Geology 1:50,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	MGR	Made Ground (Undivided)	Artificial Deposit	Not Supplied - Holocene
	WGR	Worked Ground (Undivided)	Void	Not Supplied - Holocene
	SLIP	Landslide Deposit	Clay	Not Supplied - Quaternary

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Not Supplied - Holocene
	TFD	Tidal Flat Deposits	Clay and Silt	Not Supplied - Holocene
	STGR	Stanmore Gravel Formation	Sand and Gravel	Not Supplied - Pleistocene
	HEAD	Head	Clay, Silt, Sand and Gravel	Not Supplied - Quaternary
	RTDU	River Terrace Deposits (Undifferentiated)	Sand and Gravel	Not Supplied - Quaternary

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	LC	London Clay Formation	Clay, Silt and Sand	Not Supplied - Ypresian
	CLGB	Claygate Member	Clay, Silt and Sand	Not Supplied - Ypresian
	BGS	Bagshot Formation	Sand	Not Supplied - Ypresian

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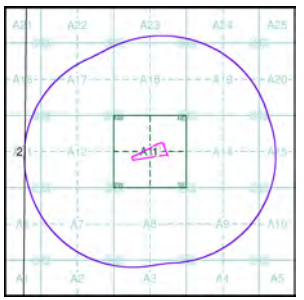
Geology 1:50,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	2	**Map ID:**	1
Map Sheet No:	257	**Map Sheet No:**	258
Map Name:	Romford	**Map Name:**	Southend and Fa
Map Date:	1996	**Map Date:**	1976
Bedrock Geology:	Available	**Bedrock Geology:**	Available
Superficial Geology:	Available	**Superficial Geology:**	Available
Artificial Geology:	Available	**Artificial Geology:**	Available
Faults:	Not Supplied	**Faults:**	Not Supplied
Landslip:	Available	**Landslip:**	Available
Rock Segments:	Not Supplied	**Rock Segments:**	Not Supplied

Geology 1:50,000 Maps - Slice A



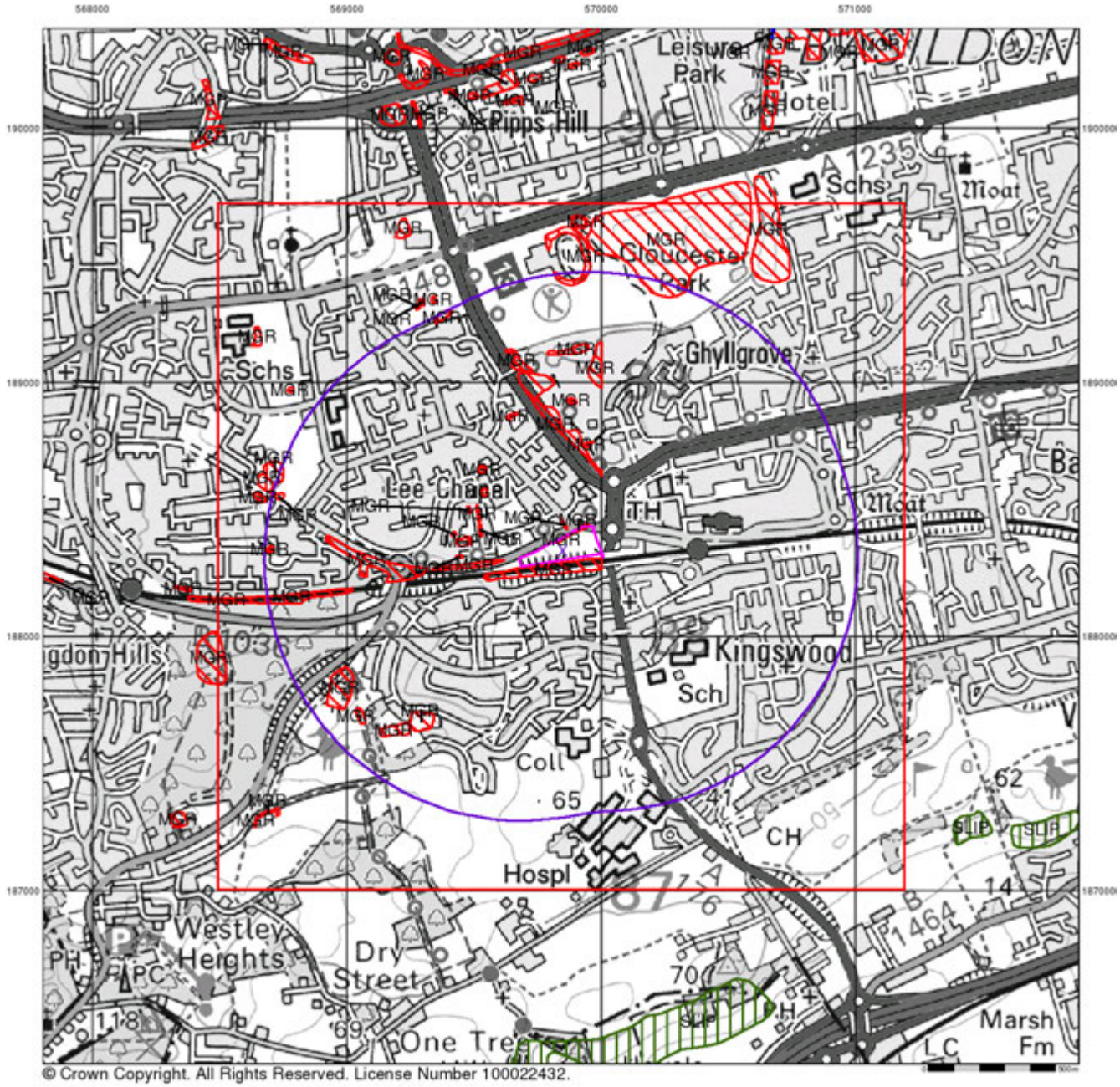
Order Details:

Order Number:	259013368_1_1
Customer Reference:	2009004
National Grid Reference:	569850, 188340
Slice:	A
Site Area (Ha):	2.48
Search Buffer (m):	1000

Site Details:

1, Hempstalls, BASILDON, SS15 5AA

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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Artificial Ground and Landslip

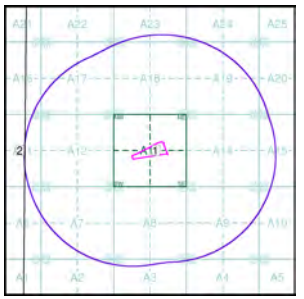
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



Order Details:

Order Number:	259013368_1_1
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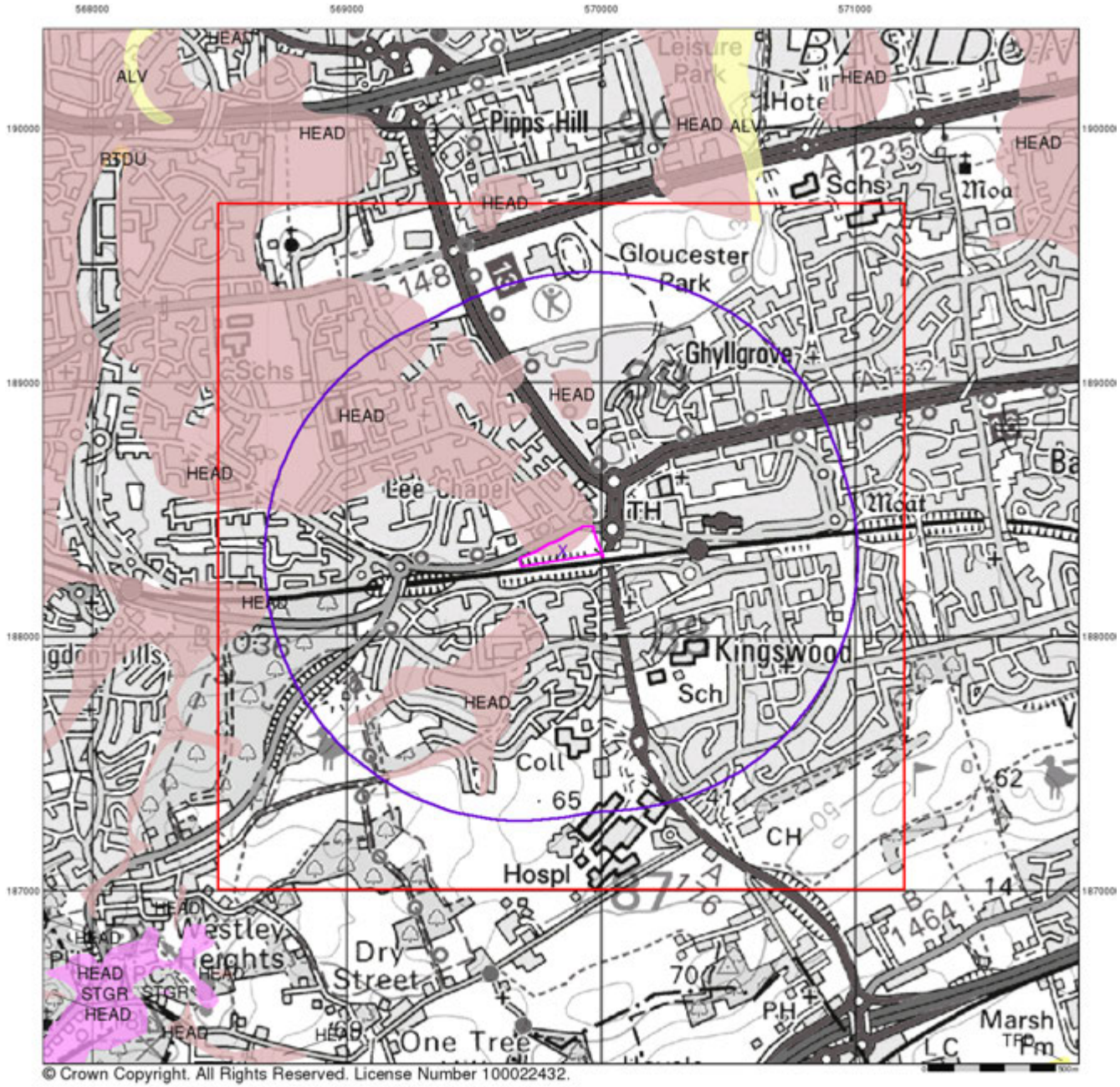

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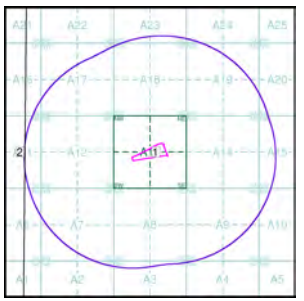
Superficial Geology

Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

Superficial Geology Map - Slice A

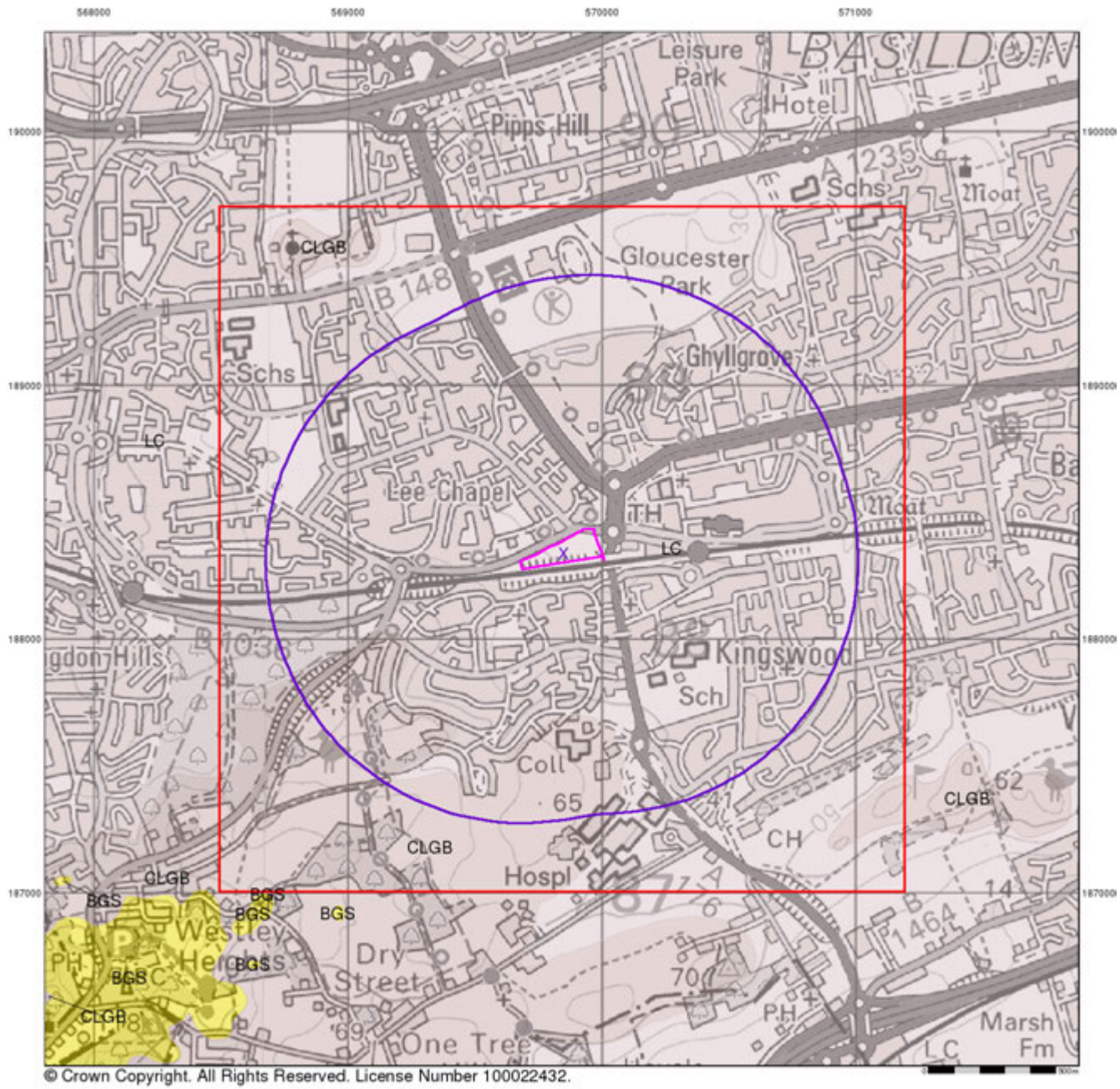


Order Details:

Order Number:	259013368_1_1
Customer Reference:	2009004
National Grid Reference:	569850, 188340
Slice:	A
Site Area (Ha):	2.48
Search Buffer (m):	1000

Site Details:

1, Hempstalls, BASILDON, SS15 5AA



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Bedrock and Faults

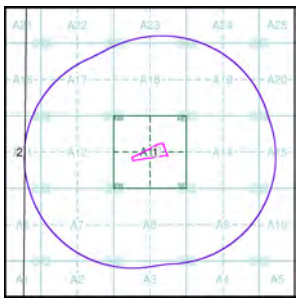
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

Bedrock and Faults Map - Slice A



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Order Number:	259013368_1_1
Customer Reference:	2009004
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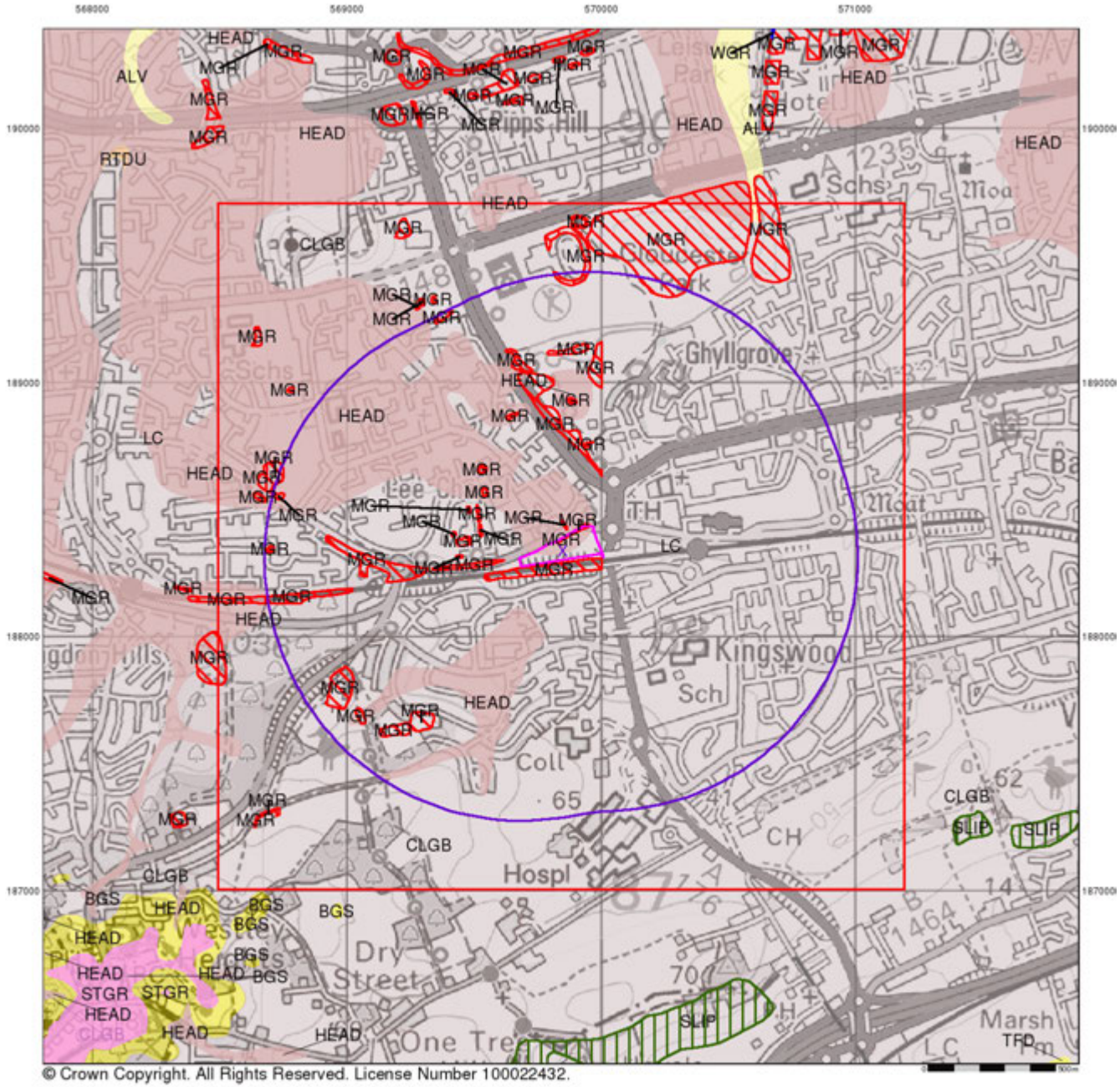

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Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

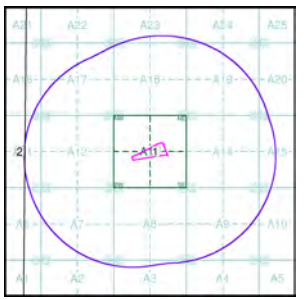
Additional Information

More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
NG12 5GG
Telephone: 0115 936 3143
Fax: 0115 936 3276
email: enquiries@bgs.ac.uk
website: www.bgs.ac.uk

Combined Geology Map - Slice A



Order Details:

Order Number:	259013368_1_1
Customer Reference:	2009004
National Grid Reference:	569850, 188340
Slice:	A
Site Area (Ha):	2.48
Search Buffer (m):	1000

Site Details:

1, Hempstalls, BASILDON, SS15 5AA

Envirocheck® Report:

Mining and Ground Stability Datasheet

Order Details:

Order Number:
259013368_1_1

Customer Reference:
2009004

National Grid Reference:
569850, 188340

Slice:
A

Site Area (Ha):
2.48

Search Buffer (m):
1000

Site Details:

1, Hempstalls
BASILDON
SS15 5AA

Client Details:

Mr T .
Tweedie Evans Consulting Ltd
The Old Chapel
35a Southover
Wells
Somerset
BA5 1UH

TWEEDIE EVANS CONSULTING

Contents

Report Version v53.0

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m
Mining and Natural Cavities Data					
BGS Recorded Mineral Sites					
Coal Mining Affected Areas			n/a	n/a	n/a
Man Made Mining Cavities					
Mining Instability			n/a	n/a	n/a
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential Mining Areas					
Historical Land Use Information (1:2,500)					
Extractive Industries or Potential Excavations from 1855-1909 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1893-1915 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1906-1937 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1924-1949 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1950-1980 (100m)	pg 1	1	1	n/a	n/a
Subterranean Features (100m)				n/a	n/a
Historical Land Use Information (1:10,000)					
Air Shafts					
Disturbed Ground					
General Quarrying					
Heap, unknown constituents					
Mineral Railway					
Mining & quarrying general					
Mining of coal & lignite					
Quarrying of sand & clay, operation of sand & gravel pits					
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Potentially Infilled Land (Non-Water)					
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Ground Stability Data (1:50,000)					
CBSCB Compensation District			n/a	n/a	n/a
Brine Pumping Related Features					
Brine Subsidence Solution Area					
Potential for Collapsible Ground Stability Hazards	pg 4	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 4	Yes	Yes	n/a	n/a
Potential for Ground Dissolution Stability Hazards	pg 4	Yes		n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 4	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 5	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 5	Yes		n/a	n/a
Salt Mining Related Features					

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Summary

Report Version v53.0

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Historical Land Use Information (1:2,500)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Extractive Industries or Potential Excavations from 1950-1980** Use: Railway Embankment First Map Published Date: 1956 Last Map Published Date: Not Applicable	A13SE (S)	0	-	569862 188297
2	**Extractive Industries or Potential Excavations from 1950-1980** Use: Pond First Map Published Date: 1956 Last Map Published Date: N/A	A13SW (W)	8	-	569673 188287

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Historical Land Use Information (1:10,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
3	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A13NW (NW)	12	-	569819 188386
4	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A13SW (W)	16	-	569668 188278
5	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A13NW (N)	143	-	569788 188522
6	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A13SE (S)	181	-	569868 188122
7	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A13NW (N)	239	-	569761 188616
8	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A18SE (N)	309	-	569876 188736
9	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A14NW (E)	332	-	570329 188398
10	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A8NW (SW)	403	-	569631 187877
11	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A14NW (E)	406	-	570387 188463
12	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A14NW (NE)	452	-	570384 188614
13	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A18SW (NW)	508	-	569581 188825
14	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A18SE (N)	523	-	570017 188954
15	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A7NE (SW)	534	-	569233 187992
16	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1924	A12NW (NW)	662	-	569113 188656
17	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A12NW (W)	709	-	568972 188401
18	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A12NW (W)	713	-	568968 188397
19	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A19SE (NE)	755	-	570578 188880
20	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A12NW (W)	760	-	568954 188549
21	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A9NE (SE)	774	-	570692 187954
22	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1938	A14SE (E)	846	-	570852 188261
23	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A14NE (E)	875	-	570853 188541

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Historical Land Use Information (1:10,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
24	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A9SW (SE)	887	-	570333 187488
25	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A8SW (S)	893	-	569601 187388
26	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A19NW (NE)	921	-	570255 189306
27	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1960	A9NE (SE)	952	-	570720 187682

Ground Stability Data (1:50,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	CBSCB Compensation District The site does not fall within the brine compensation area.				
	Brine Subsidence Solution Area The site does not fall within the brine subsidence solution area.				
28	**Potential for Collapsible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	1	570000 188337
29	**Potential for Collapsible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	569849 188337
30	**Potential for Compressible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	0	1	569829 188369
31	**Potential for Compressible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	0	1	569877 188399
32	**Potential for Compressible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	6	1	569855 188292
33	**Potential for Compressible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	20	1	569862 188423
34	**Potential for Compressible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	58	1	569617 188300
35	**Potential for Compressible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	170	1	569532 188399
36	**Potential for Compressible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A12NE (W)	199	1	569487 188375
37	**Potential for Compressible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	204	1	570000 188634
38	**Potential for Compressible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	213	1	569523 188456
39	**Potential for Compressible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A12SE (W)	221	1	569454 188314
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	1	570000 188337
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	569849 188337
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	569849 188337
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	1	570000 188337
40	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	1	569850 188322
41	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	569849 188337
42	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	1	570000 188337

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Ground Stability Data (1:50,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
43	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	36	1	569643 188288
44	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	49	1	569857 188253
45	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (W)	81	1	569601 188270
46	**Potential for Running Sand Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	569849 188337
47	**Potential for Running Sand Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	1	570000 188337
48	**Potential for Shrinking or Swelling Clay Ground Stability Hazards** Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (SW)	0	1	569849 188337
49	**Potential for Shrinking or Swelling Clay Ground Stability Hazards** Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	0	1	570000 188337

TWEEDIE EVANS CONSULTING

Historical Map List

The following mapping has been analysed for Historical Land Use Information (1:2,500):

1:2,500	Mapsheet	Published Date
Ordnance Survey Plan	TQ6988	1956
Ordnance Survey Plan	TQ7088	1956

The following mapping has been analysed for Historical Land Use Information (1:10,000):

1:10,560	Mapsheet	Published Date
Essex	076_00	1876
Essex	068_00	1881
Essex	076_NE	1897
Essex	068_SE	1898
Essex	081_SE	1923
Essex	081_NE	1924
Essex	081_NW	1924
Essex	081_SW	1924
Essex	081_NE	1938
Essex	081_NW	1938
Essex	081_SE	1938
Essex	081_SW	1938
Ordnance Survey Plan	TQ68NE	1960
Ordnance Survey Plan	TQ78NW	1960
1:10,000	**Mapsheet**	**Published Date**
Ordnance Survey Plan	TQ78NW	1985
Ordnance Survey Plan	TQ68NE	1987

Data Currency

Mining and Cavities Data	Version	Update Cycle
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	June 2020	Bi-Annually
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	Annual Rolling Update
Man Made Mining Cavities Stantec UK Ltd	December 2019	Bi-Annually
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Natural Cavities Stantec UK Ltd	December 2019	Bi-Annually
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Historical Land Use Information (1:2,500)	**Version**	**Update Cycle**
Subterranean Features Landmark Information Group Limited	February 2020	Bi-Annually
Ground Stability Data (1:50,000)	**Version**	**Update Cycle**
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	April 2020	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	Annually
Brine Subsidence Solution Area Johnson Poole & Bloomer	January 2015	Annual Rolling Update

TWEEDIE EVANS CONSULTING

Data Suppliers

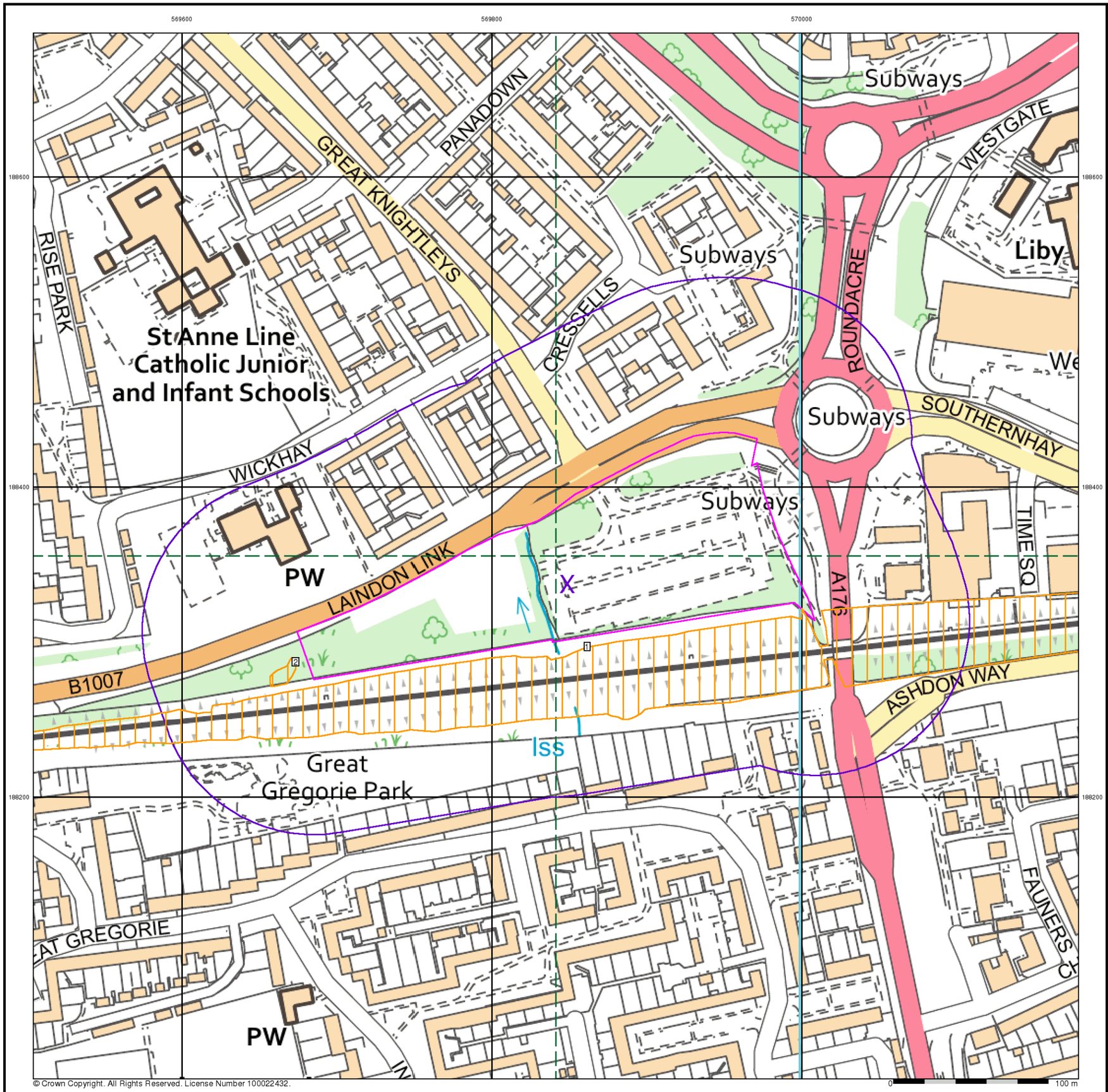
A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
British Geological Survey	
The Coal Authority	
Ove Arup	
Stantec UK Ltd	
Wardell Armstrong	
Johnson Poole & Bloomer	

TWEEDIE EVANS CONSULTING

Useful Contacts

Contact	Name and Address	Contact Details
1	**British Geological Survey - Enquiry Service** British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
-	**Landmark Information Group Limited** Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk



TWEEDIE EVANS CONSULTING

Historical Land Use Information (1:2,500)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Map ID

Several of Type at Location

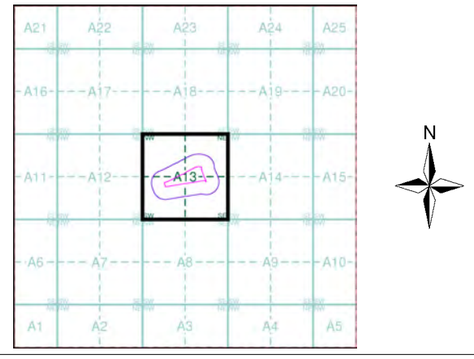
Potentially Contaminative Industrial Uses (Extractive Industries Activity)

	Point	Line	Polygon
Extractive Industries Activity from 1855 - 1909	▲	—	▭
Extractive Industries Activity from 1893 - 1915	▲	—	▨
Extractive Industries Activity from 1906 - 1937	▲	—	▦
Extractive Industries Activity from 1924 - 1949	▲	—	▨
Extractive Industries Activity from 1950 - 1980	▲	—	▥

Subterranean Features

	Point	Line	Polygon
Subterranean Features	▼	- - -	▭

Mining and Ground Stability - Segment A13



Order Details

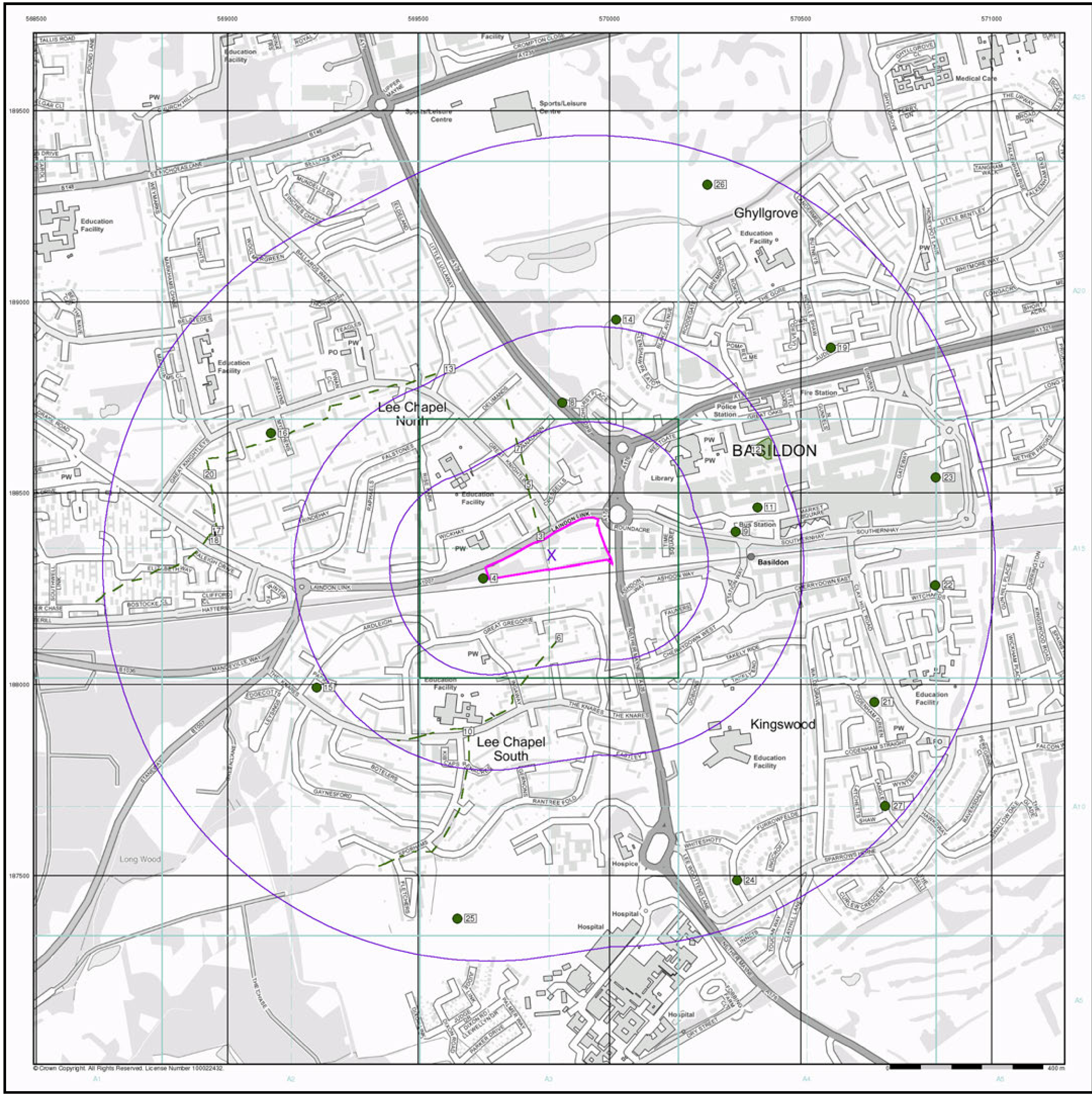
Order Number:	259013368_1_1
Customer Ref:	2009004
National Grid Reference:	569850, 188340
Slice:	A
Site Area (Ha):	2.48
Plot Buffer (m):	100

Site Details

1, Hempstalls, BASILDON, SS15 5AA

Landmark INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



TEC
TWEEDIE EVANS CONSULTING

Historical Land Use Information (1:10,000)

General

Specified Site · Specified Buffer(s) · X Bearing Reference Point · Map ID
Several of Type at Location

Potentially Contaminative Industrial Uses (Past Land Uses - Mining)

	Point	Line	Polygon
Air Shafts			
Disturbed Ground			
General Quarrying			
Heap, unknown constituents			
Mineral Railway			
Mining and Quarrying General			
Mining of Coal & Lignite			
Quarrying of Sand and Clay, Operation of Sand and Gravel Pits			

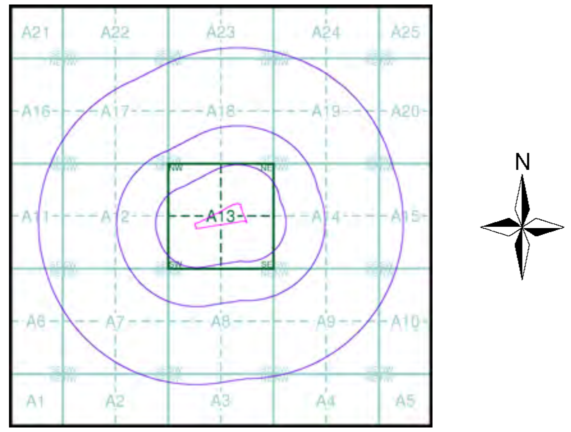
Historical Land Use

	Point	Line	Polygon
Potentially Infilled Land (Non-Water)			
Potentially Infilled Land (Water)			
Former Marsh			

Mining Data

Potential Mining Area
BGS Recorded Mineral Site

Mining and Ground Stability - Slice A

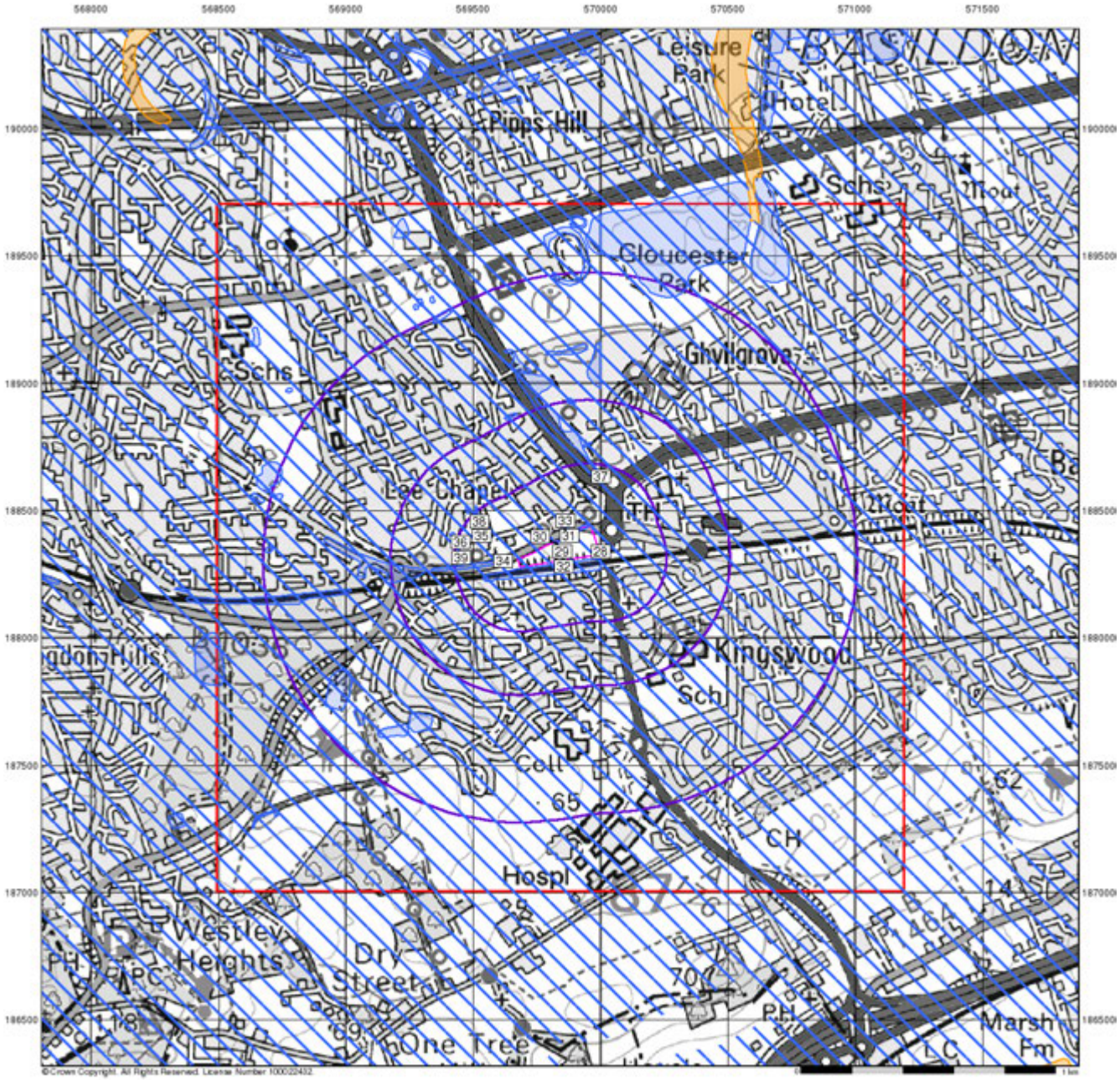


Order Details

Order Number: 259013368_1_1
Customer Ref: 2009004
National Grid Reference: 569850, 188340
Slice: A
Site Area (Ha): 2.48
Search Buffer (m): 1000

Site Details

1, Hempstalls, BASILDON, SS15 5AA



TWEEDIE EVANS CONSULTING

Ground Stability Data (1:50,000)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Potential for Compressible Ground Stability Hazards

High | Low | Moderate | Very Low

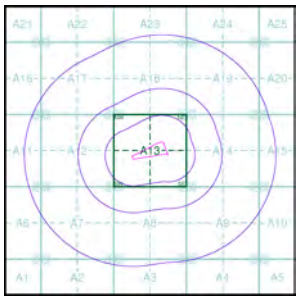
Potential for Collapsible Ground Stability Hazards

High | Low | Moderate | Very Low

Brine Pumping and Salt Mining

	Point	Polygon
Brine Pumping Related Feature	▲	▨
Salt Mining Related Feature	▲	▨

Mining and Ground Stability - Slice A



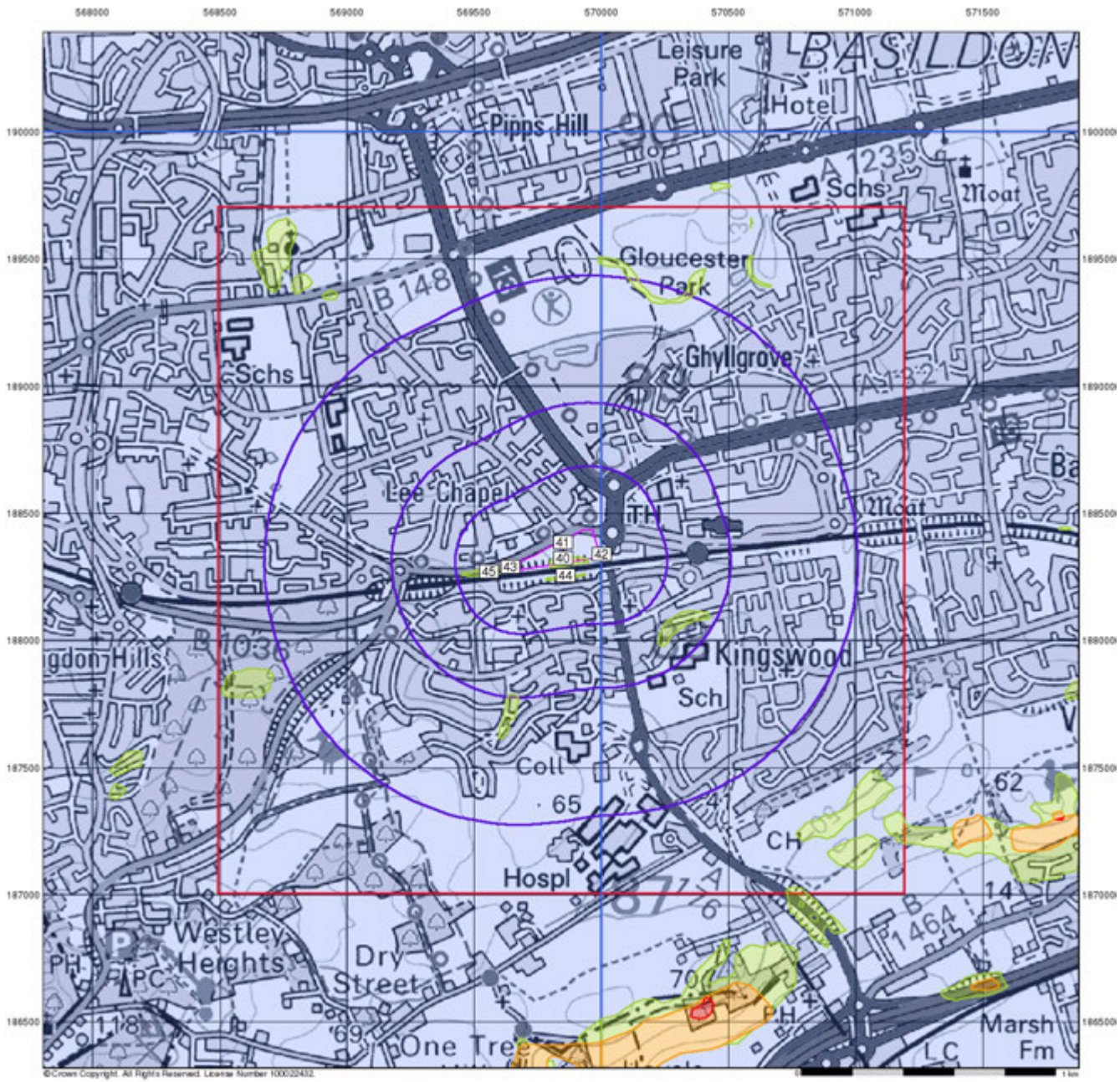
Order Details

Order Number:	259013368_1_1
Customer Ref:	2009004
National Grid Reference:	569850, 188340
Slice:	A
Site Area (Ha):	2.48
Search Buffer (m):	1000

Site Details

1, Hempstalls, BASILDON, SS15 5AA

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



TWEEDIE EVANS CONSULTING

Ground Stability Data (1:50,000)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

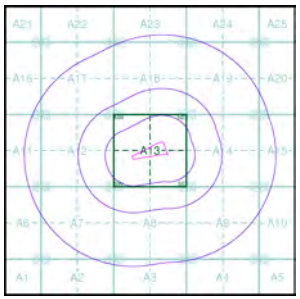
Potential for Landslide Ground Stability Hazards

High | Low | Moderate | Very Low

Potential for Ground Dissolution Stability Hazards

High | Low | Moderate | Very Low

Mining and Ground Stability - Slice A



Order Details

Order Number:	259013368_1_1
Customer Ref:	2009004
National Grid Reference:	569850, 188340
Slice:	A
Site Area (Ha):	2.48
Search Buffer (m):	1000

Site Details

1, Hempstalls, BASILDON, SS15 5AA

Landmark INFORMATION GROUP
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Fax: 0844 844 9951
Web: www.envirocheck.co.uk

TWEEDIE EVANS CONSULTING

Ground Stability Data (1:50,000)

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

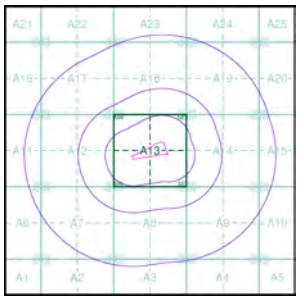
Potential for Running Sand Ground Stability Hazards

High | Low | Moderate | Very Low

Potential for Shrinking or Swelling Clay Ground Stability Hazards

High | Low | Moderate | Very Low

Mining and Ground Stability - Slice A



Order Details

Order Number:	259013368_1_1
Customer Ref:	2009004
National Grid Reference:	569850, 188340
Slice:	A
Site Area (Ha):	2.48
Search Buffer (m):	1000

Site Details

1, Hempstalls, BASILDON, SS15 5AA

Landmark INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Appendix D

Regulatory Correspondence

Basildon Council
BASILDON • BILLERICAY • WICKFORD

Mr James Naylor
James.naylor@tecon.co.uk

BY EMAIL

Date	15 October 2020
Please ask for	Sarah Wakely
Department	Environmental Health Services
Tel. No	(01268) 206894
E-Mail	Sarah.wakely@basildon.gov.uk
Reference	EIRSR161470

Dear Sir,

ENVIRONMENTAL INFORMATION REGULATIONS 2004
ENVIRONMENTAL INFORMATION ENQUIRY – CAR PARK 14, BASILDON

I refer to your enquiry dated 1 October 2020 in respect of the above site. Thank you for paying the search fee. This Service would answer your questions as follows:

1. This Service does not hold any records with respect to pre-licensed landfills within 500m of the site (pink circle on attached plan). In respect of landfill queries it would be advisable to enquire with the Environment Agency. I understand their contact address for this area is:

   Rivens House
   Threshelfords Business Park
   Inworth Road
   Feering
   Colchester
   Essex
   CO5 9SE

2. You are advised that files in this Service generally extend back to the early 1990's. A search of these systems has not disclosed any records regarding pollution incidents or known areas of contaminated land (determined under Part IIA of the EPA 1990) within 500m of the subject site. However, this Service has a duty to identify sites of potential contamination from various sources. This Service has identified five potentially contaminative land uses within 500m of the site. The sites are listed below and shaded and referred to on the attached plan:

Basildon Council
The Basildon Centre
St. Martin's Square
Basildon, Essex, SS14 1DL
Tel: (01268) 533333
www.basildon.gov.uk

Ref No	Grid Ref	Identification Source	Further Details	Priority Category
BAS 176	569839m, 188697m	Pre 1953 Historical OS maps	Small unknown infill	2
BAS 176a	569870m, 188742m	Pre 1953 Historical OS maps	Small unknown infill	2
POST 741	569666m, 188279m	Historical OS maps 1953-present	Small unknown infill	2
POST 753	570281m, 188362m	Historical OS maps 1953-present	Garage	1
POST 754	570334m, 188393m	Historical OS maps 1953-present	Small unknown infill	2

The sites are classified (using a locally derived assessment criteria) into preliminary priority categories 1 to 4, where 1 represents high risk and 4 represents low risk.

3. There is one Part B APC authorisation within 500m of the subject site, which is listed below and shaded in green on the attached plan:

Name of Business	Grid Ref	Type of Permit
BP Connect Roundacre Filling Station	570063m,188361m	Petrol Filling Station

4. This Service does not hold any records with respect to private water supplies.

5. This Service does not hold any records relating to storage of petroleum hydrocarbons. You are advised to contact the Petroleum Officer who is based at Essex County Council Trading Standards.

6. This Service is aware of one site (Roundacre – grid ref 569966m,188520m) where a site investigation has been carried out. Should you wish to see a copy of the site investigation, this Service would need to request permission from the owner of the report before providing it. Such a request will also incur an additional charge.

7. This Services does not hold any records relating to unexploded ordnance.

8. This Service is not aware of any known problems with ground gas in the site area.

9. This Service does not hold any records with respect to naturally elevated contaminant concentrations.

10. This Service does not hold any other information that may have an impact upon the contaminative status of the site.

I trust this information assists.

Yours faithfully,

Sarah Wakely
Environmental Planning Officer
enc.

Appendix E

Risk Methodologies and Evaluation

Risk Evaluation

The qualitative assessment methodology presented in CIRIA publication C552 (2001) titled *'Contaminated Land Risk Assessment: A Guide to Good Practice'* has been used by TEC for the basis of evaluating potential risk.

The method requires an assessment of the:

- magnitude of the probability or likelihood of the risk occurring (Table 1); and
- magnitude of the potential consequence or severity of the risk occurring (Table 2)

Table 1. Classification of Probability

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

Table 2. Classification of Consequence

Classification	Definition	Examples
Severe	Short-term (acute) risk to human health likely to result in "significant harm" as defined by the Environment Protection Act 1990, Part IIA. Short-term risk of pollution of sensitive water resource. (Note: Water Resources Act contains no scope for considering significance of pollution). Catastrophic damage to buildings/property. A short-term risk to a particular ecosystem, or organisation forming part of such ecosystem (note: the definitions of ecological systems within the draft circular on Contaminated Land, DETR, 2000).	High concentrations of cyanide on the surface of an informal recreation area. Major spillage of contaminants from site into controlled water. Explosion, causing building collapse (can also equate to a short-term human health risk if buildings are occupied).
Medium	Chronic damage to human health ("significant harm" as defined in DETR, 2000). Pollution of sensitive water resources. (Note: Water Resources Act contains no scope for considering significance of pollution). A significant change in a particular ecosystem, or organism forming part of such ecosystem, (note: the definitions of ecological systems within draft circular on Contaminated Land, DETR, 2000).	Concentration of a contaminant from site exceeding the generic or site-specific assessment criteria. Leaching of contaminants from a site to a major or minor aquifer. Death of a species within a designated nature reserve.
Mild	Pollution of non-sensitive water resources. Significant damage to crops, buildings, structures and services ("significant harm" as defined in the draft circular on Contaminated Land, DETR, 2000). Damage to sensitive buildings/structures/services or the environment.	Pollution of non-classified groundwater. Damage to building rendering it unsafe to occupy (for example foundation damage resulting in instability).
Minor	Harm, although not necessarily significant harm, which may result in a financial loss, or expenditure to resolve. Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc), easily repairable effects of damage to buildings, structures and services.	The presence of contaminants at such concentrations that protective equipment is required during site works. The loss of plants in a landscaping scheme. Discolouration of concrete.

The combination of the two factors is determined using Table 3 and the resulting level of risk is described in Table 4. The evaluation can be applied to each of the scenarios identified in the risk model and the overall risk assessed.

Table 3. Combination of Consequence with Probability

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

Table 4. Description of risks and likely action required

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

Using the risk model the pollutant linkages are identified and a preliminary estimate of risk undertaken. If there is no pollutant linkage identified, then there is no risk. If the estimate of risk for all the linkages and exposure scenarios is very low at this stage then it is likely that no further assessment will be required.

Appendix F

Exploratory Hole Logs

Borehole Log

Borehole No. **BH01**
FINAL
Sheet 1 of 3

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569737.00 - 188320.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	03/11/2020 - 03/11/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
						0.15			MADE GROUND: Orangish brown slightly sandy gravelly clay. Gravel of flint, mudstone, concrete and brick.
		0.20	1D						
		0.40 - 0.60	2B						Firm becoming stiff medium becoming high strength orangish brown slightly sandy slightly gravelly silty CLAY. Sand is fine and medium. Gravel is subangular to rounded fine and medium of claystone. Rare pyrite and selenite crystals.
		1.00	3D						
		1.20	4D						
		1.20	S	N=12 (1,2/2,3,3,4)	Casing=0.00m Water=DRY				
		1.90	5D						
		2.10	6D						
		2.10	S	N=11 (2,2/2,3,3,3)	Casing=1.90m Water=DRY				
		3.00	7D						
		3.00	S	N=14 (2,3/3,3,4,4)	Casing=2.50m Water=DRY				*Pocket Penetrometer at 3.00 mbgl:* *-2.1 kg/cm2* *-2.1 kg/cm2* *-2.1 kg/cm2*
		3.0	HV	78kPa					
		3.0	HV	80kPa					
		3.0	HV	80kPa					
		4.00	8D						
		4.00	S	N=18 (2,2/3,5,5,5)	Casing=2.50m Water=DRY				
		5.00	9D						
		5.00	S	N=18 (2,2/4,4,5,5)	Casing=2.50m Water=DRY				
		6.00	10D						
		6.50	11D						
		6.50	S	N=22 (3,4/4,6,6,6)	Casing=2.50m Water=DRY				
		7.50	12D						
		8.00	13D						
		8.00	S	N=23 (3,3/5,6,6,6)	Casing=2.50m Water=DRY				*Pocket Penetrometer at 8.00 mbgl:* *-3.4 kg/cm2* *-3.1 kg/cm2* *-3.0 kg/cm2*
		8.0	HV	102kPa					
		8.0	HV	105kPa					
		8.0	HV	10kPa					
		9.00	14D						
		9.50	15D						
		9.50	S	N=25 (3,3/5,6,7,7)	Casing=2.50m Water=DRY				
		10.0	HV	128kPa		10.00			

Continued on next sheet

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No. **BH01**
FINAL
Sheet 2 of 3

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569737.00 - 188320.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	03/11/2020 - 03/11/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		10.0	HV	130kPa					PARTIALLY WEATHERED LONDON CLAY: Stiff becoming very stiff high strength blueish grey locally mottled orangish brown slightly sandy CLAY. Sand is fine and medium.
		10.0	HV	130kPa					
		10.50	16D						
		11.00	17D						
		11.00	S	N=25 (2,3/5,6,7,7)	Casing=2.50m Water=DRY				
		12.00	18D						
		12.50	19D						
		12.50	S	N=23 (3,3/4,5,7,7)	Casing=2.50m Water=DRY				
		13.50	20D						
		14.00	21D						
		14.00	S	N=33 (4,4/6,8,9,10)	Casing=2.50m Water=DRY				
		15.00	22D						
		15.50	S	N=34 (3,6/8,8,8,10)	Casing=2.50m Water=DRY				
		16.00	23D						
		17.00	24D						
		17.00	S	N=41 (5,7/9,10,11,11)	Casing=2.50m Water=DRY				
		18.00	25D						
		18.50	S	N=44 (4,7/8,12,11,13)	Casing=2.50m Water=DRY				
		19.50	26D						
		20.00	27D						

Continued on next sheet

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No.
BH01
FINAL
Sheet 3 of 3

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569737.00 - 188320.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	03/11/2020 - 03/11/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		20.00	S	N=42 (5,8/9,10,10,13)	Casing=2.50m Water=DRY				
		21.00	28D						
		21.50	29D						
		21.50	S	N=41 (4,6/9,10,11,11)	Casing=2.50m Water=DRY				
		22.50	30D						
		23.00	31D						
		23.00	S	N=42 (5,7/9,9,12,12)	Casing=2.50m Water=DRY				
		24.00	32D						
		24.50	33D						
		24.50	S	N=50 (6,9/50 for 295mm)	Casing=2.50m Water=DRY				
						25.00			End of borehole at 25.0 m

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No. **BH03**
FINAL
Sheet 1 of 3

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569855.00 - 188314.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	03/11/2020 - 03/11/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
						0.10			MADE GROUND: Black bituminous bound tarmacadam.
		0.30	1ES			0.25			MADE GROUND: Light brown sandy gravel of tarmac, brick, igneous lithologies and mudstone.
		1.20	S	N=10 (2,1/2,3,2,3)	Casing=0.00m Water=DRY				DISTINCTLY WEATHERED LONDON CLAY: Firm becoming stiff medium becoming high strength dark orangish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium. Gravel is subangular to subrounded fine and medium of claystone. Rare pyrite and selenite crystals.
		2.10	S	N=13 (2,2/2,4,3,4)	Casing=1.90m Water=DRY				
		2.5	HV	92kPa					*Pocket Penetrometer at 2.50 mbgl:*
		2.5	HV	92kPa					*-1.9 kg/cm2*
		2.5	HV	95kPa					*-2.4 kg/cm2*
		3.00	S	N=18 (3,3/4,4,5,5)	Casing=2.10m Water=DRY				*-2.3 kg/cm2*
		3.50 - 4.00	2D						
		4.00	S	N=30 (5,5/6,8,8,8)	Casing=2.50m Water=DRY				
		5.00	S	N=25 (4,4/5,6,6,8)	Casing=2.50m Water=DRY				
		6.50	S	N=23 (2,3/4,5,7,7)	Casing=2.50m Water=DRY				
						6.80			PARTIALLY WEATHERED LONDON CLAY: Stiff becoming very stiff high becoming very high strength blueish grey mottled orangish brown slightly sandy CLAY with rare crystals of pyrite. Sand is fine and medium.
		7.0	HV	102kPa					*Pocket Penetrometer at 7.00 mbgl:*
		7.0	HV	105kPa					*-4.0 kg/cm2*
		7.0	HV	110kPa					*-3.5 kg/cm2*
		7.00 - 7.50	3D						*-3.6 kg/cm2*
		8.00	S	N=26 (3,4/5,7,7,7)	Casing=2.50m Water=DRY				
		9.50 - 10.00	4U	90blows					

Continued on next sheet

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No. **BH03**
FINAL
Sheet 2 of 3

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569855.00 - 188314.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	03/11/2020 - 03/11/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		11.00	S	N=36 (4,7/8,8,10,10)	Casing=2.50m Water=DRY				
		12.4	HV	128kPa					*Pocket Penetrometer at 12.40 mbgl:*
		12.4	HV	130kPa					*-4.1 kg/cm2*
		12.4	HV	130kPa					*-4.1 kg/cm2*
		12.50 - 13.00	6U	85blows					*-4.3 kg/cm2*
		13.00 - 13.50	5D						
		14.00	S	N=33 (6,6/7,9,8,9)	Casing=2.50m Water=DRY				
		19.00	S	N=39 (3,5/7,9,10,13)	Casing=2.50m Water=DRY				*Sand pockets (2-4 mm) within clay.*
		19.00 - 19.50	7D						

Continued on next sheet

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No.
BH03
FINAL
Sheet 3 of 3

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569855.00 - 188314.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	03/11/2020 - 03/11/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		21.00	S	N=35 (5,5/8,8,9,10)	Casing=2.50m Water=DRY				
		22.50	S	N=44 (4,9/10,10,12,12)	Casing=2.50m Water=DRY				
		23.00 - 23.50	8D						
		24.00	S	N=46 (8,10/10,10,12,14)	Casing=2.50m Water=DRY				
						25.00			End of borehole at 25.0 m

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Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No. **BH04**
FINAL
Sheet 1 of 3

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569879.00 - 188382.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	02/11/2020 - 02/11/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
						0.05			MADE GROUND: Black bituminous bound tarmacadam.
		0.20	1D			0.30			MADE GROUND: Orangish brown slightly clayey sandy gravel of igneous lithologies, mudstone, tarmac and brick.
		0.50 - 0.70	2B						Soft becoming firm blueish grey mottled greenish brown mottled blueish grey slightly gravelly CLAY. Sand is fine and medium. Gravel of subangular to subrounded fine and medium claystone.
		1.00	3D			1.00			DISTINCTLY WEATHERED LONDON CLAY: Firm becoming stiff medium becoming high strength orangish brown slightly sandy CLAY. Sand is fine and medium. Occasional pyrite and selenite crystals.
		1.20	4D						
		1.20	S	N=10 (1,1/2,2,3,3)	Casing=0.00m Water=DRY				
		2.00 - 2.50	5U	60blows					
		2.45	6D						*Band of claystone.*
		2.5	HV	75kPa					*Pocket Penetrometer at 2.50 mbgl:*
		2.5	HV	75kPa					*-1.9 kg/cm2*
		2.5	HV	75kPa					*-2.0 kg/cm2*
		2.50 - 2.90	7B						*-2.0 kg/cm2*
		3.00	8D						
		3.00	S	N=19 (2,3/4,4,5,6)	Casing=2.00m Water=DRY				
		3.50	9D						
		4.00	10D						
		4.00	S	N=20 (3,3/4,5,5,6)	Casing=2.50m Water=DRY				
		4.50	11D						
		5.00	12D						
		5.00	S	N=19 (2,3/4,4,5,6)	Casing=2.50m Water=DRY				
		6.00	13D						
		6.50	14D						
		6.50	S	N=21 (2,5/5,5,5,6)	Casing=2.50m Water=DRY	6.80			PARTIALLY WEATHERED LONDON CLAY: Stiff becoming very stiff high becoming very high strength blueish grey slightly sandy CLAY. Sand is fine to coarse. Rare pyrite and selenite crystals.
		7.50	15D						
		8.00	16D						*Pocket Penetrometer at 8.00 mbgl:*
		8.00	S	N=29 (3,4/5,8,8,8)	Casing=2.50m Water=DRY				*-3.0 kg/cm2*
		8.0	HV	120kPa					*-2. kg/cm2*
		8.0	HV	123kPa					*-2.8 kg/cm2*
		8.0	HV	125kPa					
		9.00	17D						
		9.50	18D						
		9.50	S	N=30 (3,4/7,7,8,8)	Casing=2.50m Water=DRY				

Continued on next sheet

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater seepage from claystone band at 2.40-2.50 mbgl.

Borehole Log

Borehole No. **BH04**
FINAL
Sheet 2 of 3

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569879.00 - 188382.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	02/11/2020 - 02/11/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		10.50	19D						
		11.00	20D						
		11.00	S	N=30 (3,4/6,7,8,9)	Casing=2.50m Water=DRY				
		12.00	21D						
		12.50	22D						
		12.50	S	N=37 (4,6/8,9,10,10)	Casing=2.50m Water=DRY				
		13.50	23D						
		14.00	24D						
		14.00	S	N=34 (5,6/7,8,9,10)	Casing=2.50m Water=DRY				
		15.00	25D						
		15.50	26D						
		15.50	S	N=41 (5,5/9,10,10,12)	Casing=2.50m Water=DRY				
		16.50	27D						
		17.00	28D						
		17.00	S	N=48 (4,6/9,11,13,15)	Casing=2.50m Water=DRY				
		18.00	29D						
		18.50	30D						
		18.50	S	N=39 (5,6/9,9,9,12)	Casing=2.50m Water=DRY				
		19.50	31D						
		20.00	32D						

Continued on next sheet

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater seepage from claystone band at 2.40-2.50 mbgl.

Borehole Log

Borehole No.
BH04
FINAL
Sheet 3 of 3

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569879.00 - 188382.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	02/11/2020 - 02/11/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		20.00	S	N=35 (4,7/7,9,9,10)	Casing=2.50m Water=DRY				
		21.00	33D						
		21.50	34D						
		21.50	S	N=43 (6,7/10,10,11,12)	Casing=2.50m Water=DRY				
		22.50	35D						
		23.00	36D						
		23.00	S	N=42 (8,8/8,10,11,13)	Casing=2.50m Water=DRY				
		24.00	37D						
		24.50	38D						
		24.50	S	N=42 (12 for 0mm/42 for 0mm)	Casing=2.50m Water=DRY				
						25.00			End of borehole at 25.0 m

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater seepage from claystone band at 2.40-2.50 mbgl.

Borehole Log

Borehole No. **BH05**
FINAL
Sheet 1 of 4

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569908.00 - 188342.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	27/10/2020 - 28/10/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		0.30	1ES			0.20			MADE GROUND: Black bituminous bound tarmacadam.
						0.45			MADE GROUND: Orangish brown mottled blueish grey slightly clayey sandy gravel of flint, tarmacadam, brick and mudstone.
		1.20	S	N=5 (1,0/1,1,1,2)	Casing=0.00m Water=DRY				Soft becoming firm low strength blueish grey becoming orangish brown mottled blueish grey slightly gravelly CLAY. Sand is fine and medium. Gravel is subangular to subrounded fine and medium of claystone.
						1.50			Firm becoming stiff medium becoming high strength orangish brown slightly sandy CLAY. Sand is fine and medium.
		2.0	HV	68kPa					*Pocket Penetrometer at 2.00 mbgl:*
		2.0	HV	80kPa					*-1.9 kg/cm2*
		2.0	HV	80kPa					*-2.0 kg/cm2*
		2.10	S	N=10 (1,1/2,2,3,3)	Casing=2.10m Water=DRY				*-2.0 kg/cm2*
		3.00	S	N=10 (1,2/1,3,3,3)	Casing=2.50m Water=DRY				
		3.00 - 3.50	2D						
		4.00	S	N=17 (2,3/3,4,4,6)	Casing=2.50m Water=DRY				
		5.00	S	N=11 (1,2/2,2,3,4)	Casing=2.50m Water=DRY				
		6.50	S	N=17 (2,3/4,4,4,5)	Casing=2.50m Water=DRY				
						7.30			Stiff high strength blueish grey mottled orangish brown slightly sandy CLAY. Sand is fine and medium. Occasional pyrite and selenite crystals.
		7.50 - 8.00	3D						
		8.00	S	N=19 (3,3/3,5,5,6)	Casing=2.50m Water=DRY				
		8.00 - 8.50	4B						
		9.0	HV	120kPa					*Pocket Penetrometer at 9.00 mbgl:*
		9.0	HV	125kPa					*-2.9 kg/cm2*
		9.0	HV	132kPa					*-3.1 kg/cm2*
		9.50	S	N=21 (3,3/4,5,5,7)	Casing=2.50m Water=DRY				*-3.0 kg/cm2*
						10.00			Continued on next sheet

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No. **BH05**
FINAL
Sheet 2 of 4

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569908.00 - 188342.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	27/10/2020 - 28/10/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		10.50 - 11.00	5D						UNWEATHERED LONDON CLAY: Stiff becoming very stiff high becoming very high strength blueish grey CLAY with occasional pyrite and selenite crystals.
		11.00	S	N=26 (3,4/5,5,7,9)	Casing=2.50m Water=DRY				
		12.50	S	N=30 (4,5/7,7,7,9)	Casing=2.50m Water=DRY				
		14.00	S	N=35 (4,6/8,8,8,11)	Casing=2.50m Water=DRY				
		15.0	HV	138kPa					*Pocket Penetrometer at 15.00 mbgl:*
		15.0	HV	138kPa					*-4.3 kg/cm2*
		15.0	HV	140kPa					*-4.3 kg/cm2*
		15.00 - 15.50	6D						*-4.5 kg/cm2*
		15.50	S	N=35 (5,7/7,8,10,10)	Casing=2.50m Water=DRY				
		17.50 - 18.00	7U	90blows					*Pocket Penetrometer at 17.00 mbgl:*
		17.50 - 18.00	8D						*-4.5 kg/cm2*
									-4.2 kg/cm2
									-3.8 kg/cm2
		18.50	S	N=41 (6,6/8,9,12,12)	Casing=2.50m Water=DRY				*Pocket Penetrometer at 18.50 mbgl:*
									-5 kg/cm2
									-5 kg/cm2
									-5 kg/cm2
									Continued on next sheet

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No. **BH05**
FINAL
Sheet 3 of 4

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569908.00 - 188342.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	27/10/2020 - 28/10/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		20.00	S	N=32 (4,5/7,7,9,9)	Casing=2.50m Water=DRY				
		20.00 - 20.50	9B						*2-3mm small bands of sand present within CLAY.*
		21.50	S	N=44 (5,8/9,10,12,13)	Casing=2.50m Water=DRY				
		23.00 - 23.50	10U	90blows					
		24.50	S	N=50 (5,10/10,13,13,14)	Casing=2.50m Water=DRY				
		26.00	S	N=43 (5,8/10,10,11,12)	Casing=2.50m Water=DRY				
		27.50 - 28.00	11D						
		29.00	S	N=50 (6,12/50 for 235mm)	Casing=2.50m Water=DRY				
		30.00 - 30.50	12B						

21 22 23 24 25 26 27 28 29 30

Continued on next sheet

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No. **BH05**
FINAL
Sheet 4 of 4

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569908.00 - 188342.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	27/10/2020 - 28/10/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		30.50	S	N=50 (6,10/50 for 230mm)	Casing=2.50m Water=DRY				
		32.00	S	50 (7,11/50 for 200mm)	Casing=2.50m Water=DRY				
		32.00 - 32.50	13D						
		33.50	S	50 (7,12/50 for 180mm)	Casing=2.50m Water=DRY				
		34.50	S	50 (7,14/50 for 154mm)	Casing=2.50m Water=DRY				
						35.00			End of borehole at 35.0 m

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Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No. **BH06**
FINAL
Sheet 1 of 4

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569934.00 - 188397.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	28/10/2020 - 28/10/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
						0.15			MADE GROUND: Black bituminous bound tarmacadam.
						0.25			MADE GROUND: Greyish brown slightly clayey sandy gravel of igneous lithologies, mudstone, tarmac and brick.
		0.50 - 0.60	1B						MADE GROUND: Orangish brown slightly clayey very gravelly sand. Gravel of mudstone, flint, tarmacadam and igneous lithologies.
		1.20	S	N=8 (1,1/1,2,2,3)	Casing=0.00m Water=DRY				
		1.60 - 2.00	2B			1.60			Firm becoming stiff medium becoming high strength orangish brown slightly sandy CLAY. Sand is fine and medium. Rare pyrite and selenite crystals.
		2.10	S	N=13 (1,1/2,3,4,4)	Casing=1.60m Water=DRY				
		3.00	S	N=14 (1,2/3,3,4,4)	Casing=2.10m Water=DRY				
		4.00	S	N=23 (2,3/4,4,6,9)	Casing=2.50m Water=DRY				
		4.00 - 4.50	3D						
		4.5	HV	90kPa					
		4.5	HV	90kPa					
		4.5	HV	95kPa					
		5.00	S	N=21 (3,4/4,5,6,6)	Casing=2.50m Water=DRY				
		6.50	S	N=24 (3,3/5,5,7,7)	Casing=2.50m Water=DRY				
						7.90			Stiff becoming locally very stiff high becoming very high strength blueish grey slightly sandy CLAY. Sand is fine and medium.
		8.0	HV	123kPa					
		8.0	HV	125kPa					
		8.0	HV	125kPa					
		8.00 - 8.50	5U	75blows					
		9.50	S	N=28 (4,5/5,7,8,8)	Casing=2.50m Water=DRY				

Continued on next sheet

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No. **BH06**
FINAL
Sheet 2 of 4

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569934.00 - 188397.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	28/10/2020 - 28/10/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		11.00	S	N=32 (3,5/7,8,8,9)	Casing=2.50m Water=DRY				
		12.50	S	N=33 (4,6/8,8,8,9)	Casing=2.50m				*Becomes locally mottled reddish brown.*
		12.5	HV	140kPa	Water=DRY				
		12.5	HV	140kPa					
		12.5	HV	142kPa					
		13.00 - 13.50	4D						
		14.00 - 14.50	6U	85blows					
						15.00			UNWEATHERED LONDON CLAY: Very stiff very high strength blueish grey CLAY. *Pockets of sand (2-5mm) within clay.*
		15.50	S	N=33 (4,5/7,8,8,10)	Casing=2.50m Water=DRY				
		16.00 - 16.50	7B						
		17.00	S	N=36 (6,7/8,9,9,10)	Casing=2.50m Water=DRY				
		18.00 - 18.50	13U	100blows					
		19.00 - 19.50	8D						

Continued on next sheet

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No. **BH06**
FINAL
Sheet 3 of 4

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569934.00 - 188397.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	28/10/2020 - 28/10/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		20.00	S	N=38 (5,5/8,10,10,10)	Casing=2.50m Water=DRY				
		21.00 - 21.50	9B						
		21.50	S	N=50 (6,9/50 for 235mm)	Casing=2.50m Water=DRY				
		23.00	S	N=48 (5,7/9,13,13,13)	Casing=2.50m Water=DRY				
		24.50	S	N=42 (5,6/9,10,11,12)	Casing=2.50m Water=DRY				
		25.00 - 26.00	10D						
		26.00	S	N=40 (4,7/9,9,11,11)	Casing=2.50m Water=DRY				
		26.00 - 26.50	11D						
		27.50	S	N=41 (4,7/9,10,10,12)	Casing=2.50m Water=DRY				
		29.00	S	N=45 (5,7/10,11,11,13)	Casing=2.50m Water=DRY				
		29.50 - 30.00	12D						

21 22 23 24 25 26 27 28 29 30

Continued on next sheet

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No. **BH06**
FINAL
Sheet 4 of 4

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569934.00 - 188397.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	28/10/2020 - 28/10/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		30.50	S	N=50 (5,8/50 for 230mm)	Casing=2.50m Water=DRY				
		32.00	S	N=50 (5,9/50 for 255mm)	Casing=2.50m Water=DRY				
		33.50	S	N=50 (5,9/50 for 280mm)	Casing=2.50m Water=DRY				
		34.50	S	50 (6,13/50 for 150mm)	Casing=2.50m Water=DRY				
						35.00			End of borehole at 35.0 m

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Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

AGS

Borehole Log

Borehole No. **BH07**
FINAL
Sheet 1 of 3

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569968.00 - 188336.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	26/10/2020 - 27/10/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		0.30	1ES			0.20			MADE GROUND: Black bituminous bound tarmacadam.
		0.30	PID	0ppmv					MADE GROUND: Light orangish brown slightly gravelly sandy clay. Gravel of of tarmac, brick, igneous lithologies and mudstone.
		0.50	2ES			0.50			
		0.50	PID	0ppmv		0.70			MADE GROUND: Orangish brown slightly gravelly clay. Gravel of igneous lithologies and mudstone.
		0.50 - 0.70	5B						
		0.8	HV	78kPa					
		0.8	HV	78kPa					
		0.8	HV	82kPa					
		1.20	S	N=11 (1,2/2,3,3,3)	Casing=0.00m Water=DRY				DISTINCTLY WEATHERED LONDON CLAY: Firm becoming stiff medium becoming high strength orangish brown mottled blueish grey slightly gravelly CLAY. Gravel is subangular to rounded fine and medium of claystone.
		1.60 - 2.00	4B						
		2.10	S	N=13 (2,2/3,3,3,4)	Casing=2.10m Water=DRY				
		2.5	HV	117kPa					
		2.5	HV	118kPa					
		2.5	HV	120kPa					
		3.00	S	N=13 (1,2/2,3,4,4)	Casing=2.10m Water=DRY				
		3.50 - 4.00	3D						*Claystone band within clay. Slight water seepage at depth.*
		4.00	S	N=20 (2,3/4,5,5,6)	Casing=4.00m Water=DRY				
		4.0	HV	140kPa					*Pocket Penetrometer at 4.00 mbgl:* *-2.2 kg/cm2* *-2.4 kg/cm2* *-2.1 kg/cm2*
		4.0	HV	142kPa					
		4.0	HV	142kPa					
		5.00	S	N=19 (2,3/4,5,5,5)	Casing=4.30m Water=DRY				
		6.0	HV	160kPa					
		6.0	HV	160kPa					
		6.0	HV	162kPa					
		6.50	S	N=21 (2,3/5,5,5,6)	Casing=4.30m Water=DRY				
		7.00 - 7.50	6D			7.10			PARTIALLY WEATHERED LONDON CLAY: Stiff becoming very stiff high becoming very high strength blueish grey locally mottled orangish brown slightly sandy CLAY. Sand is fine and medium. Occasional pyrite and selenite crystals.
		7.5	HV	150kPa					
		7.5	HV	150kPa					*Pocket Penetrometer at 7.00 mbgl:* *-3.0 kg/cm2* *-3.1 kg/cm2* *-2.9 kg/cm2*
		7.5	HV	152kPa					
		8.00	S	N=23 (3,3/5,5,6,7)	Casing=4.30m Water=DRY				
		9.50 - 10.00	9U	80blows					

Continued on next sheet

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater seepage from claystone band at 3.50 mbgl.

Borehole Log

Borehole No. **BH07**
FINAL
Sheet 2 of 3

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569968.00 - 188336.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	26/10/2020 - 27/10/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		11.00	S	N=24 (2,3/5,5,7,7)	Casing=4.30m Water=DRY				
		12.00 - 12.50	8B						
		12.50	S	N=29 (3,4/6,7,8,8)	Casing=4.30m Water=DRY				
		13.00 - 13.50	7D						
		14.00	S	N=32 (3,4/6,7,9,10)	Casing=4.30m Water=DRY				
		15.50 - 16.00	10U	90blows					*Sand becomes 2-3mm bands within clay.*
		16.00 - 16.50	11D						
		17.00	S	N=38 (3,5/8,10,10,10)	Casing=4.30m Water=DRY				
		17.00 - 17.50	12B						
		18.50	S	N=35 (4,7/8,8,9,10)	Casing=4.30m Water=DRY				
		19.00 - 19.50	15B						
		20.00 - 20.50	13D						

Continued on next sheet

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater seepage from claystone band at 3.50 mbgl.

Borehole Log

Borehole No. **BH07**
FINAL
Sheet 3 of 3

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569968.00 - 188336.00	Hole Type CP
Location:	Basildon		Level:	mbgl	Scale 1:50
Client:	Sempra Homes Ltd		Dates:	26/10/2020 - 27/10/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		20.50 - 21.00	14U	100blows					*2-5mm pockets of fine to coarse grey sand.*
		21.50	S	N=36 (3,5/7,9,9,11)	Casing=4.30m Water=DRY				
		22.50 - 23.00	16D						
		23.00	S	N=33 (4,5/8,8,8,9)	Casing=4.30m Water=DRY				
		24.00 - 24.50	17B						
		24.50	S	N=44 (5,6/8,8,14,14)	Casing=4.30m Water=DRY				
		24.50 - 25.00	18D			25.00			End of borehole at 25.0 m

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Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater seepage from claystone band at 3.50 mbgl.

Borehole Log

Borehole No. **WS01**
FINAL
Sheet 1 of 1

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569715.00 - 188315.00	Hole Type WS
Location:	Basildon		Level:	mbgl	Scale 1:33
Client:	Sempra Homes Ltd		Dates:	03/11/2020 - 03/11/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
						0.10			MADE GROUND: Reddish brown slightly sandy gravelly clay. Gravel of flint, mudstone, concrete and brick.
		0.45	1ES						MADE GROUND: Orangish brown slightly sandy slightly gravelly clay. Gravel of mudstone and brick.
		0.90 - 1.00	2ES			0.90			
		1.00	C	N=20 (2,3/3,5,5,7)	Casing=1.00m Water=DRY				Firm becoming stiff orangish brown sandy slightly gravelly CLAY. Sand is fine and medium. Gravel is subangular to subrounded fine and medium of claystone.
		2.00	C	N=17 (2,3/3,4,5,5)	Casing=1.00m Water=DRY				*Pocket Penetrometer at 3.00 mbgl:* *-1.8 kg/cm2* *-1.9 kg/cm2* *-1.9 kg/cm2*
		3.00	C	N=14 (2,2/3,3,4,4)	Casing=1.00m Water=DRY	3.00			DISTINCTLY WEATHERED LONDON CLAY: Stiff orangish brown slightly sandy CLAY. Sand is fine and medium.
		4.00	C	N=16 (3,2/3,4,4,5)	Casing=1.00m Water=DRY				*Pocket Penetrometer at 4.00 mbgl:* *-2.0 kg/cm2* *-2.3 kg/cm2* *-2.0 kg/cm2*
		5.00	C	N=17 (3,3/3,5,4,5)	Casing=1.00m Water=DRY				
		6.00	C	N=21 (3,3/4,5,5,7)	Casing=1.00m Water=DRY	6.00			End of borehole at 6.0 m

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No. **WS03**
FINAL
Sheet 1 of 1

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569756.00 - 188334.00	Hole Type WS
Location:	Basildon		Level:	mbgl	Scale 1:33
Client:	Sempra Homes Ltd		Dates:	03/11/2020 - 03/11/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
		0.10	1ES			0.15			MADE GROUND: Reddish brown slightly sandy gravelly clay. Gravel of flint, mudstone, concrete and brick.
						0.30			MADE GROUND: Orangish brown sandy slightly gravelly clay. Gravel of mudstone, concrete and brick.
		1.00	C	N=14 (2,2/3,3,4,4)	Casing=1.00m Water=DRY				Firm becoming stiff orangish brown slightly sandy slightly gravelly CLAY. Sand is fine and medium. Gravel is angular to subrounded fine and medium of claystone.
		1.70 - 1.80	2ES						
		2.00	C	N=11 (2,2/2,2,3,4)	Casing=1.00m Water=DRY	2.00			Stiff becoming very stiff orangish brown slightly sandy CLAY. Sand is fine and medium. Rare pyrite and selenite crystals.
		2.50 - 3.00	3D						
		3.00	C	N=14 (2,2/3,3,4,4)	Casing=1.00m Water=DRY				
		4.00	C	N=17 (2,3/4,4,4,5)	Casing=1.00m Water=DRY				
		5.00	C	N=17 (3,3/3,4,5,5)	Casing=1.00m Water=DRY				
		6.00	C	N=34 (3,4/7,8,9,10)	Casing=1.00m Water=DRY	6.00			End of borehole at 6.0 m

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No. **WS06**
FINAL
Sheet 1 of 1

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569889.00 - 188318.00	Hole Type WS
Location:	Basildon		Level:	mbgl	Scale 1:33
Client:	Sempra Homes Ltd		Dates:	02/11/2020 - 02/11/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
						0.10			MADE GROUND: Black bituminous bound tarmacadam.
						0.35			MADE GROUND: Light reddish brown slightly clayey sandy gravel of concrete, brick, tarmacadam and mudstone.
		0.50 - 1.00	3B						
		0.70	1ES						MADE GROUND: Blueish grey slightly gravelly clay. Gravel of tarmacadam and mudstone.
		1.00	C	N=8 (0,2/2,2,2,2)	Casing=1.00m Water=DRY				
						1.10			Firm becoming very stiff medium becoming very high strength orangish brown sandy CLAY. Sand is fine and medium. Rare pyrite and selenite crystals.
		1.30 - 1.40	2ES						
		2.00	C	N=13 (2,2/3,3,3,4)	Casing=1.00m Water=DRY				
		2.0	HV	70kPa					*Pocket Penetrometer at 2.00 mbgl:*
		2.0	HV	78kPa					*-1.9kg/cm2*
		2.0	HV	78kPa					*-2.2 kg/cm2*
									-2.2 kg/cm2
		3.00	C	N=14 (2,3/3,3,4,4)	Casing=1.00m Water=DRY				
		4.00	C	N=17 (2,3/3,4,5,5)	Casing=1.00m Water=DRY				
		4.0	HV	85kPa					*Pocket Penetrometer at 4.00 mbgl:*
		4.0	HV	88kPa					*-2.4 kg/cm2*
		4.0	HV	88kPa					*-2.4 kg/cm2*
									-2.4 kg/cm2
		5.00	C	N=19 (3,3/4,4,5,6)	Casing=1.00m Water=DRY				
		6.00	C	N=35 (4,6/7,8,9,11)	Casing=1.00m Water=DRY	6.00			End of borehole at 6.0 m

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No. **WS07**
FINAL
Sheet 1 of 1

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569856.00 - 188359.00	Hole Type WS
Location:	Basildon		Level:	mbgl	Scale 1:33
Client:	Sempra Homes Ltd		Dates:	02/11/2020 - 02/11/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
						0.15			MADE GROUND: Black bituminous bound tarmacadam.
						0.25			MADE GROUND: Strong light grey concrete.
						0.40			MADE GROUND: Light orangish brown slightly clayey sandy gravel of concrete, brick, tarmacadam and mudstone.
		0.50	1ES						Firm orangish brown sandy CLAY. Sand is fine and medium. Rare pyrite and selenite crystals.
		1.00	C	N=8 (0,0/2,2,2,2)	Casing=1.00m Water=DRY				
						1.20			Firm becoming stiff medium strength orangish brown sandy CLAY. Sand is fine and medium. Rare pyrite and selenite crystals.
		1.5	HV	63kPa					*Pocket Penetrometer at 1.50 mbgl:*
		1.5	HV	65kPa					*-1.7 kg/cm2*
		1.5	HV	65kPa					*-1.8 kg/cm2*
		1.50 - 1.60	2ES						*-1.6 kg/cm2*
		2.00	C	N=13 (2,2/3,3,3,4)	Casing=1.00m Water=DRY				
		2.50 - 3.00	3D						
		3.00	C	N=14 (2,3/3,3,4,4)	Casing=1.00m Water=DRY				
		3.0	HV	85kPa					
		3.50	C	50 (25 for 110mm/50 for 180mm)	Casing=1.00m Water=DRY	3.50			End of borehole at 3.5 m

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Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater seepage from claystone band at 3.50 mbgl.

Borehole Log

Borehole No. **WS10**
FINAL
Sheet 1 of 1

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569936.00 - 188329.00	Hole Type WS
Location:	Basildon		Level:	mbgl	Scale 1:33
Client:	Sempra Homes Ltd		Dates:	02/11/2020 - 02/11/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
						0.10			MADE GROUND: Black bituminous bound tarmacadam.
		0.40	1ES			0.50			MADE GROUND: Light orangish brown sandy gravel of tarmac, brick, igneous lithologies and mudstone.
									MADE GROUND: Blueish grey slightly gravelly slightly sandy clay. Gravel of igneous lithologies and mudstone.
		1.00	C	N=13 (2,2/2,3,4,4)	Casing=1.00m Water=DRY	1.00			Firm becoming stiff medium strength orangish brown mottled blueish grey slightly sandy CLAY. Sand is fine and medium.
		1.60 - 1.70	2ES						
		2.00	C	N=15 (3,3/3,4,4,4)	Casing=1.00m Water=DRY				*Pocket Penetrometer at 2.00 mbgl:* *-1.7kg/cm2* *-1.7 kg/cm2* *-1.9 kg/cm2*
		2.0	HV	60kPa					
		2.0	HV	65kPa					
		2.0	HV	65kPa					
		3.00	C	N=21 (2,3/4,6,6,5)	Casing=1.00m Water=DRY				
		3.30 - 3.50	3D			3.30			Stiff medium becoming very high strength reddish brown slightly sandy CLAY. Sand is fine and medium. *Very stiff clay band present, slight water seepage noted.*
		4.00	C	N=18 (3,3/4,4,5,5)	Casing=1.00m Water=DRY				*Pocket Penetrometer at 4.00 mbgl:* *-2.3 kg/cm2* *-2.3 kg/cm2* *-1.9 kg/cm2*
		4.0	HV	80kPa					
		4.0	HV	80kPa					
		4.0	HV	80kPa					
		5.00	C	N=18 (3,4/4,4,5,5)	Casing=1.00m Water=DRY				
		6.00	C	N=35 (4,6/7,8,10,10)	Casing=1.00m Water=DRY	6.00			End of borehole at 6.0 m

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Borehole Log

Borehole No. **WS11**
FINAL
Sheet 1 of 1

Project Name:	Car Park 14, Basildon	Project No. 2009004.001	Co-ords:	569968.00 - 188367.00	Hole Type WS
Location:	Basildon		Level:	mbgl	Scale 1:33
Client:	Sempra Homes Ltd		Dates:	02/11/2020 - 02/11/2020	Logged By JN

Well	Water Strikes	Samples and In Situ Testing				Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results	Information				
						0.15			MADE GROUND: Black bituminous bound tarmacadam.
		0.30	1ES			0.25 0.35			MADE GROUND: Light orangish brown sandy gravel of tarmac, brick, igneous lithologies and mudstone.
									MADE GROUND: Orange fine to coarse sand.
									MADE GROUND: Blueish grey locally mottled reddish brown slightly sandy CLAY. Rare pyrite and selenite crystals.
		1.00	C	N=11 (0,2/3,2,3,3)	Casing=1.00m Water=DRY				1
		1.10 - 1.20	2ES			1.20			Firm becoming stiff medium becoming high strength orangish brown slightly sandy CLAY. Sand is fine and medium. Rare pyrite and selenite crystals.
		2.00	C	N=10 (0,0/2,2,3,3)	Casing=1.00m				2
		2.0	HV	65kPa	Water=DRY				*Pocket Penetrometer at 2.00 mbgl:*
		2.0	HV	65kPa					*-2.3 kg/cm2*
		2.0	HV	65kPa					*-2.0 kg/cm2*
									-2.0 kg/cm2
		3.00	C	N=13 (2,2/3,3,3,4)	Casing=1.00m Water=DRY				3
		4.00	C	N=17 (2,3/4,4,4,5)	Casing=1.00m Water=DRY				4
		4.00 - 4.10	3D						
		5.00	C	N=16 (3,3/4,3,4,5)	Casing=1.00m				5
		5.0	HV	80kPa	Water=DRY				*Pocket Penetrometer at 5.00 mbgl:*
		5.0	HV	82kPa					*-2.9 kg/cm2*
		5.0	HV	85kPa					*-2.8 kg/cm2*
									-2.9 kg/cm2
		6.00	C	N=22 (3,3/4,5,6,7)	Casing=1.00m Water=DRY	6.00			End of borehole at 6.0 m 6

Remarks
Terminated at scheduled depth on Engineer's instruction.
Groundwater not encountered.

Appendix G

Geochemical Certificates of Analysis

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Analytical Report Number : 20-39484

Project / Site name:	Car Park 14, Basildon	**Samples received on:**	03/11/2020
Your job number:	2009004.001	**Samples instructed on/ Analysis started on:**	05/11/2020
Your order number:		**Analysis completed by:**	18/11/2020
Report Issue Number:	1	**Report issued on:**	18/11/2020
Samples Analysed:	6 soil samples		

Signed: Karolina Marek

Karolina Marek
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

Analytical Report Number: 20-39484
Project / Site name: Car Park 14, Basildon

Lab Sample Number				1673055	1673056	1673057	1673058
Sample Reference				WS01	WS01	WS03	WS06
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.45	0.90-1.00	0.10	0.50
Date Sampled				03/11/2020	03/11/2020	03/11/2020	02/11/2020
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	%	0.01	NONE	19	16	14	14
Total mass of sample received	kg	0.001	NONE	0.5	0.5	0.5	0.5
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	9.2	8.6	8.4	8.5
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1
Total Sulphate as SO4	mg/kg	50	MCERTS	980	390	510	390
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.079	0.13	0.029	0.16
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0	5.2	21
Total Organic Carbon (TOC)	%	0.1	MCERTS	1.2	0.2	1.2	0.9
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	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Total PAH							
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	< 0.80	< 0.80
Heavy Metals / Metalloids							
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	17	15	12	9.6
Barium (aqua regia extractable)	mg/kg	1	MCERTS	1400	120	70	29
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.6	1.4	1	0.7
Boron (water soluble)	mg/kg	0.2	MCERTS	1.4	1	0.4	0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	64	62	40	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	26	27	32	12
Lead (aqua regia extractable)	mg/kg	1	MCERTS	19	18	39	19
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	43	53	29	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	100	100	63	45
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	71	78	98	45

Analytical Report Number: 20-39484
Project / Site name: Car Park 14, Basildon

Lab Sample Number				1673055	1673056	1673057	1673058
Sample Reference				WS01	WS01	WS03	WS06
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.45	0.90-1.00	0.10	0.50
Date Sampled				03/11/2020	03/11/2020	03/11/2020	02/11/2020
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Monoaromatics & Oxygenates							
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 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 C10 - C40	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
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	< 1.0	< 1.0	< 1.0	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
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	< 2.0	< 2.0	< 2.0	< 2.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10

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

Analytical Report Number: 20-39484
Project / Site name: Car Park 14, Basildon

Lab Sample Number				1673059	1673060
Sample Reference				WS10	WS11
Sample Number				None Supplied	None Supplied
Depth (m)				0.40	0.30
Date Sampled				02/11/2020	02/11/2020
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	%	0.01	NONE	3.6	7.1
Total mass of sample received	kg	0.001	NONE	0.5	0.5

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	9.1	9.1
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1
Total Sulphate as SO4	mg/kg	50	MCERTS	380	140
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.025	0.021
Sulphide	mg/kg	1	MCERTS	62	< 1.0
Total Organic Carbon (TOC)	%	0.1	MCERTS	< 0.1	< 0.1

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	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 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	< 0.80	< 0.80

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5.6	4.7
Barium (aqua regia extractable)	mg/kg	1	MCERTS	270	31
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.12	0.38
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.1	< 0.2
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	6.9	13
Copper (aqua regia extractable)	mg/kg	1	MCERTS	9.4	8.4
Lead (aqua regia extractable)	mg/kg	1	MCERTS	40	10
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	5.9	9
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	8.9	20
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100	22

Analytical Report Number: 20-39484
Project / Site name: Car Park 14, Basildon

Lab Sample Number				1673059	1673060
Sample Reference				WS10	WS11
Sample Number				None Supplied	None Supplied
Depth (m)				0.40	0.30
Date Sampled				02/11/2020	02/11/2020
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Monoaromatics & Oxygenates					
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0
Petroleum Hydrocarbons					
TPH C10 - C40	mg/kg	10	MCERTS	< 10	< 10
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 (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10
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 (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10

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

Analytical Report Number : 20-39484
Project / Site name: Car Park 14, Basildon

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1673055	WS01	None Supplied	0.45	Brown clay.
1673056	WS01	None Supplied	0.90-1.00	Brown clay.
1673057	WS03	None Supplied	0.1	Brown clay with gravel and vegetation.
1673058	WS06	None Supplied	0.5	Light brown clay and sand.
1673059	WS10	None Supplied	0.4	Light brown gravelly sand.
1673060	WS11	None Supplied	0.3	Light brown sand with gravel.

Analytical Report Number : 20-39484
Project / Site name: Car Park 14, Basildon

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
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
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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	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
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-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.	L038-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
Total cyanide in soil	Determination of total 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
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

Analytical Report Number : 20-39484
Project / Site name: Car Park 14, Basildon

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Analytical Report Number : 20-38364

Project / Site name:	Car Park 14, Basildon	**Samples received on:**	28/10/2020
Your job number:	2009004.001	**Samples instructed on/ Analysis started on:**	29/10/2020
Your order number:		**Analysis completed by:**	11/11/2020
Report Issue Number:	1	**Report issued on:**	11/11/2020
Samples Analysed:	2 soil samples		

Signed: A. Czerwińska

Agnieszka Czerwińska
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

Analytical Report Number: 20-38364
Project / Site name: Car Park 14, Basildon

Lab Sample Number				1667272	1667273
Sample Reference				BH07	BH05
Sample Number				None Supplied	None Supplied
Depth (m)				0.30	0.30
Date Sampled				26/10/2020	26/10/2020
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	%	0.01	NONE	20	7.9
Total mass of sample received	kg	0.001	NONE	0.2	0.2
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.2	9
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1
Total Sulphate as SO4	mg/kg	50	MCERTS	1800	320
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.74	0.044
Sulphide	mg/kg	1	MCERTS	21	30
Total Organic Carbon (TOC)	%	0.1	MCERTS	0.5	0.2

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	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 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	< 0.80	< 0.80

Analytical Report Number: 20-38364
Project / Site name: Car Park 14, Basildon

Lab Sample Number				1667272	1667273
Sample Reference				BH07	BH05
Sample Number				None Supplied	None Supplied
Depth (m)				0.30	0.30
Date Sampled				26/10/2020	26/10/2020
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Heavy Metals / Metalloids					
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12	2.7
Barium (aqua regia extractable)	mg/kg	1	MCERTS	190	81
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.3	0.1
Boron (water soluble)	mg/kg	0.2	MCERTS	2.9	2.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	0.7
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	58	6.6
Copper (aqua regia extractable)	mg/kg	1	MCERTS	13	4.8
Lead (aqua regia extractable)	mg/kg	1	MCERTS	21	36
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20	4.3
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	85	5.8
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	76	45
Monoaromatics & Oxygenates					
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0
Petroleum Hydrocarbons					
TPH C10 - C40	mg/kg	10	MCERTS	< 10	< 10
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 (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10
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 (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10

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

Analytical Report Number : 20-38364
Project / Site name: Car Park 14, Basildon

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1667272	BH07	None Supplied	0.3	Brown clay and sand with gravel.
1667273	BH05	None Supplied	0.3	Brown sand with gravel.

Analytical Report Number : 20-38364
Project / Site name: Car Park 14, Basildon

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
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
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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	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
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-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.	L038-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
Total cyanide in soil	Determination of total 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
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

Analytical Report Number : 20-38364
Project / Site name: Car Park 14, Basildon

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	W	MCERTS

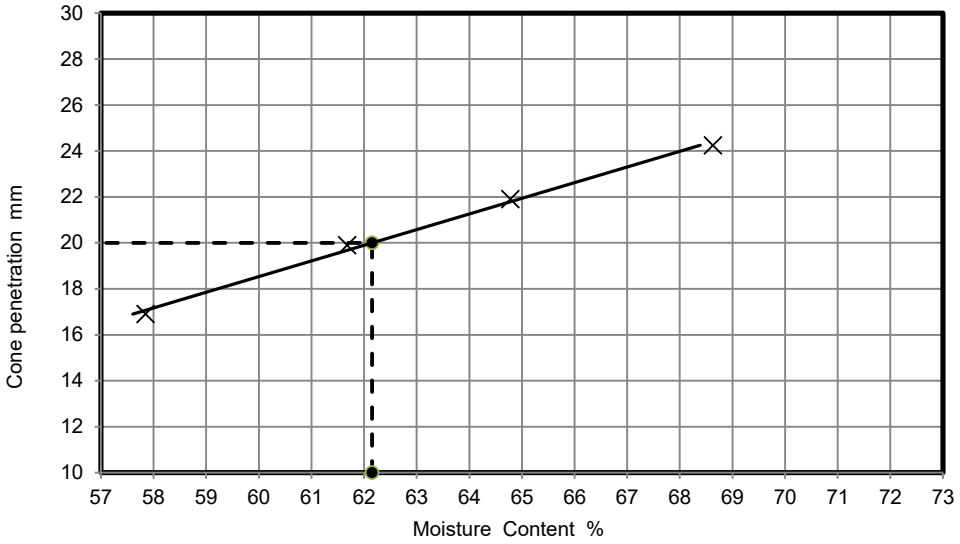
For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Appendix H

Geotechnical Laboratory Report

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

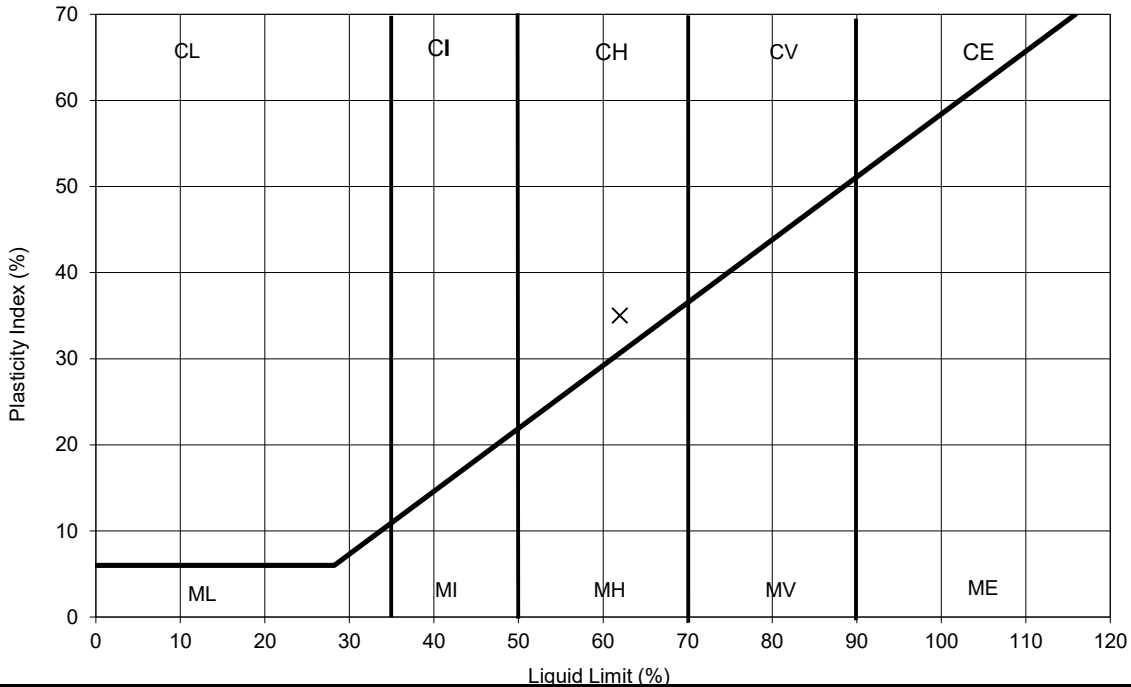
				Job No.	29124
				Borehole/Pit No.	BH01
Site Name	Car Park 14, Basildon			Sample No.	-
Project No.	2009004.001	Client	TEC	Depth Top	3.00 m
Soil Description	Orangish brown slightly mottled grey silty CLAY with traces of selenite crystals			Depth Base	- m
				Sample Type	D
				Samples received	03/11/2020
				Schedules received	24/11/2020
				Project Started	25/11/2020
				Date Tested	04/12/2020



NATURAL MOISTURE CONTENT	**30**	**%**
% PASSING 425µm SIEVE	**100**	**%**
LIQUID LIMIT	**62**	**%**
PLASTIC LIMIT	**27**	**%**
PLASTICITY INDEX	**35**	**%**

Remarks

PLASTICITY INDEX



TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method
BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index
BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying method

Checked and Approved

Initials: J.P
Date: 09/12/2020

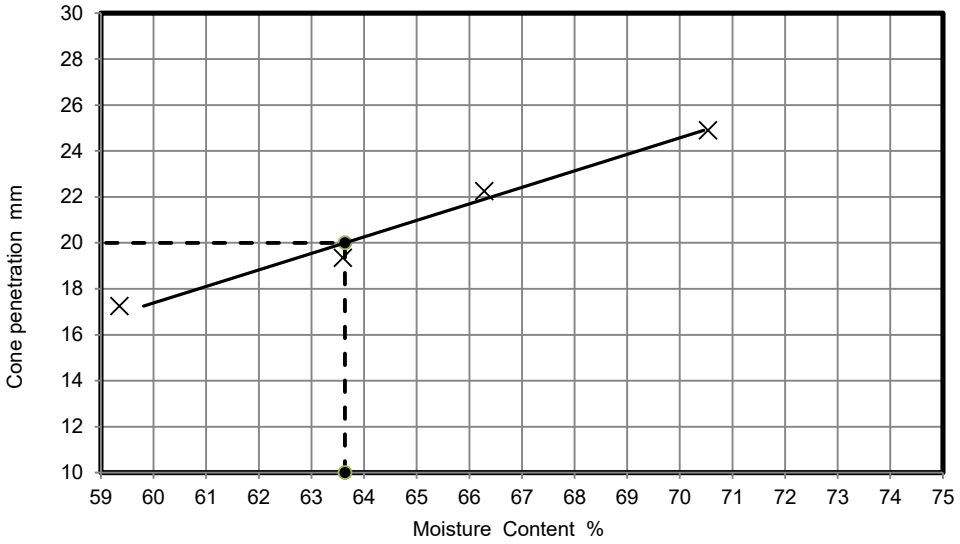
Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU
Tel: 01923 711 288 Email: James@k4soils.com

UKAS TESTING 2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

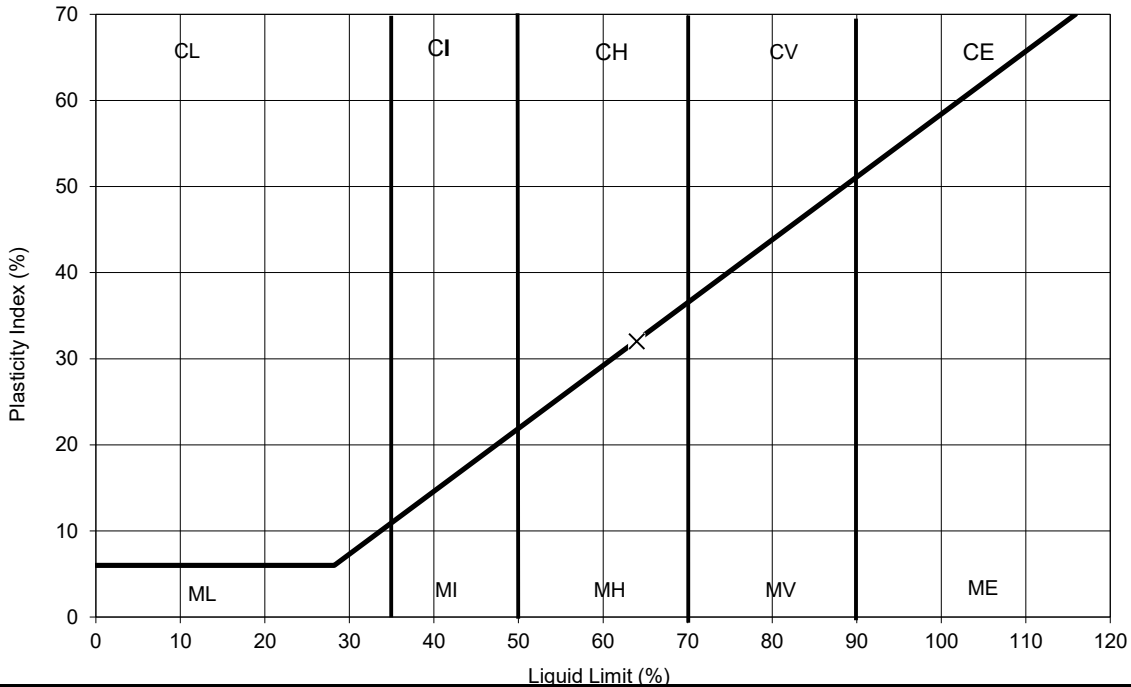
Site Name	Car Park 14, Basildon			Job No.	29124
				Borehole/Pit No.	BH01
Project No.	2009004.001	Client	TEC	Sample No.	-
				Depth Top	24.00 m
Soil Description	Dark brown slightly mottled grey silty CLAY			Depth Base	- m
				Sample Type	D
				Samples received	03/11/2020
				Schedules received	24/11/2020
				Project Started	25/11/2020
				Date Tested	04/12/2020



NATURAL MOISTURE CONTENT	**30**	**%**
% PASSING 425µm SIEVE	**100**	**%**
LIQUID LIMIT	**64**	**%**
PLASTIC LIMIT	**32**	**%**
PLASTICITY INDEX	**32**	**%**

Remarks

PLASTICITY INDEX



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BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying method

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UKAS TESTING 2519

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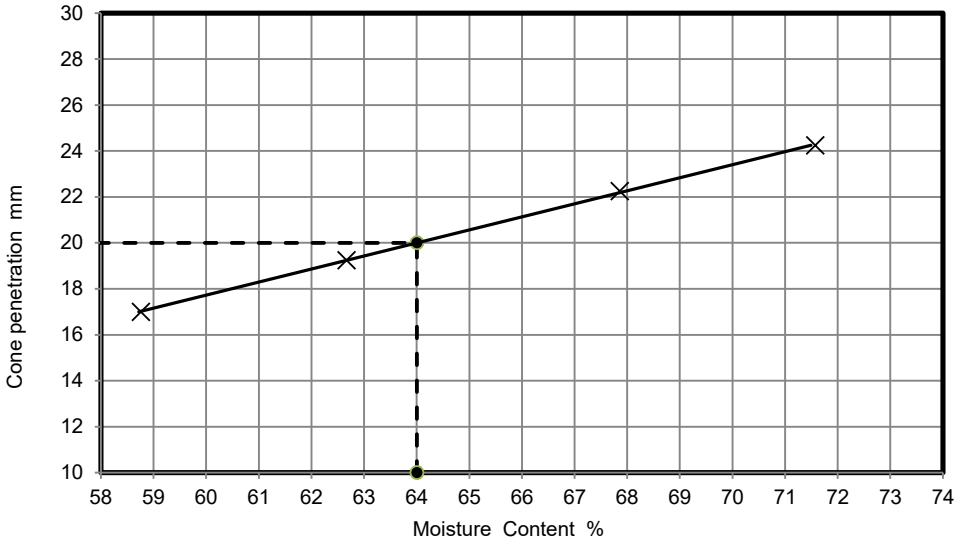
LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

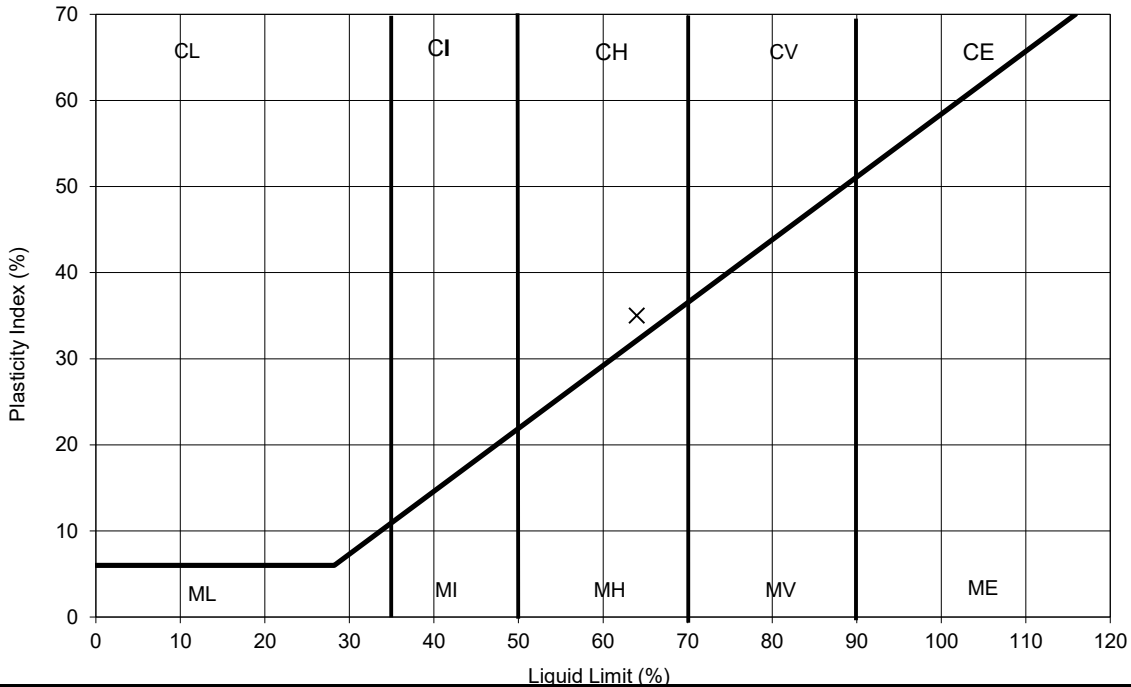
Site Name	Car Park 14, Basildon			Job No.	29124
				Borehole/Pit No.	BH03
Project No.	2009004.001	Client	TEC	Sample No.	-
				Depth Top	7.00 m
Soil Description	Greyish brown silty CLAY			Depth Base	7.50 m
				Sample Type	D
				Samples received	03/11/2020
				Schedules received	24/11/2020
				Project Started	25/11/2020
				Date Tested	04/12/2020



NATURAL MOISTURE CONTENT	**31**	**%**
% PASSING 425µm SIEVE	**100**	**%**
LIQUID LIMIT	**64**	**%**
PLASTIC LIMIT	**29**	**%**
PLASTICITY INDEX	**35**	**%**

Remarks

PLASTICITY INDEX



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2519

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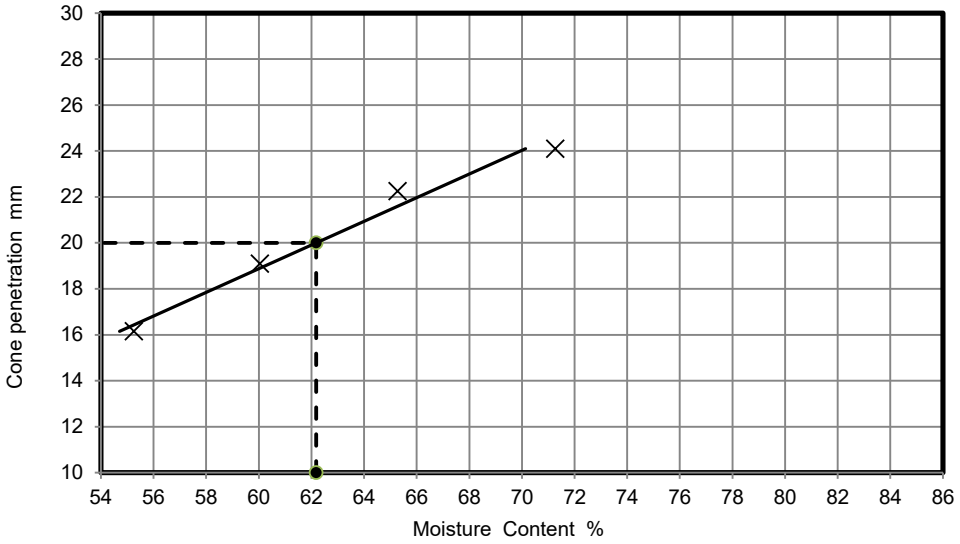
LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

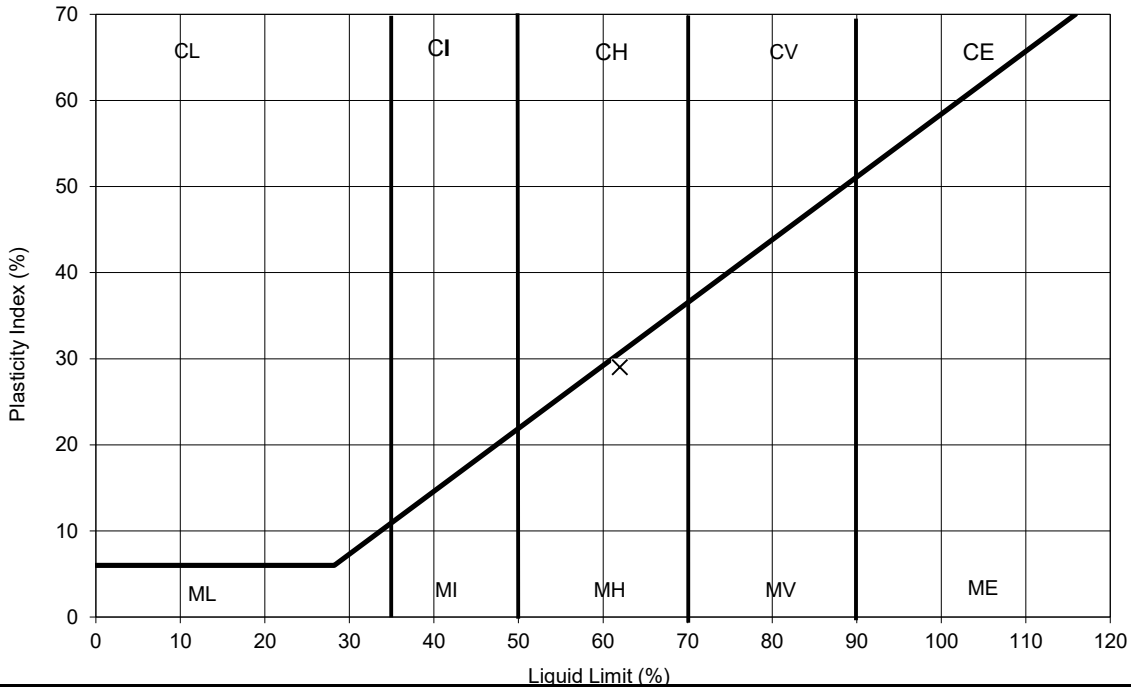
				Job No.	29124
				Borehole/Pit No.	BH03
Site Name	Car Park 14, Basildon			Sample No.	-
Project No.	2009004.001	Client	TEC	Depth Top	12.95 m
Soil Description	Dark brown silty CLAY			Depth Base	13.50 m
				Sample Type	D
				Samples received	03/11/2020
				Schedules received	24/11/2020
				Project Started	25/11/2020
				Date Tested	04/12/2020



NATURAL MOISTURE CONTENT	**26**	**%**
% PASSING 425µm SIEVE	**100**	**%**
LIQUID LIMIT	**62**	**%**
PLASTIC LIMIT	**33**	**%**
PLASTICITY INDEX	**29**	**%**

Remarks

PLASTICITY INDEX



TEST METHOD

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BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying method

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UKAS TESTING 2519

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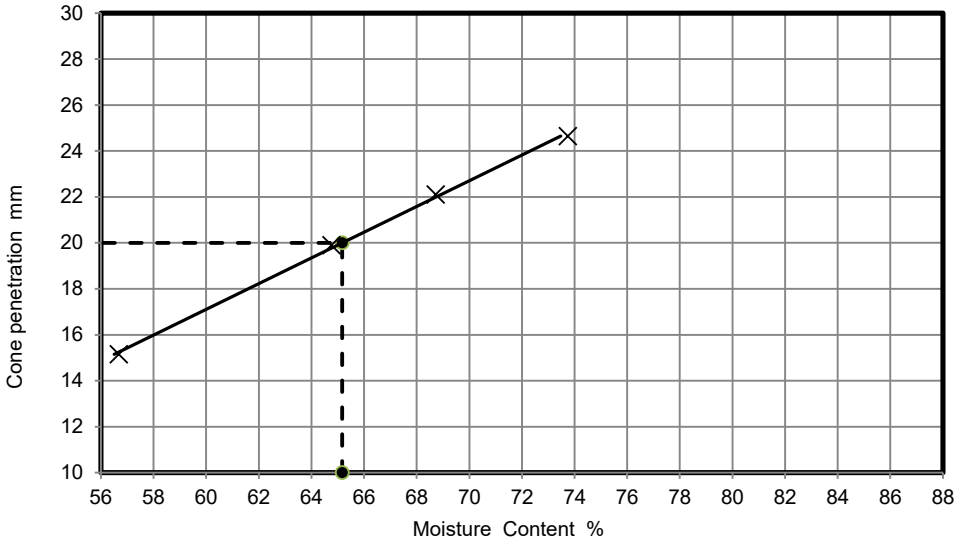
LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

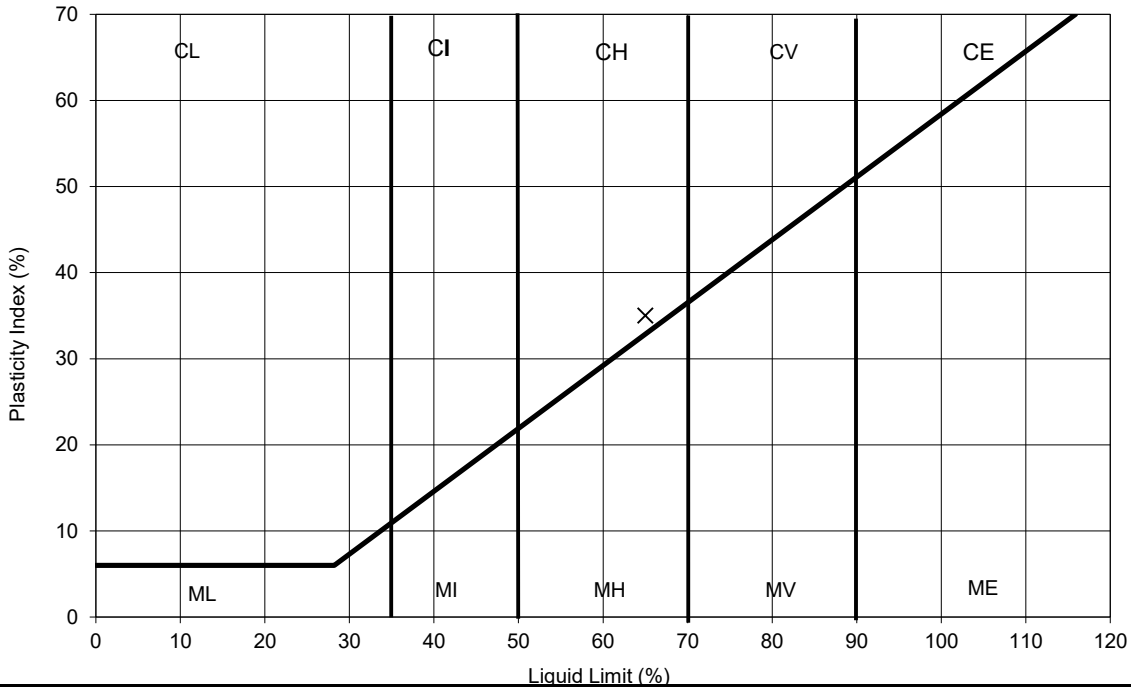
				Job No.	29124
				Borehole/Pit No.	BH04
Site Name	Car Park 14, Basildon			Sample No.	-
Project No.	2009004.001	Client	TEC	Depth Top	6.50 m
Soil Description	Dark grey slightly mottled brown silty CLAY with traces of selenite crystals			Depth Base	- m
				Sample Type	D
				Samples received	03/11/2020
				Schedules received	24/11/2020
				Project Started	25/11/2020
				Date Tested	07/12/2020



NATURAL MOISTURE CONTENT	**32**	**%**
% PASSING 425µm SIEVE	**100**	**%**
LIQUID LIMIT	**65**	**%**
PLASTIC LIMIT	**30**	**%**
PLASTICITY INDEX	**35**	**%**

Remarks

PLASTICITY INDEX



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Date: 09/12/2020

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UKAS TESTING 2519

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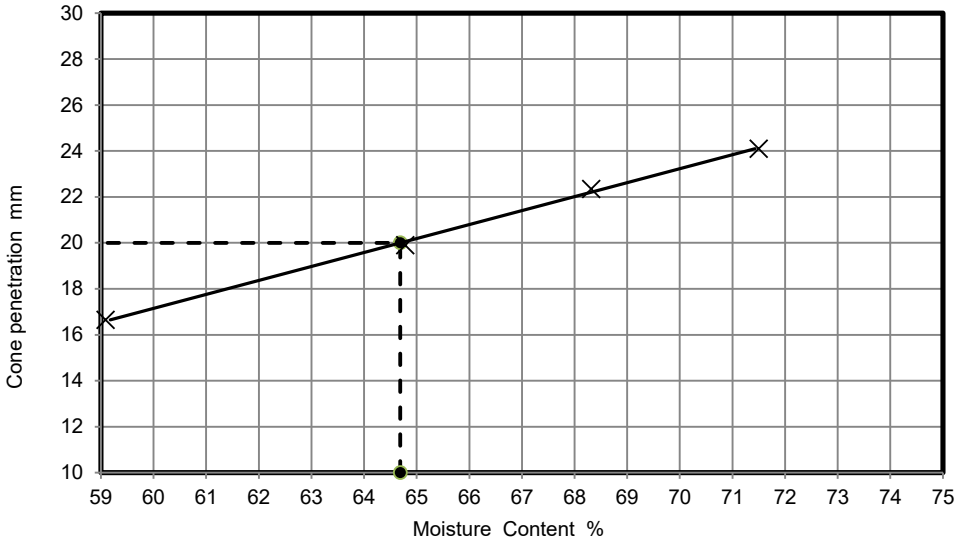
LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

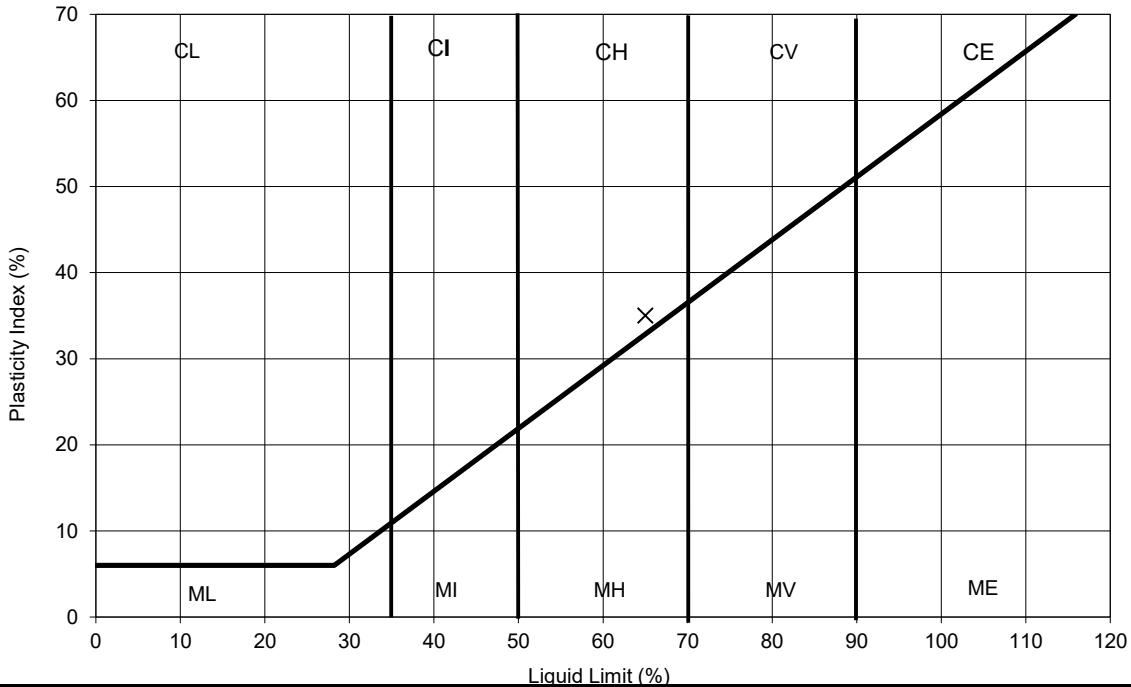
Site Name	Car Park 14, Basildon			Job No.	29124
Project No.	2009004.001	Client	TEC	Borehole/Pit No.	BH04
Soil Description	Dark brown silty CLAY			Sample No.	-
				Depth Top	8.00 m
				Depth Base	- m
				Sample Type	D
				Samples received	03/11/2020
				Schedules received	24/11/2020
				Project Started	25/11/2020
				Date Tested	07/12/2020



NATURAL MOISTURE CONTENT	**31**	**%**
% PASSING 425µm SIEVE	**100**	**%**
LIQUID LIMIT	**65**	**%**
PLASTIC LIMIT	**30**	**%**
PLASTICITY INDEX	**35**	**%**

Remarks

PLASTICITY INDEX



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UKAS TESTING 2519

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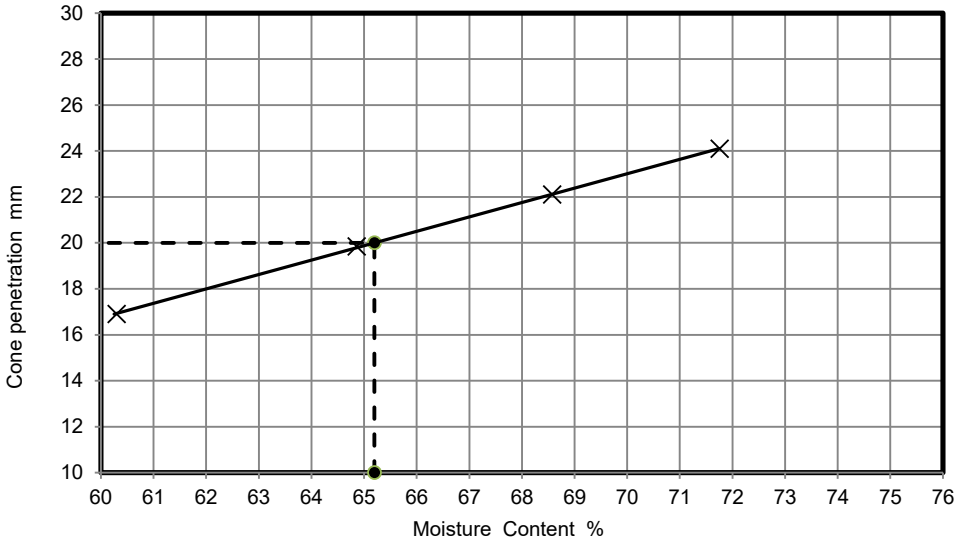
LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

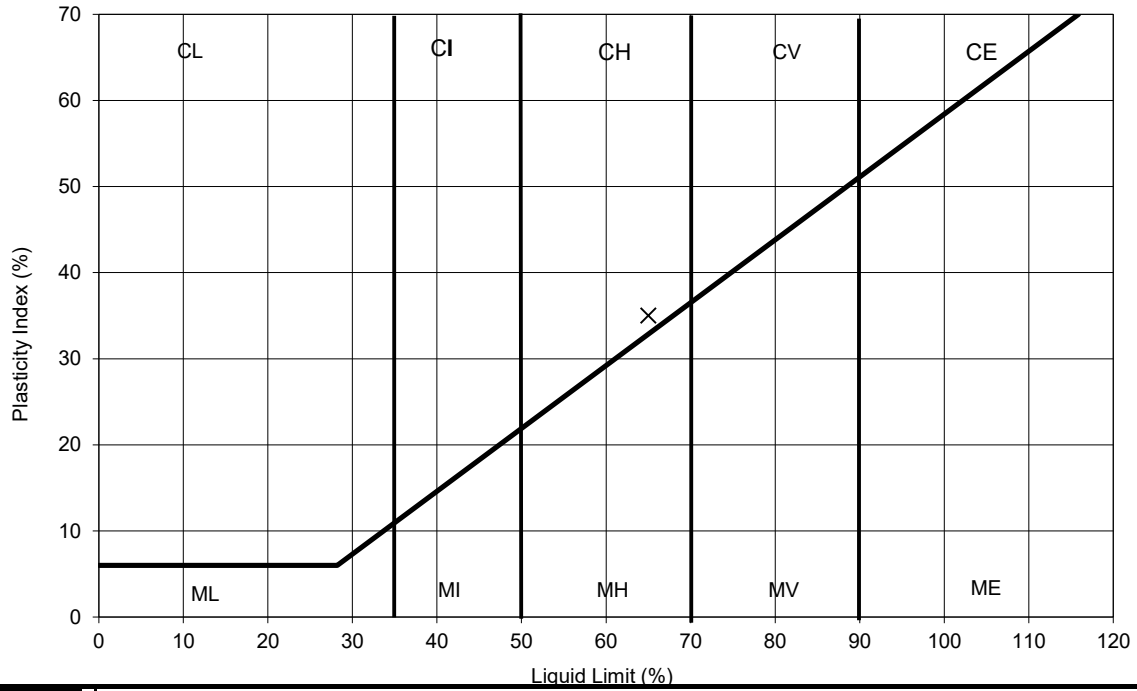
Site Name	Car Park 14, Basildon			Job No.	29124
				Borehole/Pit No.	BH05
Project No.	2009004.001	Client	TEC	Sample No.	-
				Depth Top	10.50 m
				Depth Base	11.00 m
Soil Description	Dark grey slightly mottled brown silty CLAY			Sample Type	D
				Samples received	03/11/2020
				Schedules received	24/11/2020
				Project Started	25/11/2020
				Date Tested	07/12/2020



NATURAL MOISTURE CONTENT	**30**	**%**
% PASSING 425µm SIEVE	**100**	**%**
LIQUID LIMIT	**65**	**%**
PLASTIC LIMIT	**30**	**%**
PLASTICITY INDEX	**35**	**%**

Remarks

PLASTICITY INDEX



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2519

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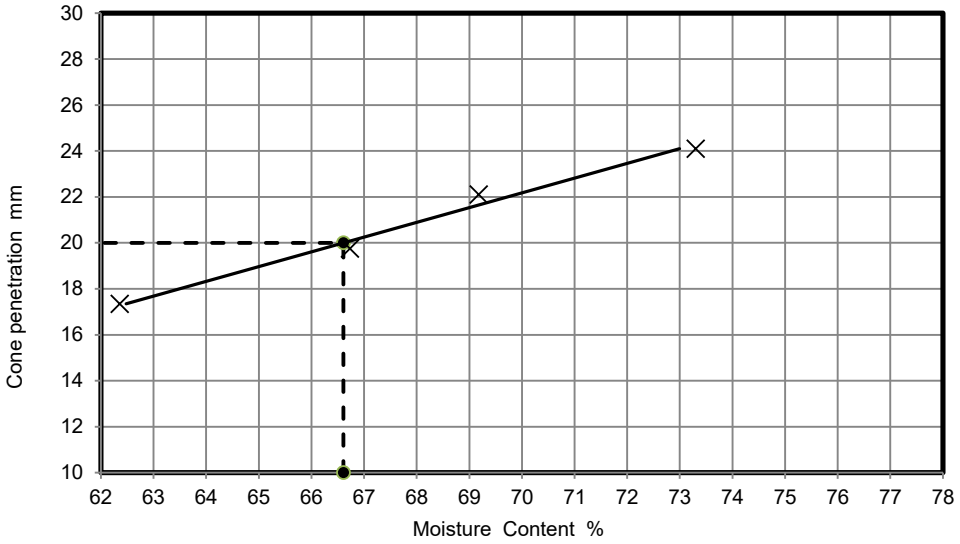
MSF-5 R2

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

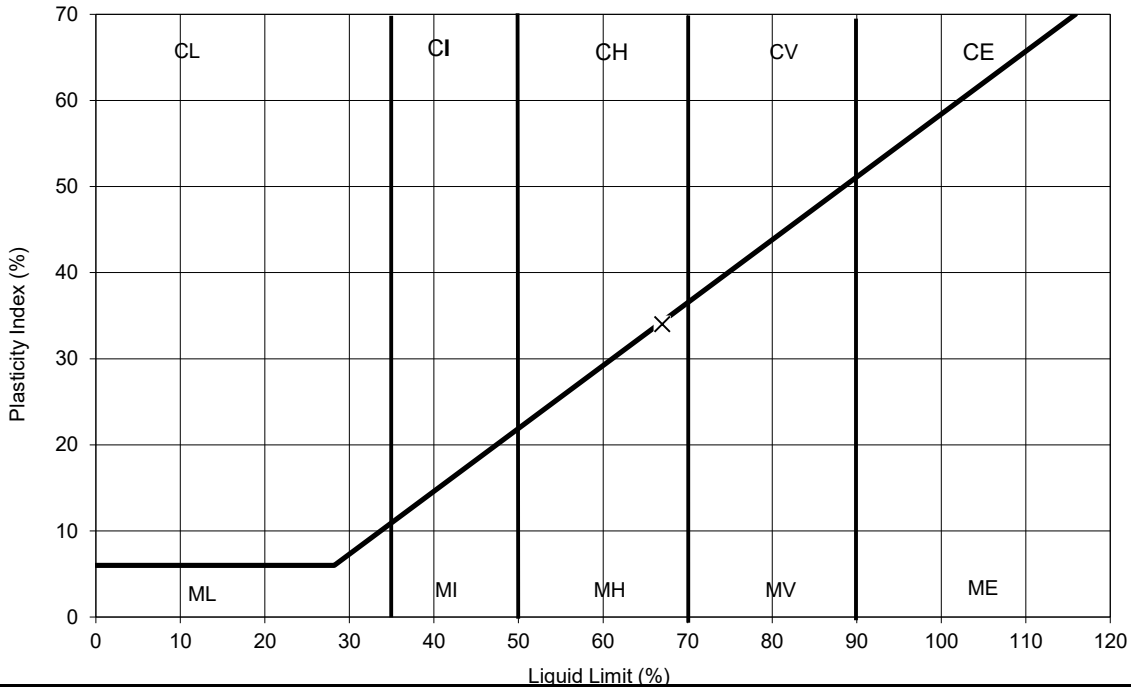
Site Name	Car Park 14, Basildon			Job No.	29124
				Borehole/Pit No.	BH05
Project No.	2009004.001	Client	TEC	Sample No.	-
				Depth Top	27.50 m
Soil Description	Very high strength dark grey silty CLAY			Depth Base	28.00 m
				Sample Type	U
				Samples received	03/11/2020
				Schedules received	24/11/2020
				Project Started	25/11/2020
				Date Tested	07/12/2020



NATURAL MOISTURE CONTENT	**29**	**%**
% PASSING 425µm SIEVE	**100**	**%**
LIQUID LIMIT	**67**	**%**
PLASTIC LIMIT	**33**	**%**
PLASTICITY INDEX	**34**	**%**

Remarks

PLASTICITY INDEX



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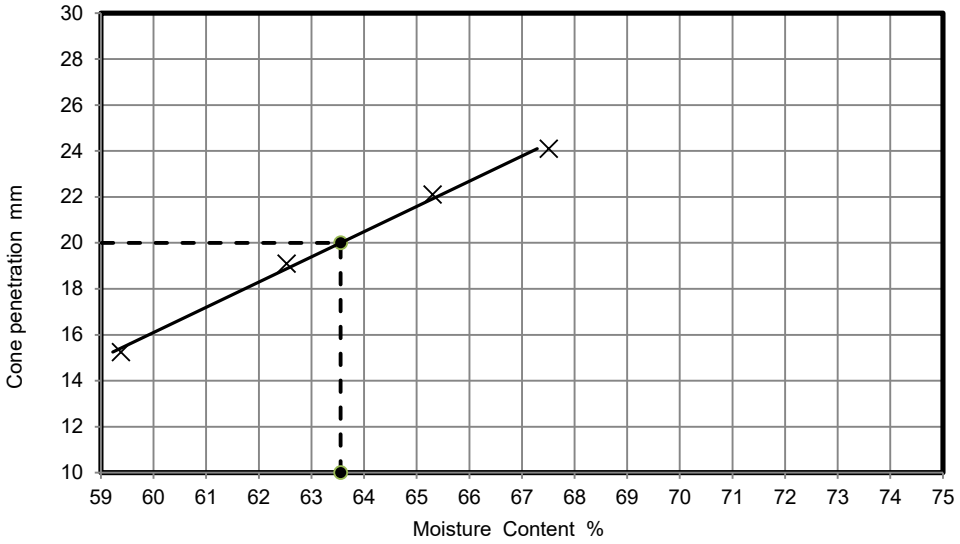
UKAS TESTING 2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

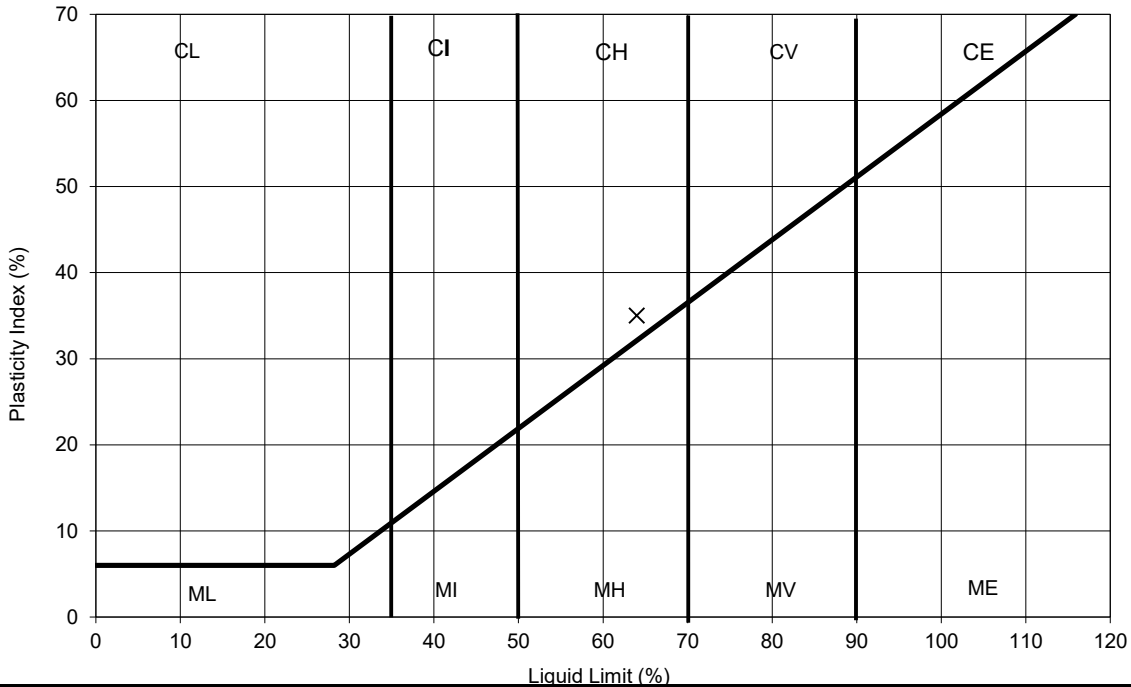
Site Name	Car Park 14, Basildon			Job No.	29124
				Borehole/Pit No.	BH06
Project No.	2009004.001	Client	TEC	Sample No.	-
				Depth Top	17.00 m
Soil Description	Dark brown silty CLAY			Depth Base	18.00 m
				Sample Type	D
				Samples received	03/11/2020
				Schedules received	24/11/2020
				Project Started	25/11/2020
				Date Tested	08/12/2020



NATURAL MOISTURE CONTENT	**29**	**%**
% PASSING 425µm SIEVE	**100**	**%**
LIQUID LIMIT	**64**	**%**
PLASTIC LIMIT	**29**	**%**
PLASTICITY INDEX	**35**	**%**

Remarks

PLASTICITY INDEX



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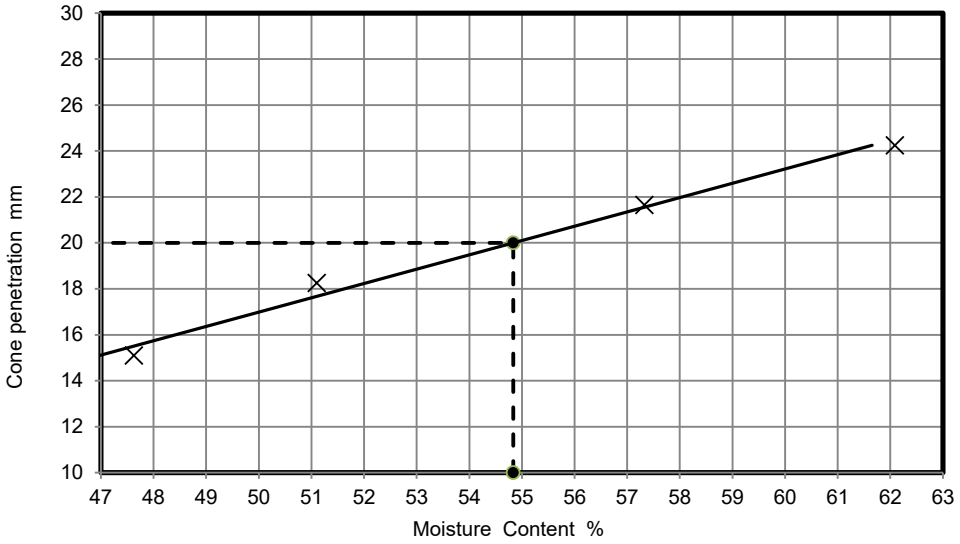
LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

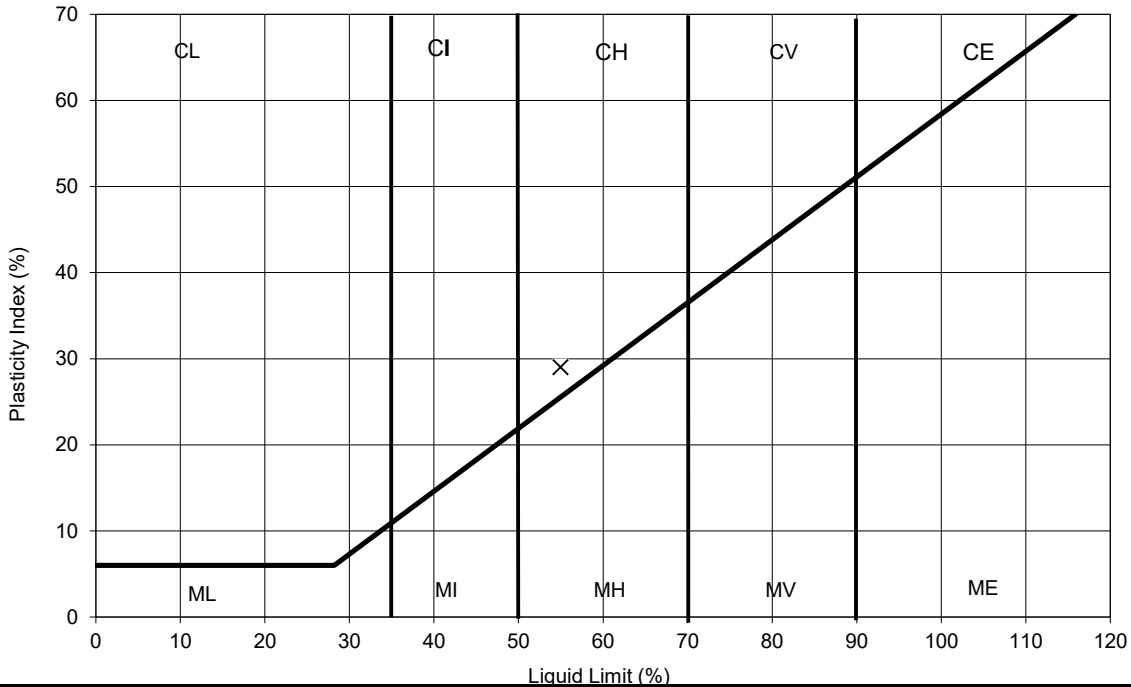
Site Name	Car Park 14, Basildon			Job No.	29124
Project No.	2009004.001	Client	TEC	Borehole/Pit No.	BH07
Soil Description	Orangish brown slightly mottled grey slightly fine sandy silty CLAY			Sample No.	-
				Depth Top	3.50 m
				Depth Base	4.00 m
				Sample Type	D
				Samples received	03/11/2020
				Schedules received	24/11/2020
				Project Started	25/11/2020
				Date Tested	08/12/2020



NATURAL MOISTURE CONTENT	**28**	**%**
% PASSING 425µm SIEVE	**100**	**%**
LIQUID LIMIT	**55**	**%**
PLASTIC LIMIT	**26**	**%**
PLASTICITY INDEX	**29**	**%**

Remarks

PLASTICITY INDEX



TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method
BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index
BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying method

Checked and Approved

Initials: J.P
Date: 09/12/2020

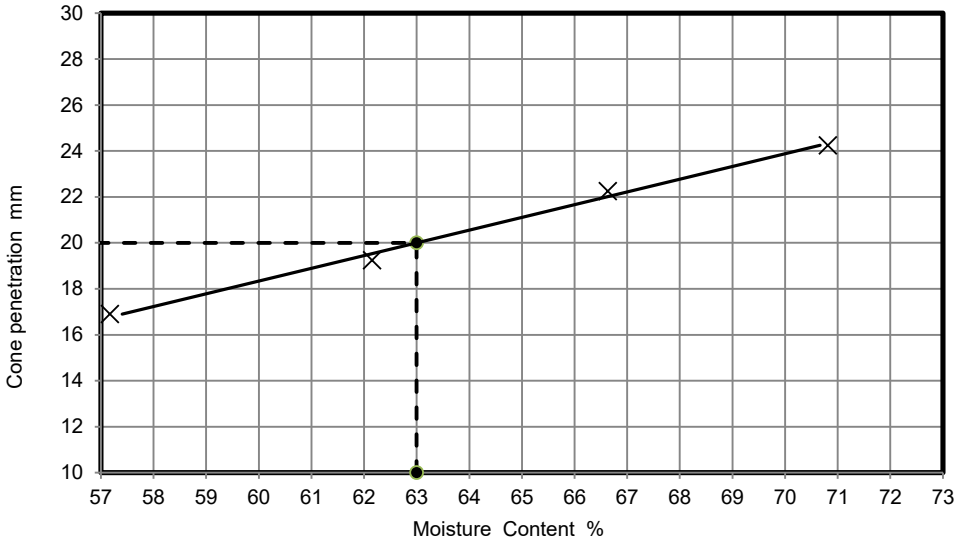
Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU
Tel: 01923 711 288 Email: James@k4soils.com

UKAS TESTING 2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

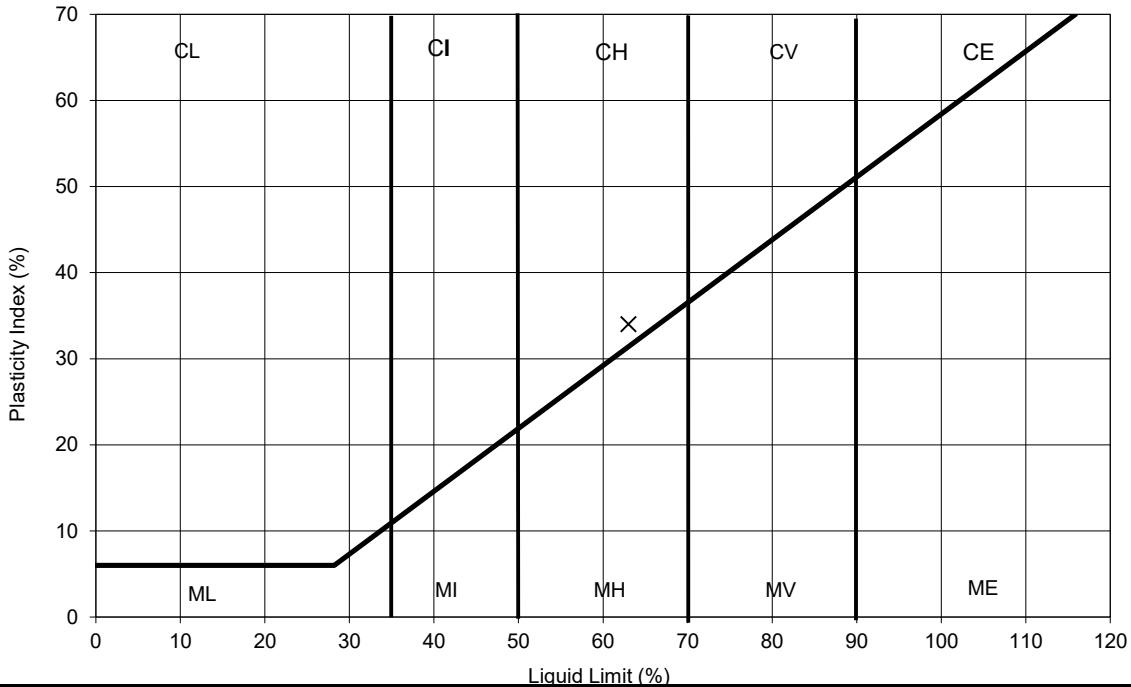
Site Name	Car Park 14, Basildon			Job No.	29124
Project No.	2009004.001	Client	TEC	Borehole/Pit No.	BH07
Soil Description	Dark grey slightly mottled brown silty CLAY			Sample No.	-
				Depth Top	13.00 m
				Depth Base	13.50 m
				Sample Type	D
				Samples received	03/11/2020
				Schedules received	24/11/2020
				Project Started	25/11/2020
				Date Tested	08/12/2020



NATURAL MOISTURE CONTENT	**29**	**%**
% PASSING 425µm SIEVE	**100**	**%**
LIQUID LIMIT	**63**	**%**
PLASTIC LIMIT	**29**	**%**
PLASTICITY INDEX	**34**	**%**

Remarks

PLASTICITY INDEX



TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method
BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index
BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying method

Checked and Approved

Initials: J.P
Date: 09/12/2020

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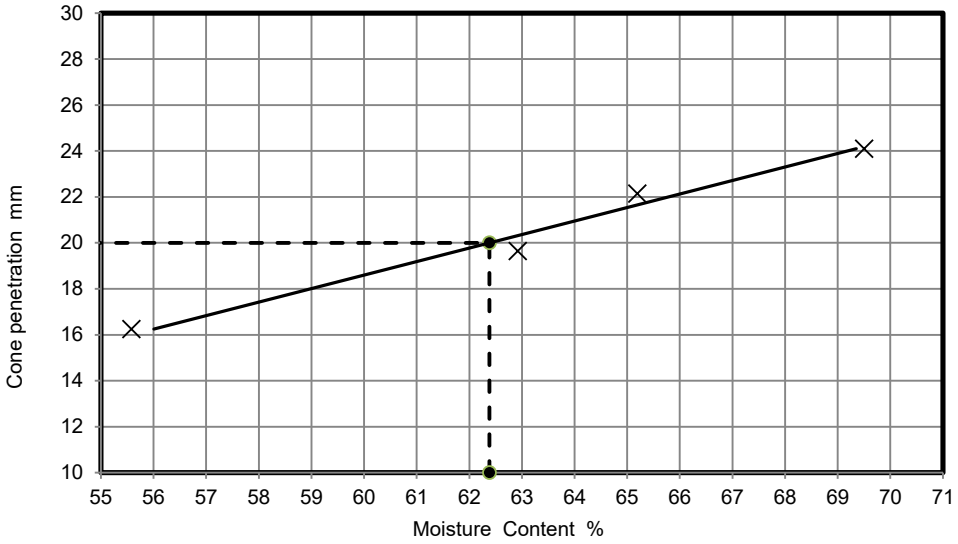
2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

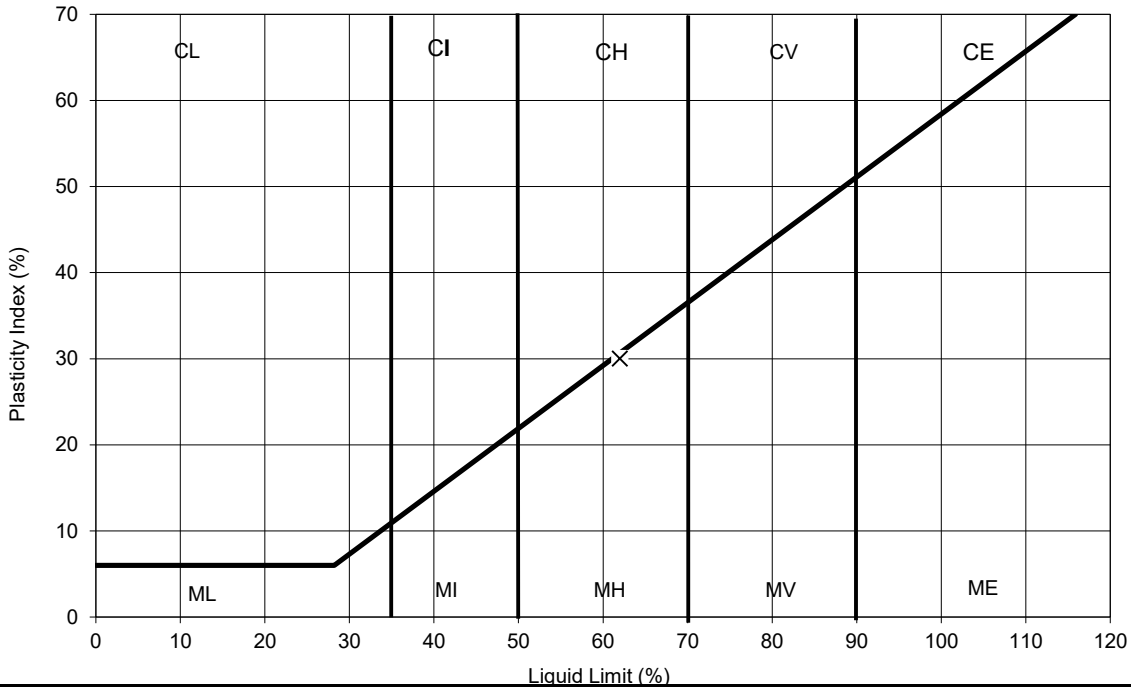
Site Name	Car Park 14, Basildon			Job No.	29124
Project No.	2009004.001	Client	TEC	Borehole/Pit No.	BH07
Soil Description	Brown silty CLAY			Sample No.	-
				Depth Top	22.50 m
				Depth Base	23.00 m
				Sample Type	D
				Samples received	03/11/2020
				Schedules received	24/11/2020
				Project Started	25/11/2020
				Date Tested	08/12/2020



NATURAL MOISTURE CONTENT	**30**	**%**
% PASSING 425µm SIEVE	**100**	**%**
LIQUID LIMIT	**62**	**%**
PLASTIC LIMIT	**32**	**%**
PLASTICITY INDEX	**30**	**%**

Remarks

PLASTICITY INDEX



TEST METHOD

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method
BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index
BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying method

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UKAS TESTING 2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results

Job No.	Project Name	Programme	
29124	Car Park 14, Basildon	Samples received	03/11/2020
		Schedule received	24/11/2020
Project No.	Client	Project started	25/11/2020
2009004.001	TEC	Testing Started	04/12/2020

Hole No.	Sample				Soil Description	NMC	Passing 425µm	LL	PL	PI	Remarks
	Ref	Top m	Base m	Type		%	%	%	%	%	
BH01	-	3.00	-	D	Orangish brown slightly mottled grey silty CLAY with traces of selenite crystals	30	100	62	27	35	
BH01	-	24.00	-	D	Dark brown slightly mottled grey silty CLAY	30	100	64	32	32	
BH03	-	7.00	7.50	D	Greyish brown silty CLAY	31	100	64	29	35	
BH03	-	12.95	13.50	D	Dark brown silty CLAY	26	100	62	33	29	
BH04	-	6.50	-	D	Dark grey slightly mottled brown silty CLAY with traces of selenite crystals	32	100	65	30	35	
BH04	-	8.00	-	D	Dark brown silty CLAY	31	100	65	30	35	
BH05	-	10.50	11.00	D	Dark grey slightly mottled brown silty CLAY	30	100	65	30	35	
BH05	-	27.50	28.00	U	Very high strength dark grey silty CLAY	29	100	67	33	34	
BH06	-	17.00	18.00	D	Dark brown silty CLAY	29	100	64	29	35	
BH07	-	3.50	4.00	D	Orangish brown slightly mottled grey slightly fine sandy silty CLAY	28	100	55	26	29	
BH07	-	13.00	13.50	D	Dark grey slightly mottled brown silty CLAY	29	100	63	29	34	
BH07	-	22.50	23.00	D	Brown silty CLAY	30	100	62	32	30	

Test Methods: BS1377: Part 2: 1990:
Natural Moisture Content : clause 3.2
Atterberg Limits: clause 4.3, 4.4 and 5.0

Test Report by K4 SOILS LABORATORY
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Date: 09/12/2020

Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test

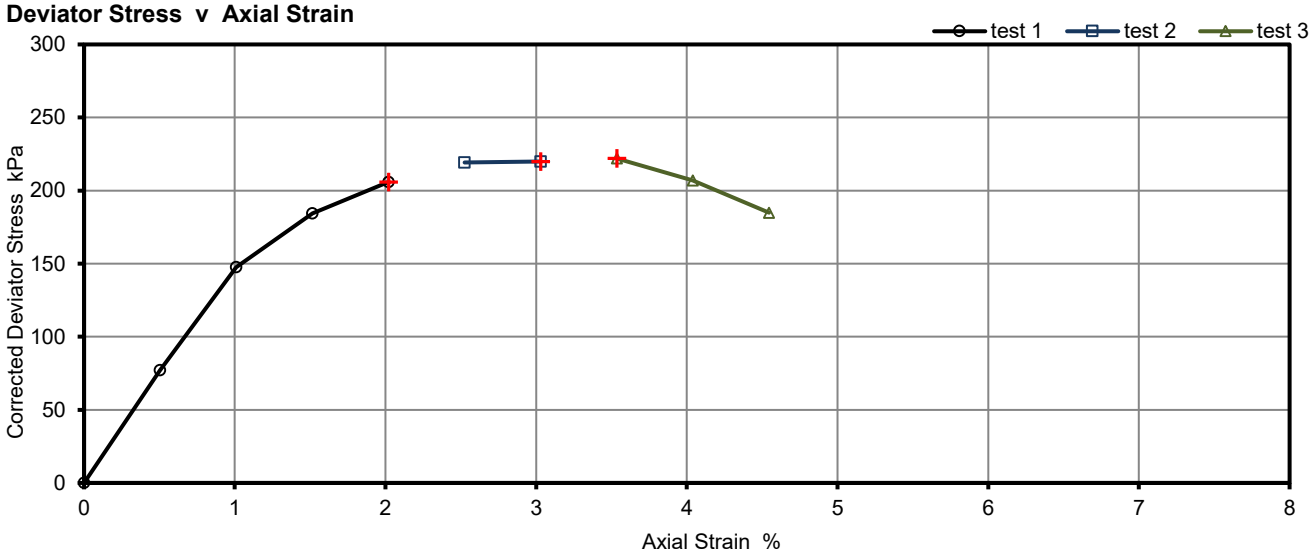
Site Name	Car Park 14, Basildon			Job Ref	29124
				Borehole/Pit No.	BH03
Project No.	2009004.001	Client	TEC	Sample No.	-
				Depth Top	9.50 m
Soil Description	High strength dark grey silty CLAY with rare coarse pyrite nodules and rare pockets of black fine sand			Depth Base	9.95 m
				Sample Type	U
				Samples received	03/11/2020
				Schedules received	24/11/2020
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen			Date of test	30/11/2020

Remarks

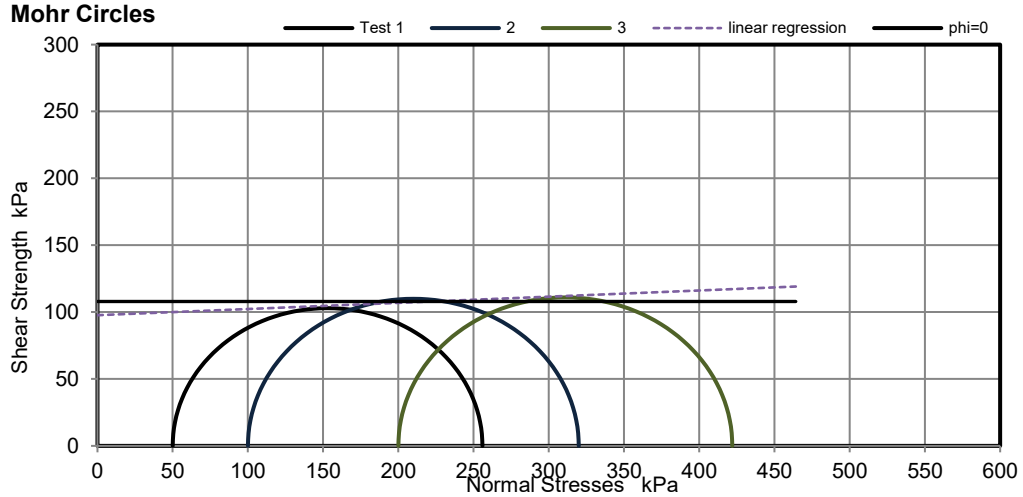
Position within sample

Length	mm	198.0		
Diameter	mm	102.0		
Bulk Density	Mg/m3	2.02		
Moisture Content	%	28		
Dry Density	Mg/m3	1.57		
Rate of Strain	%/min	2.00		
Stage Number		1	2	3
Cell Pressure	kPa	50	100	200
Axial Strain	%	2.0	3.0	3.5
Deviator Stress, (σ1 - σ3)f	kPa	205.9	219.9	222.0
Shear strength, cu	kPa	102.9	110.0	111.0
Mode of failure		Compound		

Deviator Stress v Axial Strain



Mohr Circles



ϕu = 0

Average cu 108 kPa

Linear Regression

ϕu 2.6 °

cu 98 kPa

Mohr circles and their interpretation is not covered by BS1377. These are provided for information only.

Test Report by K4 SOILS LABORATORY
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Checked and Approved

Initials: J.P

Date: 09/12/2020

	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test			Job Ref	29124
				Borehole/Pit No.	BH03
Site Name	Car Park 14, Basildon			Sample No.	-
Project No.	2009004.001	Client	TEC	Depth Top	12.50 m
Soil Description	Very high strength dark grey silty CLAY			Depth Base	12.95 m
				Sample Type	U
				Samples received	03/11/2020
				Schedules received	24/11/2020
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen			Date of test	30/11/2020

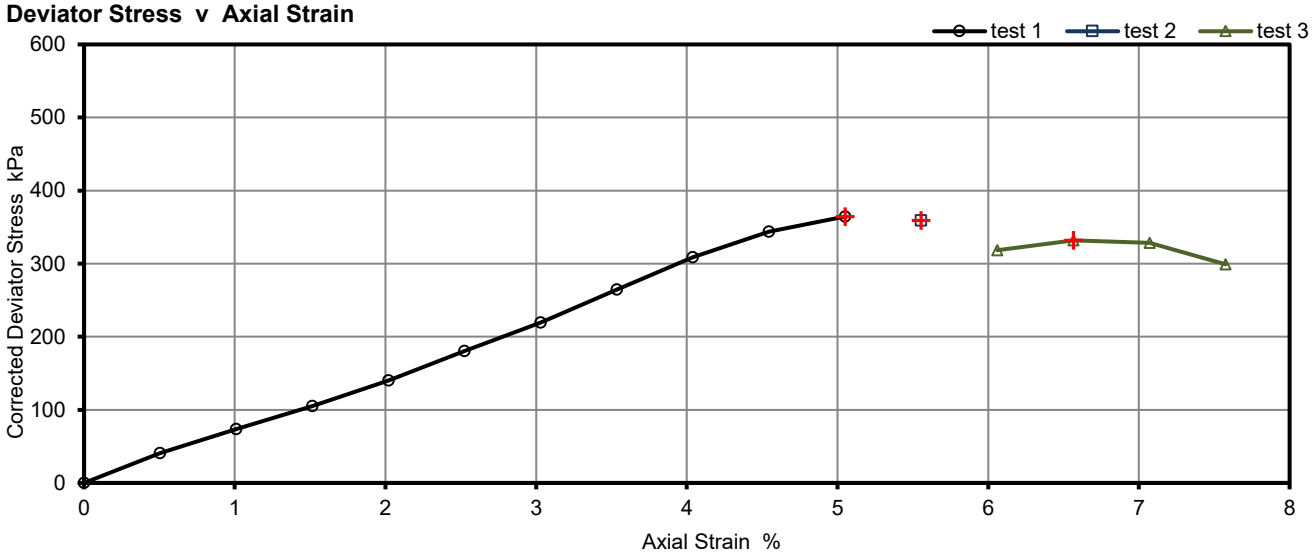
Remarks

Sample failed at first pressure

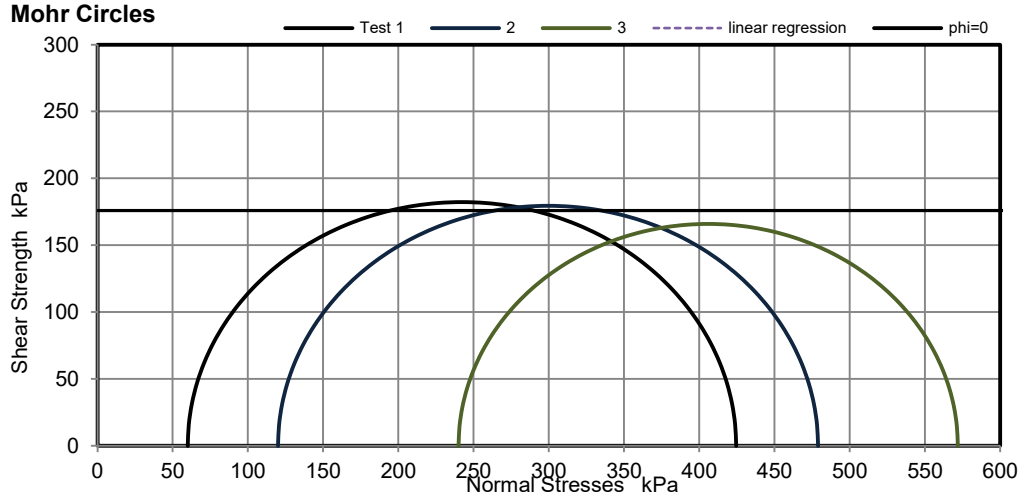
Position within sample

Length	mm	198.0		
Diameter	mm	102.0		
Bulk Density	Mg/m3	1.98		
Moisture Content	%	27		
Dry Density	Mg/m3	1.56		
Rate of Strain	%/min	2.00		
Stage Number		1	2	3
Cell Pressure	kPa	60	120	240
Axial Strain	%	5.1	5.6	6.6
Deviator Stress, (σ1 - σ3)f	kPa	364.5	359.0	331.9
Shear strength, cu	kPa	182.3	179.5	165.9
Mode of failure		Brittle		

Deviator Stress v Axial Strain



Mohr Circles



ϕu = 0

Average cu 176 kPa

Linear Regression

ϕu 0.0 °

cu 176 kPa

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Initials: J.P

Date: 09/12/2020

UKAS TESTING 2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

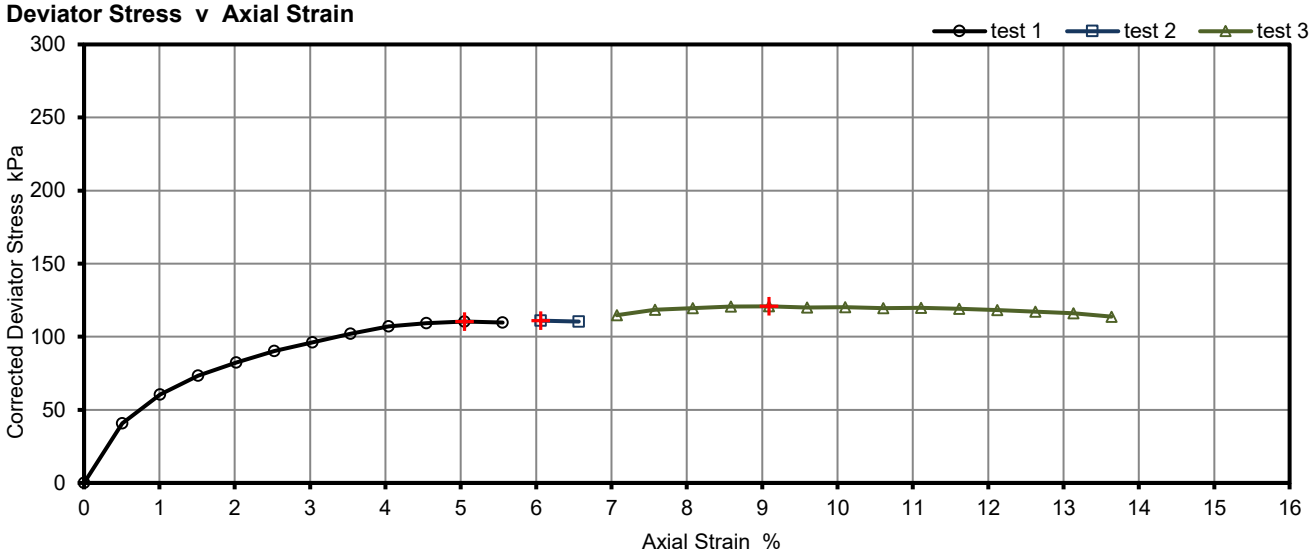
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test			Job Ref	29124
				Borehole/Pit No.	BH04
Site Name	Car Park 14, Basildon			Sample No.	-
Project No.	2009004.001	Client	TEC	Depth Top	2.00 m
Soil Description	Medium strength brown mottled grey silty CLAY with rare selenite crystals			Depth Base	2.45 m
				Sample Type	U
				Samples received	03/11/2020
				Schedules received	24/11/2020
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen			Date of test	30/11/2020

Remarks

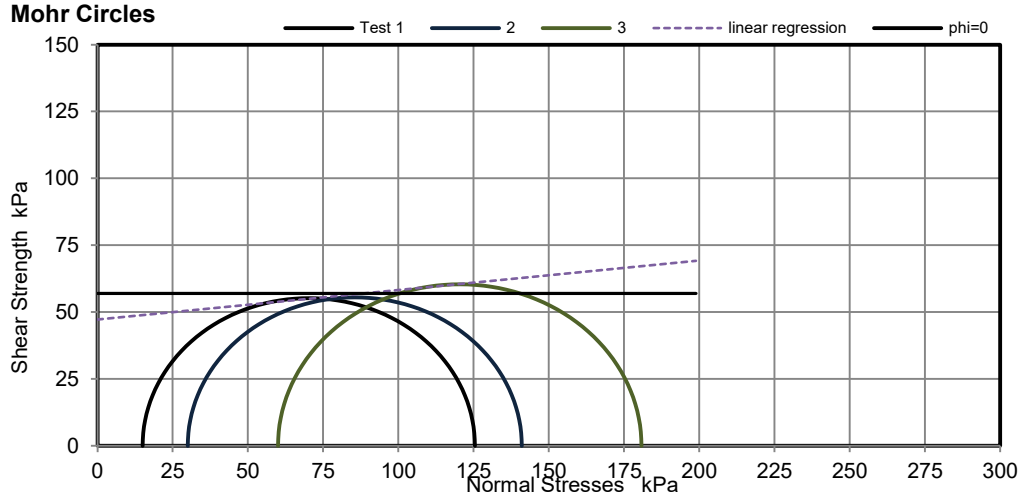
Position within sample

Length	mm	198.0		
Diameter	mm	102.0		
Bulk Density	Mg/m3	1.92		
Moisture Content	%	34		
Dry Density	Mg/m3	1.43		
Rate of Strain	%/min	2.00		
Stage Number		1	2	3
Cell Pressure	kPa	15	30	60
Axial Strain	%	5.1	6.1	9.1
Deviator Stress, (σ1 - σ3)f	kPa	110.4	111.0	120.8
Shear strength, cu	kPa	55.2	55.5	60.4
Mode of failure		Compound		

Deviator Stress v Axial Strain



Mohr Circles



ϕu = 0

Average cu 57 kPa

Linear Regression

ϕu 6.3 °

cu 47 kPa

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Date: 09/12/2020

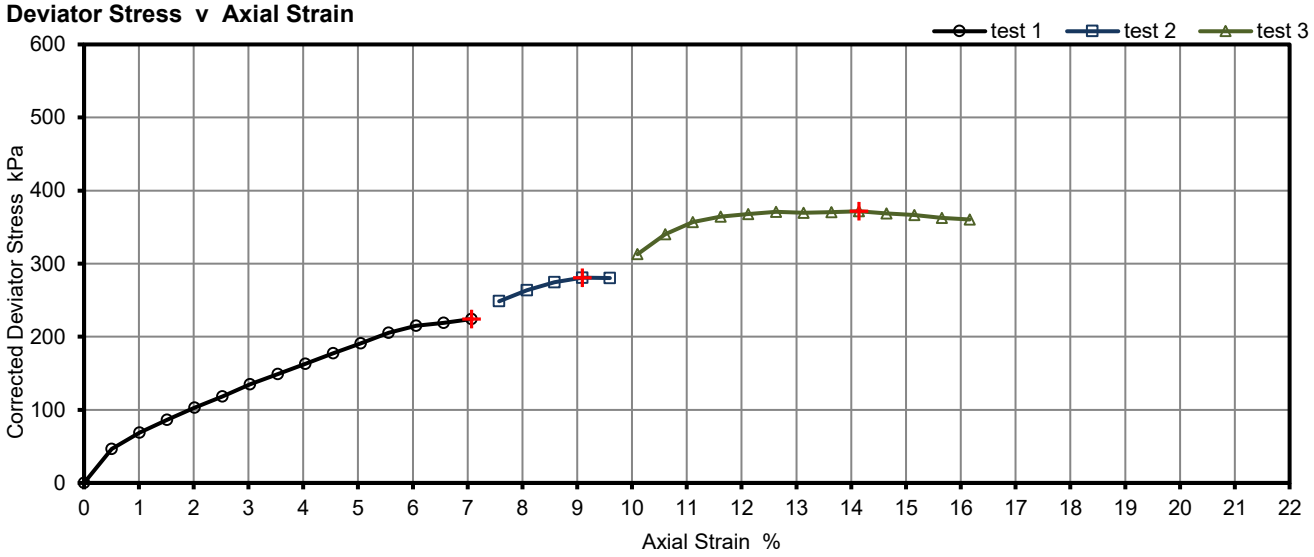
	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test			Job Ref	29124
				Borehole/Pit No.	BH05
Site Name	Car Park 14, Basildon			Sample No.	-
Project No.	2009004.001	Client	TEC	Depth Top	17.00 m
Soil Description	High strength dark grey silty CLAY			Depth Base	17.50 m
				Sample Type	U
				Samples received	03/11/2020
				Schedules received	24/11/2020
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen			Date of test	30/11/2020

Remarks

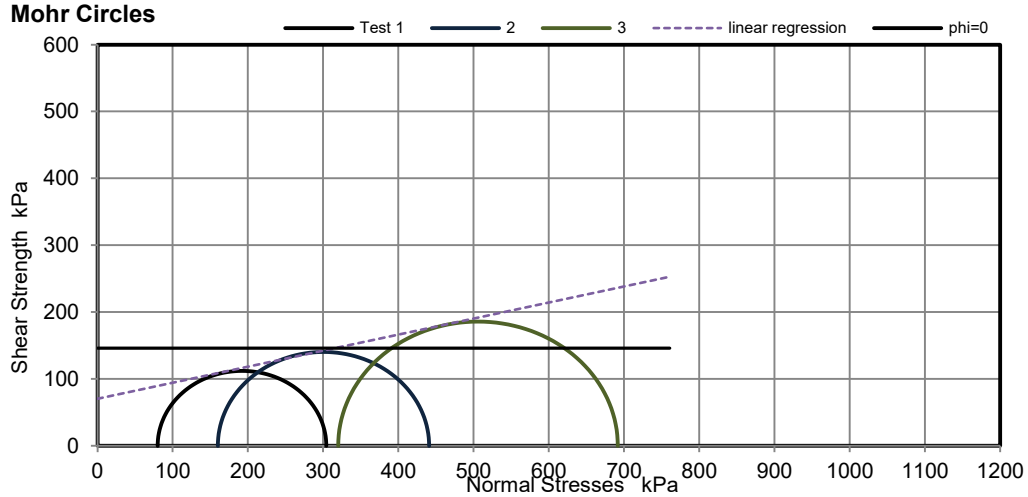
Length	mm	198.0		
Diameter	mm	102.0		
Bulk Density	Mg/m3	1.90		
Moisture Content	%	28		
Dry Density	Mg/m3	1.48		
Rate of Strain	%/min	2.00		
Stage Number		1	2	3
Cell Pressure	kPa	80	160	320
Axial Strain	%	7.1	9.1	14.1
Deviator Stress, (σ1 - σ3)f	kPa	224.2	280.9	371.7
Shear strength, cu	kPa	112.1	140.5	185.9
Mode of failure		Compound		

Position within sample

Deviator Stress v Axial Strain



Mohr Circles



ϕu = 0

Average cu 146 kPa

Linear Regression

ϕu 13.5 °

cu 70 kPa

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Initials: J.P

Date: 09/12/2020

UKAS TESTING 2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test

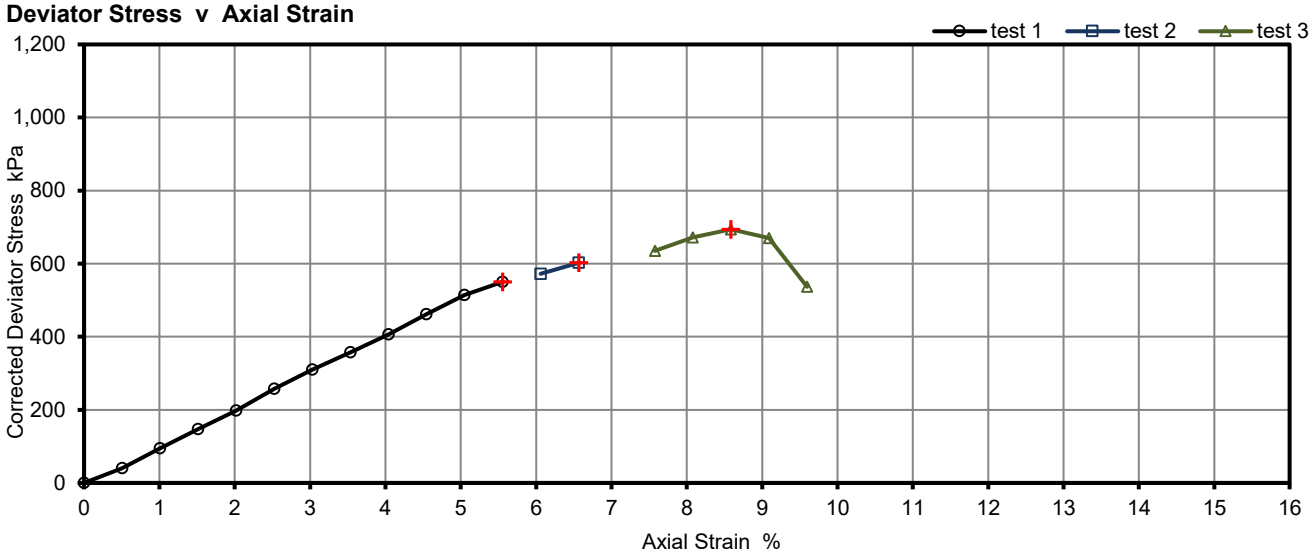
Site Name	Car Park 14, Basildon			Job Ref	29124
				Borehole/Pit No.	BH05
Project No.	2009004.001	Client	TEC	Sample No.	-
				Depth Top	23.00 m
Soil Description	Extremely high strength dark grey silty CLAY			Depth Base	23.50 m
				Sample Type	U
				Samples received	03/11/2020
				Schedules received	24/11/2020
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen			Date of test	30/11/2020

Remarks

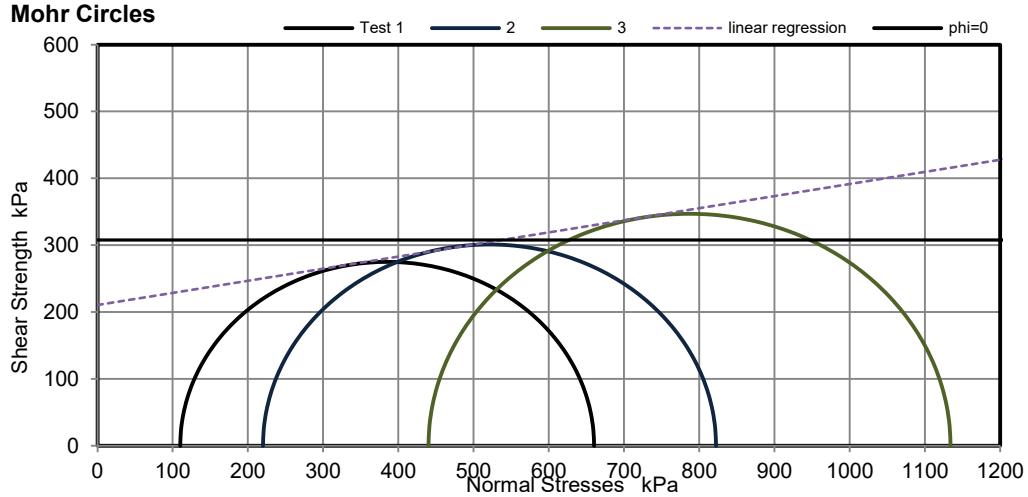
Position within sample

Length	mm	198.0		
Diameter	mm	102.0		
Bulk Density	Mg/m3	1.98		
Moisture Content	%	28		
Dry Density	Mg/m3	1.54		
Rate of Strain	%/min	2.00		
Stage Number		1	2	3
Cell Pressure	kPa	110	220	440
Axial Strain	%	5.6	6.6	8.6
Deviator Stress, (σ1 - σ3)f	kPa	550.2	602.4	694.1
Shear strength, cu	kPa	275.1	301.2	347.0
Mode of failure		Brittle		

Deviator Stress v Axial Strain



Mohr Circles



ϕu = 0

Average cu 308 kPa

Linear Regression

ϕu 10.3 °

cu 211 kPa

Mohr circles and their interpretation is not covered by BS1377. These are provided for information only.

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Date: 09/12/2020

	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test			Job Ref	29124
				Borehole/Pit No.	BH05
Site Name	Car Park 14, Basildon			Sample No.	-
Project No.	2009004.001	Client	TEC	Depth Top	27.50 m
Soil Description	Very high strength dark grey silty CLAY			Depth Base	28.00 m
				Sample Type	U
				Samples received	03/11/2020
				Schedules received	24/11/2020
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen			Date of test	30/11/2020

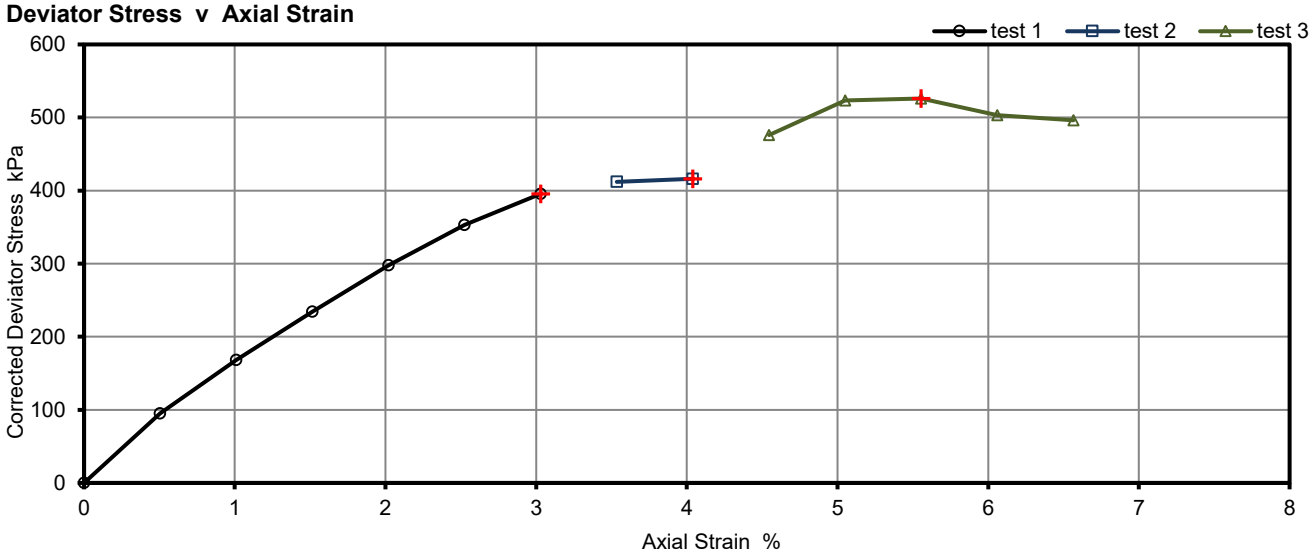
Remarks

Length	mm	198.0
Diameter	mm	102.0
Bulk Density	Mg/m3	1.99
Moisture Content	%	28
Dry Density	Mg/m3	1.55
Rate of Strain	%/min	2.00

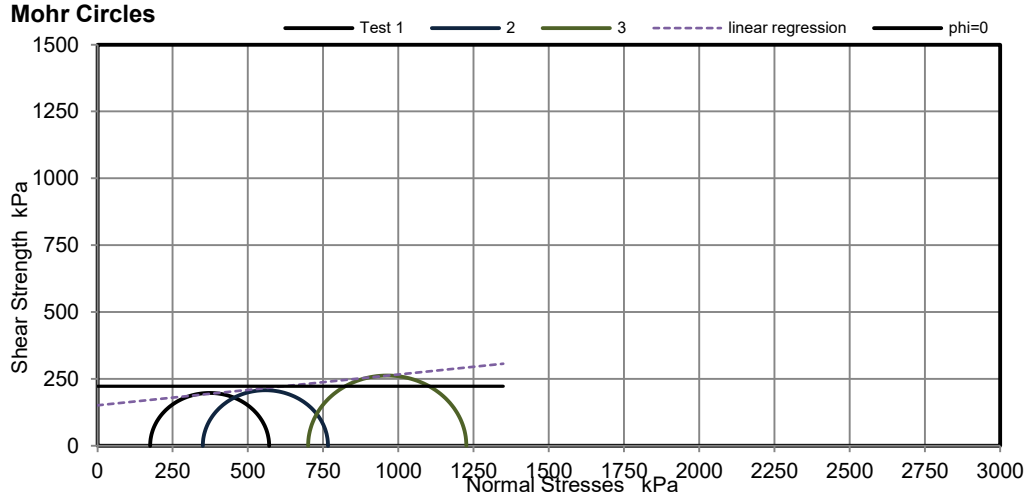
Position within sample

Stage Number		1	2	3
Cell Pressure	kPa	175	350	700
Axial Strain	%	3.0	4.0	5.6
Deviator Stress, (σ1 - σ3)f	kPa	395.6	416.2	526.0
Shear strength, cu	kPa	197.8	208.1	263.0
Mode of failure		Compound		

Deviator Stress v Axial Strain



Mohr Circles



ϕu = 0

Average cu 223 kPa

Linear Regression

ϕu 6.6 °

cu 152 kPa

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Date: 09/12/2020

Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test

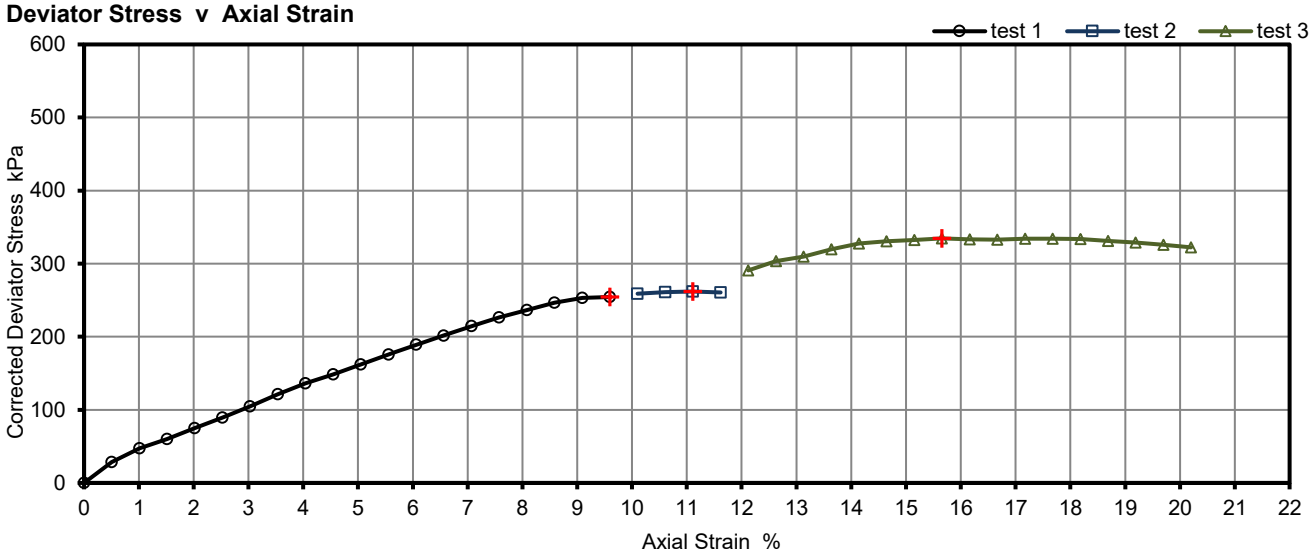
Site Name	Car Park 14, Basildon			Job Ref	29124
				Borehole/Pit No.	BH06
				Sample No.	-
Project No.	2009004.001	Client	TEC	Depth Top	8.00 m
Soil Description	High strength dark grey silty CLAY with occasional pockets of fine sand			Depth Base	8.45 m
				Sample Type	U
				Samples received	03/11/2020
				Schedules received	24/11/2020
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen			Date of test	30/11/2020

Remarks

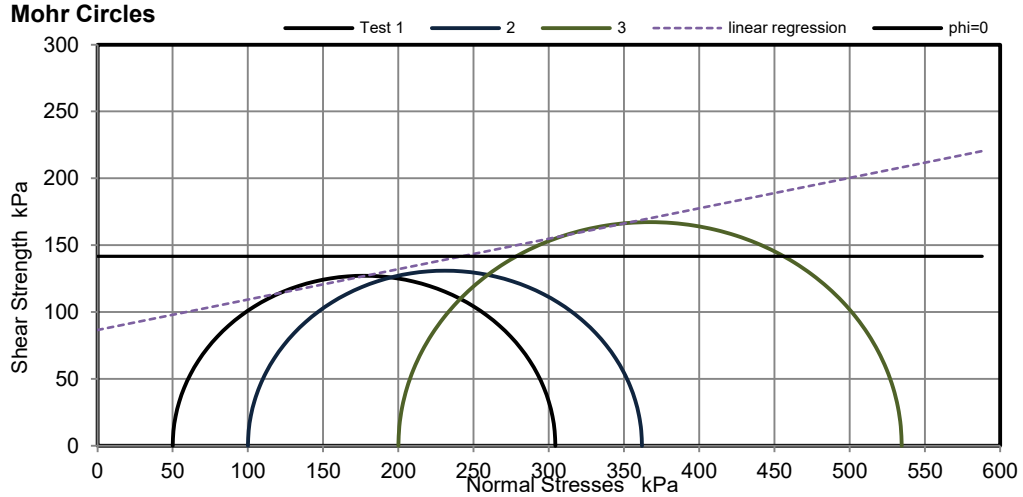
Position within sample

Length	mm	198.0		
Diameter	mm	102.0		
Bulk Density	Mg/m3	1.91		
Moisture Content	%	29		
Dry Density	Mg/m3	1.48		
Rate of Strain	%/min	2.00		
Stage Number		1	2	3
Cell Pressure	kPa	50	100	200
Axial Strain	%	9.6	11.1	15.7
Deviator Stress, (σ1 - σ3)f	kPa	254.4	261.9	334.6
Shear strength, cu	kPa	127.2	131.0	167.3
Mode of failure		Compound		

Deviator Stress v Axial Strain



Mohr Circles



ϕu = 0

Average cu 142 kPa

Linear Regression

ϕu 12.8 °

cu 87 kPa

Mohr circles and their interpretation is not covered by BS1377. These are provided for information only.

Test Report by K4 SOILS LABORATORY
Unit 8 Olds Close Olds Approach
Watford Herts WD18 9RU
Tel: 01923 711 288
Email: James@k4soils.com

Checked and Approved

Initials: J.P

Date: 09/12/2020

UKAS TESTING 2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test

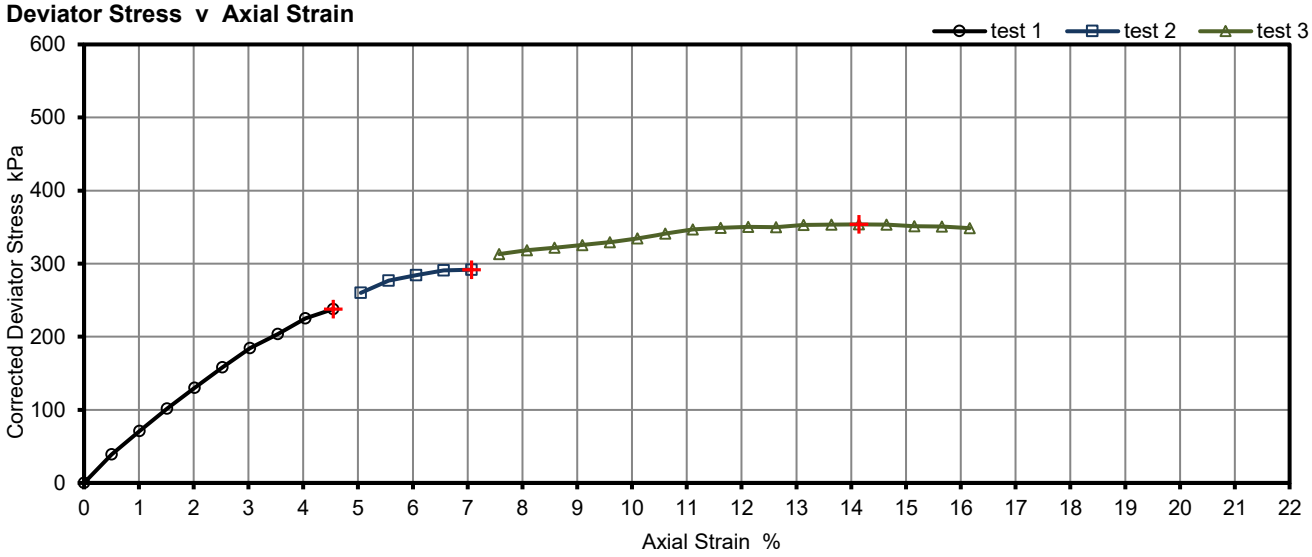
Site Name	Car Park 14, Basildon			Job Ref	29124
				Borehole/Pit No.	BH06
Project No.	2009004.001	Client	TEC	Sample No.	-
				Depth Top	14.00 m
Soil Description	High strength dark grey silty CLAY with occasional pockets of sand			Depth Base	14.50 m
				Sample Type	U
				Samples received	03/11/2020
				Schedules received	24/11/2020
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen			Date of test	30/11/2020

Remarks

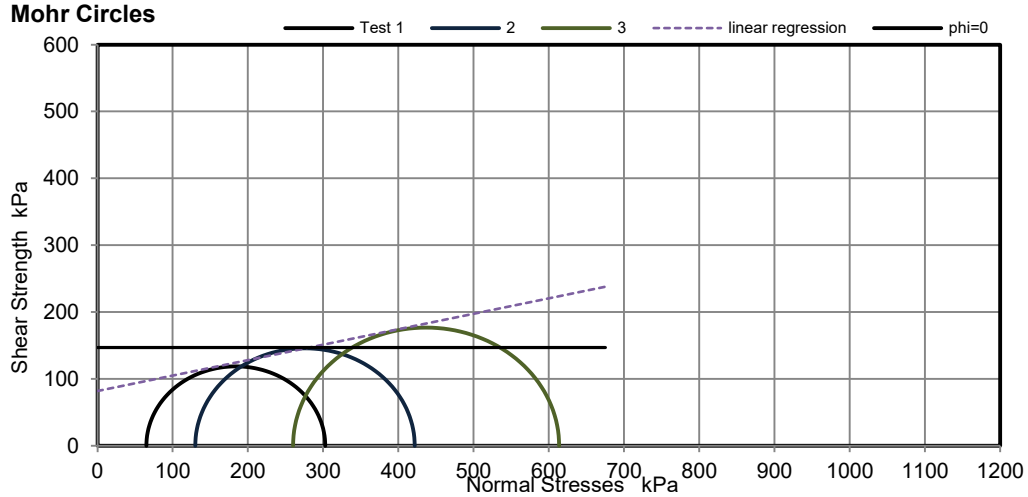
Length	mm	198.0		
Diameter	mm	102.0		
Bulk Density	Mg/m3	1.96		
Moisture Content	%	28		
Dry Density	Mg/m3	1.53		
Rate of Strain	%/min	2.00		
Stage Number		1	2	3
Cell Pressure	kPa	65	130	260
Axial Strain	%	4.5	7.1	14.1
Deviator Stress, (σ1 - σ3)f	kPa	237.8	291.8	353.7
Shear strength, cu	kPa	118.9	145.9	176.9
Mode of failure		Compound		

Position within sample

Deviator Stress v Axial Strain



Mohr Circles



ϕu = 0

Average cu 147 kPa

Linear Regression

ϕu 13.0 °

cu 82 kPa

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Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test

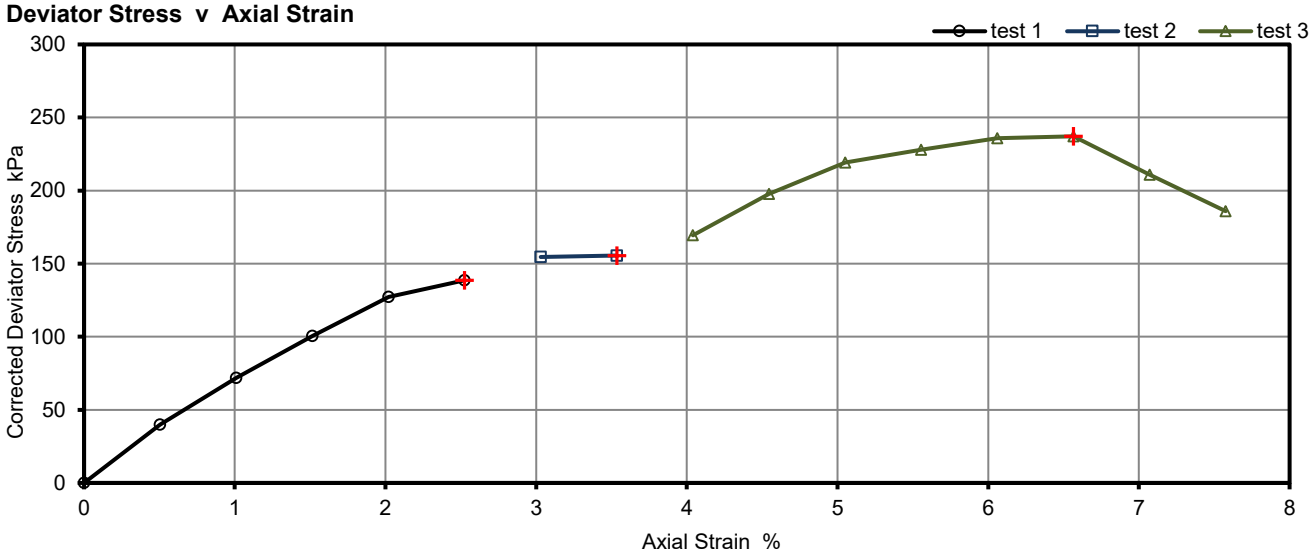
Site Name	Car Park 14, Basildon			Job Ref	29124
				Borehole/Pit No.	BH06
Project No.	2009004.001	Client	TEC	Sample No.	-
				Depth Top	18.50 m
Soil Description	High strength dark grey silty CLAY			Depth Base	18.85 m
				Sample Type	U
				Samples received	03/11/2020
				Schedules received	24/11/2020
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen			Date of test	30/11/2020

Remarks

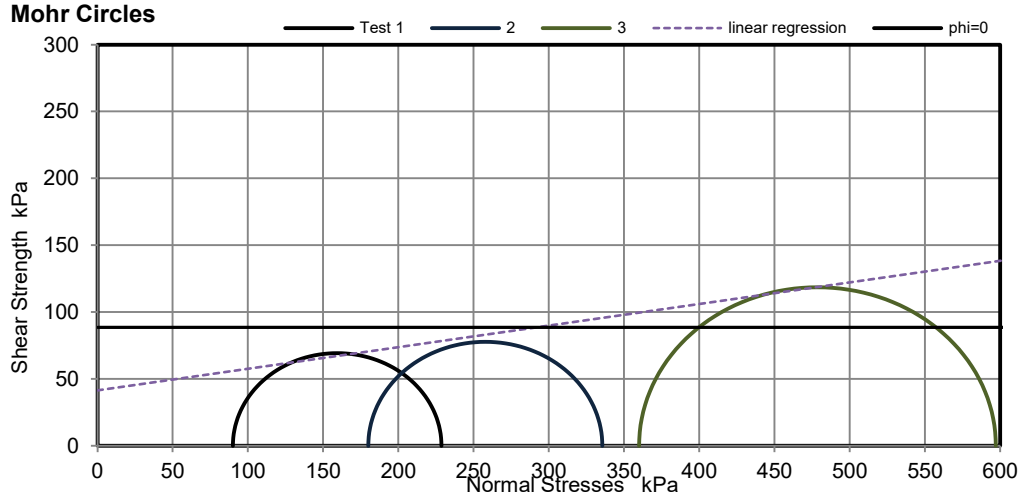
Position within sample

Length	mm	198.0		
Diameter	mm	102.0		
Bulk Density	Mg/m3	1.96		
Moisture Content	%	29		
Dry Density	Mg/m3	1.52		
Rate of Strain	%/min	2.00		
Stage Number		1	2	3
Cell Pressure	kPa	90	180	360
Axial Strain	%	2.5	3.5	6.6
Deviator Stress, (σ1 - σ3)f	kPa	138.6	155.6	237.1
Shear strength, cu	kPa	69.3	77.8	118.6
Mode of failure		Compound		

Deviator Stress v Axial Strain



Mohr Circles



ϕu = 0

Average cu 89 kPa

Linear Regression

ϕu 9.2 °

cu 42 kPa

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Date: 09/12/2020

UKAS TESTING 2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

	Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test			Job Ref	29124
				Borehole/Pit No.	BH07
Site Name	Car Park 14, Basildon			Sample No.	-
Project No.	2009004.001	Client	TEC	Depth Top	9.50 m
Soil Description	Very high strength dark grey slightly fine sandy silty CLAY			Depth Base	10.00 m
				Sample Type	U
				Samples received	03/11/2020
				Schedules received	24/11/2020
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen			Date of test	30/11/2020

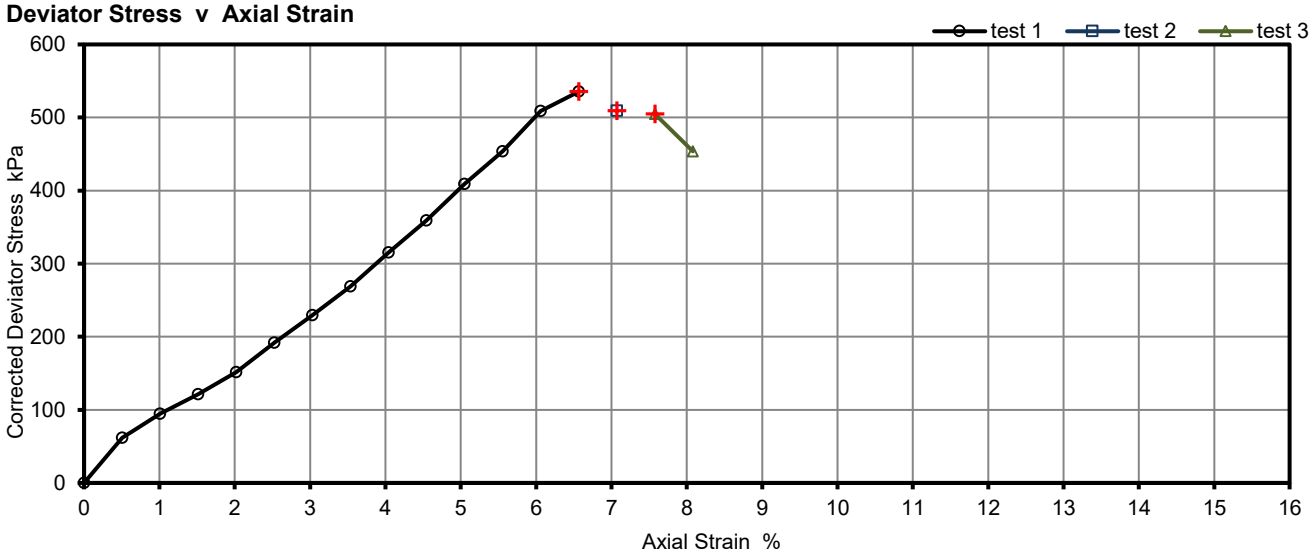
Remarks

Sample failed at first pressure

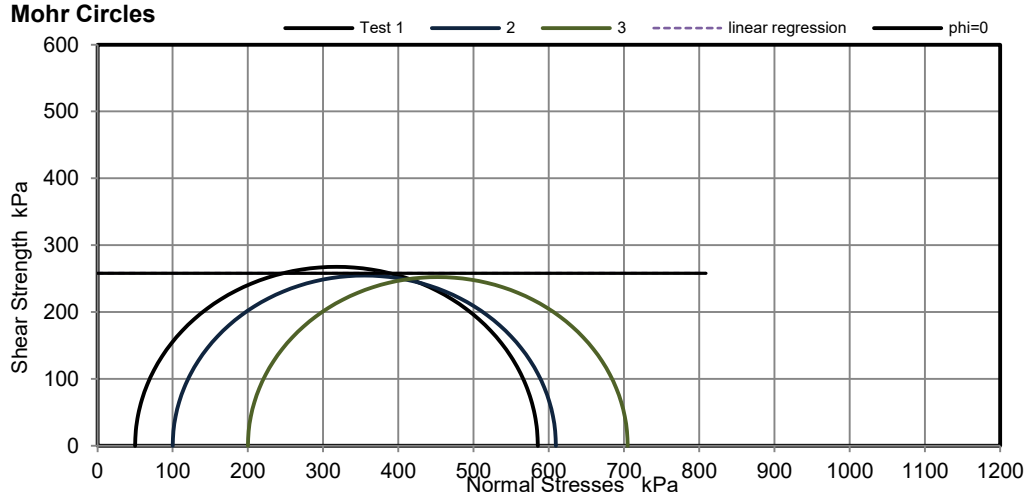
Position within sample

Length	mm	198.0		
Diameter	mm	102.0		
Bulk Density	Mg/m3	1.94		
Moisture Content	%	29		
Dry Density	Mg/m3	1.50		
Rate of Strain	%/min	2.00		
Stage Number		1	2	3
Cell Pressure	kPa	50	100	200
Axial Strain	%	6.6	7.1	7.6
Deviator Stress, (σ1 - σ3)f	kPa	535.4	509.4	504.8
Shear strength, cu	kPa	267.7	254.7	252.4
Mode of failure		Compound		

Deviator Stress v Axial Strain



Mohr Circles



ϕu = 0

Average cu 258 kPa

Linear Regression

ϕu 0.0 °

cu 258 kPa

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Checked and Approved

Initials: J.P

Date: 09/12/2020

Unconsolidated Undrained Triaxial Compression Test without measurement of pore pressure - Multistage test

Site Name	Car Park 14, Basildon			Job Ref	29124
				Borehole/Pit No.	BH07
Project No.	2009004.001	Client	TEC	Sample No.	-
				Depth Top	15.50 m
Soil Description	High strength dark grey silty CLAY			Depth Base	16.00 m
				Sample Type	U
				Samples received	03/11/2020
				Schedules received	24/11/2020
Test Method	BS1377:Part 7:1990, clause 9, multistage test on a single specimen			Date of test	30/11/2020

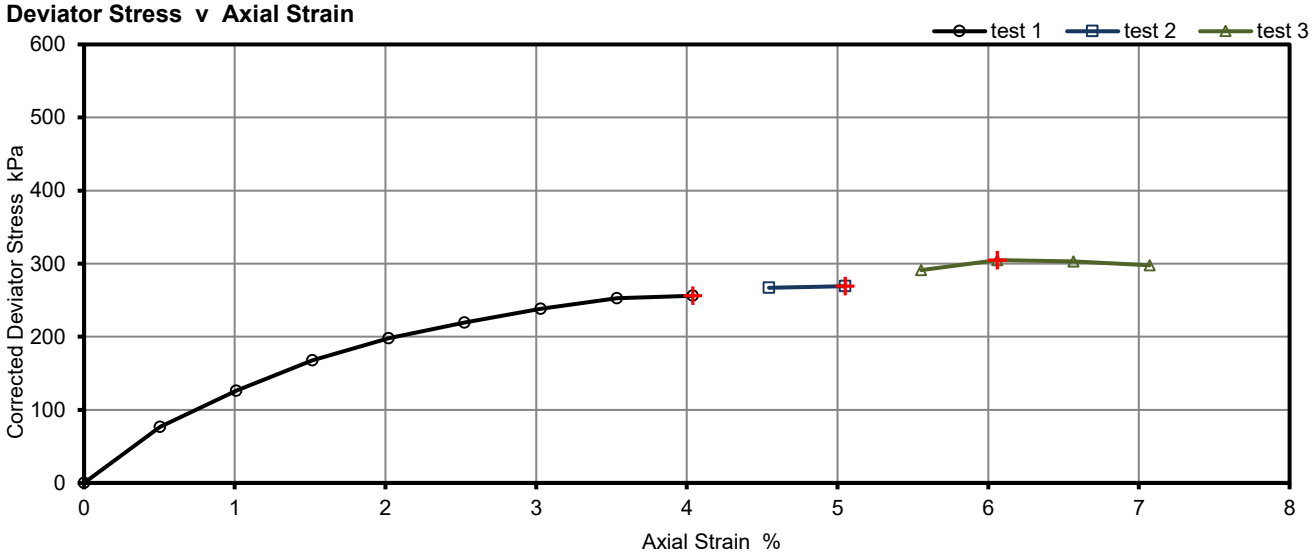
Remarks

Length	mm	198.0
Diameter	mm	102.0
Bulk Density	Mg/m3	1.99
Moisture Content	%	27
Dry Density	Mg/m3	1.57
Rate of Strain	%/min	2.00

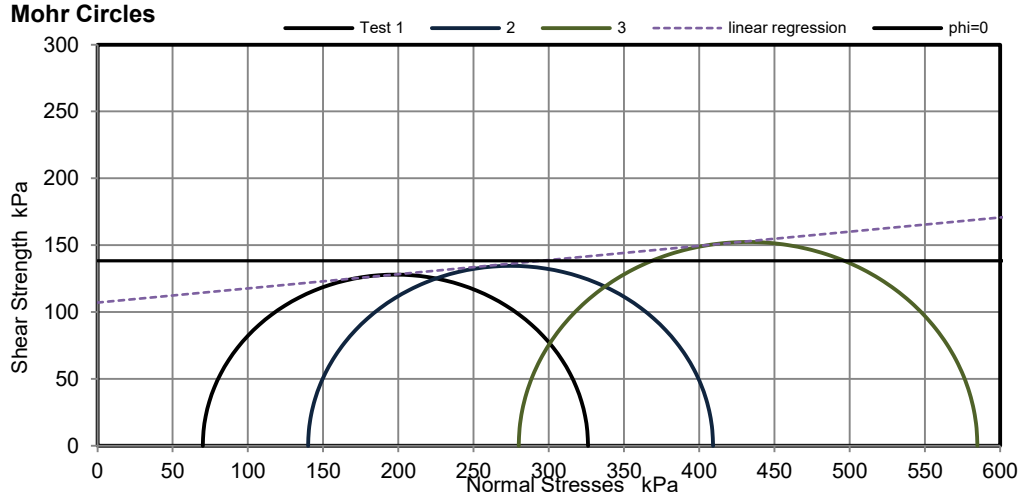
Position within sample

Stage Number		1	2	3
Cell Pressure	kPa	70	140	280
Axial Strain	%	4.0	5.1	6.1
Deviator Stress, (σ1 - σ3)f	kPa	256.1	269.2	304.9
Shear strength, cu	kPa	128.0	134.6	152.4
Mode of failure		Compound		

Deviator Stress v Axial Strain



Mohr Circles



ϕu = 0

Average cu 138 kPa

Linear Regression

ϕu 6.1 °

cu 107 kPa

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Date: 09/12/2020

UKAS TESTING 2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

Unconsolidated Undrained Triaxial Compression tests without measurement of pore pressure
Summary of Results

Tests carried out in accordance with BS1377:Part 7 : 1990 clause 8 or 9 as appropriate to test type.

Job No.	Project Name	Programme	
29124	Car Park 14, Basildon	Samples received	03/11/2020
		Schedule received	24/11/2020
Project No.	Client	Project started	25/11/2020
2009004.001	TEC	Testing Started	30/11/2020

Hole No.	Sample Ref	Top m	Base m	Type	Soil Description	Test Type	Density bulk Mg/m3	Density dry Mg/m3	w %	Length mm	Diameter mm	σ3 kPa	At failure: Axial strain %	σ1 - σ3 kPa	cu kPa	Mode	Remarks
BH03	-	9.50	9.95	U	High strength dark grey silty CLAY with rare coarse pyrite nodules and rare pockets of black fine sand	UUM	2.02	1.57	28	198	102	50 100 200	2.0 3.0 3.5	206 220 222	103 110 111	C	
BH03	-	12.50	12.95	U	Very high strength dark grey silty CLAY	UUM	1.98	1.56	27	198	102	60 120 240	5.1 5.6 6.6	365 359 332	182 179 166	B	Sample failed at first pressure
BH04	-	2.00	2.45	U	Medium strength brown mottled grey silty CLAY with rare selenite crystals	UUM	1.92	1.43	34	198	102	15 30 60	5.1 6.1 9.1	110 111 121	55 56 60	C	
BH05	-	17.00	17.50	U	High strength dark grey silty CLAY	UUM	1.90	1.48	28	198	102	80 160 320	7.1 9.1 14.1	224 281 372	112 140 186	C	
BH05	-	23.00	23.50	U	Extremely high strength dark grey silty CLAY	UUM	1.98	1.54	28	198	102	110 220 440	5.6 6.6 8.6	550 602 694	275 301 347	B	
BH05	-	27.50	28.00	U	Very high strength dark grey silty CLAY	UUM	1.99	1.55	29	198	102	175 350 700	3.0 4.0 5.6	396 416 526	198 208 263	C	
BH06	-	8.00	8.45	U	High strength dark grey silty CLAY with occasional pockets of fine sand	UUM	1.91	1.48	29	198	102	50 100 200	9.6 11.1 15.7	254 262 335	127 131 167	C	
BH06	-	14.00	14.50	U	High strength dark grey silty CLAY with occasional pockets of sand	UUM	1.96	1.53	28	198	102	65 130 260	4.5 7.1 14.1	238 292 354	119 146 177	C	
BH06	-	18.50	18.85	U	High strength dark grey silty CLAY	UUM	1.96	1.52	29	198	102	90 180 360	2.5 3.5 6.6	139 156 237	69 78 119	C	
BH07	-	9.50	10.00	U	Very high strength dark grey slightly fine sandy silty CLAY	UUM	1.94	1.50	29	198	102	50 100 200	6.6 7.1 7.6	535 509 505	268 255 252	C	Sample failed at first pressure
BH07	-	15.50	16.00	U	High strength dark grey silty CLAY	UUM	1.99	1.57	27	198	102	70 140 280	4.0 5.1 6.1	256 269 305	128 135 152	C	

Legend
UU - single stage test (single and multiple specimens) | σ3 Cell pressure | Mode of failure ; B - Brittle
UUM - Multistage test on a single specimen | σ1 - σ3 Maximum corrected deviator stress | P - Plastic
suffix R - remoulded or recompacted | cu Undrained shear strength, ½ (σ1 - σ3) | C - Compound

Test Report by K4 SOILS LABORATORY
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2683

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number:	20-31131
Issue:	1
Date of Issue:	08/12/2020
Contact:	James Phaure
Customer Details:	K4 Soils Laboratory Ltd Unit 8 Watford HertfordshireWD18 9RU
Quotation No:	Q16-00568
Order No:	Not Supplied
Customer Reference:	29124
Date Received:	01/12/2020
Date Approved:	08/12/2020
Details:	Car Park 14, Basildon
Approved by:	

Mike Varley, Technical Manager

Sample Summary

Report No.: 20-31131, issue number 1

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
221730	BH01 6.50	Not Provided	01/12/2020	Clayey loam	a
221731	BH01 15.5	Not Provided	01/12/2020	Clay	a
221732	BH03 3.50	30/10/2020	01/12/2020	Clayey loam	f
221733	BH03 19.00	Not Provided	01/12/2020	Claty	a
221734	BH03 22.50	Not Provided	01/12/2020	Claty	a
221735	BH04 10.50	Not Provided	01/12/2020	Claty	a
221736	BH05 7.50	28/10/2020	01/12/2020	Clayey loam	f
221737	BH05 15.00	28/10/2020	01/12/2020	Claty	f
221738	BH06 4.00	Not Provided	01/12/2020	Clayey loam	a
221739	BH06 13.00	28/10/2020	01/12/2020	Claty	f
221740	BH07 7.00	27/10/2020	01/12/2020	Clayey loam	f

Results Summary

Report No.: 20-31131, issue number 1

				ELAB Reference	221730	221731	221732	221733	221734
				Customer Reference					
				Sample ID					
				Sample Type	DISTURBED	DISTURBED	DISTURBED	DISTURBED	DISTURBED
				Sample Location	BH01	BH01	BH03	BH03	BH03
				Sample Depth (m)	6.50	15.5	3.50	19.00	22.50
				Sampling Date	Not Provided	Not Provided	30/10/2020	Not Provided	Not Provided
Determinand	**Codes**	**Units**	**LOD**						
Soil sample preparation parameters									
Material removed	N	%	0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Description of Inert material removed	N		0		None	None	None	None	None
Anions									
Water Soluble Sulphate	M	g/l	0.02		0.65	0.36	f 2.54	^ 0.36	^ 0.12
Inorganics									
Total Sulphur	N	%	0.01		0.06	0.47	f 0.20	0.36	0.17
Acid Soluble Sulphate (SO4)	U	%	0.02		0.15	0.10	f 0.59	0.12	0.08
Miscellaneous									
pH	M	pH units	0.1		8.3	9.0	f 8.0	^ 9.0	^ 9.4

Results Summary

Report No.: 20-31131, issue number 1

				ELAB Reference	221735	221736	221737	221738	221739
				Customer Reference					
				Sample ID					
				Sample Type	DISTURBED	DISTURBED	DISTURBED	DISTURBED	DISTURBED
				Sample Location	BH04	BH05	BH05	BH06	BH06
				Sample Depth (m)	10.50	7.50	15.00	4.00	13.00
				Sampling Date	Not Provided	28/10/2020	28/10/2020	Not Provided	28/10/2020
Determinand	**Codes**	**Units**	**LOD**						
Soil sample preparation parameters									
Material removed	N	%	0.1		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Description of Inert material removed	N		0		None	None	None	None	None
Anions									
Water Soluble Sulphate	M	g/l	0.02		^ 0.46	f 0.71	f^ 0.77	1.86	f^ 0.41
Inorganics									
Total Sulphur	N	%	0.01		0.25	f 0.32	f 0.74	0.19	f 0.30
Acid Soluble Sulphate (SO4)	U	%	0.02		0.13	f 0.15	f 0.15	0.50	f 0.11
Miscellaneous									
pH	M	pH units	0.1		^ 9.0	f 8.7	f^ 8.5	8.2	f^ 8.9

Tests marked N are not UKAS accredited.

Results Summary

2683

Report No.: 20-31131, issue number 1

ELAB Reference	221740
Customer Reference	
Sample ID	
Sample Type	DISTURBED
Sample Location	BH07
Sample Depth (m)	7.00
Sampling Date	27/10/2020

Determinand	Codes	Units	LOD	
Soil sample preparation parameters				
Material removed	N	%	0.1	< 0.1
Description of Inert material removed	N		0	None
Anions				
Water Soluble Sulphate	M	g/l	0.02	f 0.70
Inorganics				
Total Sulphur	N	%	0.01	f 0.50
Acid Soluble Sulphate (SO4)	U	%	0.02	f 0.22
Miscellaneous				
pH	M	pH units	0.1	f 8.5

Method Summary

Report No.: 20-31131, issue number 1

Parameter	Codes	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil					
pH	M	Air dried sample	03/12/2020	113	Electromeric
Acid Soluble Sulphate	U	Air dried sample	04/12/2020	115	Ion Chromatography
Water soluble anions	M	Air dried sample	03/12/2020	172	Ion Chromatography
Total organic carbon/Total sulphur	N	Air dried sample	03/12/2020	216	IR

Tests marked N are not UKAS accredited

Report Information

Report No.: 20-31131, issue number 1

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
*	UKAS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
NS	Subcontracted to approved laboratory. UKAS accreditation is not applicable.
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"
LOD	LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination.

Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed.

ELAB are unable to provide an interpretation or opinion on the content of this report.

The results relate only to the sample received.

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

Deviation Codes

a	No date of sampling supplied
b	No time of sampling supplied (Waters Only)
c	Sample not received in appropriate containers
d	Sample not received in cooled condition
e	The container has been incorrectly filled
f	Sample age exceeds stability time (sampling to receipt)
g	Sample age exceeds stability time (sampling to analysis)

Where a sample has a deviation code, the applicable test result may be invalid.

Sample Retention and Disposal

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage

Appendix I

Generic Quantitative Risk Assessment: Human Health

Project Number:		Lab Sample Number	1667272	1667273	1673055	1673056	1673057	1673058	1673059	1673060	
Project Name:		Sample Reference	BH07	BH05	WS01	WS01	WS03	WS06	WS10	WS11	
Site End Use:	GAC (mg/kg)	Sample Number	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied	
Residential with homegrown produce		Depth (m)	0.30	0.30	0.45	0.90-1.00	0.10	0.50	0.40	0.30	
		Date Sampled	26/10/2020	26/10/2020	03/11/2020	03/11/2020	03/11/2020	02/11/2020	02/11/2020	02/11/2020	
Determinand			1	2	3	4	5				
Arsenic	37[1]	mg/kg	12.00	2.70	17.00	15.00	12.00	9.60	5.60	4.70	
Boron	290[3]	mg/kg	2.90	2.40	1.40	1.00	0.40	0.20	< 0.2	< 0.2	
Cadmium	22[1]	mg/kg	0.40	0.70	< 0.2	< 0.2	< 0.2	< 0.2	1.10	< 0.2	
Chromium (total)	910[3]	mg/kg	58.00	6.60	64.00	62.00	40.00	23.00	6.90	13.00	
Chromium (VI)	21[1]	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	
Copper	2400[3]	mg/kg	13.00	4.80	26.00	27.00	32.00	12.00	9.40	8.40	
Lead	200[1]	mg/kg	21.00	36.00	19.00	18.00	39.00	19.00	40.00	10.00	
Mercury	40[2]	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	
Nickel	130[2]	mg/kg	20.00	4.30	43.00	53.00	29.00	12.00	5.90	9.00	
Selenium	350[2]	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Zinc	3700[3]	mg/kg	76.00	45.00	71.00	78.00	98.00	45.00	100.00	22.00	
Beryllium	1.7[3]	mg/kg	1.30	0.10	1.60	1.40	1.00	0.70	0.12	0.38	
Vanadium	410[3]	mg/kg	85.00	5.80	100.00	100.00	63.00	45.00	8.90	20.00	
Barium	1300[4]	mg/kg	190.00	81.00	1400.00	120.00	70.00	29.00	270.00	31.00	
Cyanide (Total)	20[5]	mg/kg	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	
Phenol (Monohydric)	120[3]	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Sulphide	-	mg/kg	21.00	30.00	< 1.0	< 1.0	5.20	21.00	62.00	< 1.0	
Total Organic Carbon (TOC)	-	%	0.50	0.20	1.20	0.20	1.20	0.90	< 0.1	< 0.1	
Naphthalene	2.3[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthylene	170[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthene	210[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Fluorene	170[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Phenanthrene	95[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Anthracene	2400[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Fluoranthene	280[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Pyrene	620[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(a)anthracene	7.2[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Chrysene	15[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(b)fluoranthene	2.6[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(k)fluoranthene	77[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(a)pyrene	2.2[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Indeno(1,2,3-cd)pyrene	27[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Dibenz(a,h)anthracene	0.24[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	320[3]	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Speciated Total EPA-16 PAHs	-	mg/kg	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80	< 0.80	
Benzene	0.087[3]	µg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	130[3]	µg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	47[3]	µg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-xylene	56[3]	µg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
o-xylene	60[3]	µg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	49[4]	µg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
TPH Aliphatic C5 - C6	42[3]	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
TPH Aliphatic C6 - C8	100[3]	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
TPH Aliphatic C8 - C10	27[3]	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
TPH Aliphatic C10 - C12	130[3]	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
TPH Aliphatic C12 - C16	1100[3]	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
TPH Aliphatic C16 - C21	65000[3]	mg/kg	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	
TPH Aliphatic C21 - C35	65000[3]	mg/kg	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	< 8.0	
TPH Aromatic C5 - C7	70[3]	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
TPH Aromatic C7 - C8	130[3]	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
TPH Aromatic C8 - C10	34[3]	mg/kg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
TPH Aromatic C10 - C12	74[3]	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	
TPH Aromatic C12 - C16	140[3]	mg/kg	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	
TPH Aromatic C16 - C21	260[3]	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	
TPH Aromatic C21 - C35	1100[3]	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	

Notes:

[1] DEFRA C4SLs (2014)

[2] Environment Agency SGVs (2009)

[3] LQM/CIEH S4ULs (2015)

[4] CL:AIRE, AGS & EIS (2009)

[5] Dutch Intervention Value for free cyanide (VROM 2000)

*All GACs based on a sandy soil and Soil Organic Matter (SOM) of 1% where applicable.

Concentration does not exceed GAC

Concentration exceeds GAC

No set GAC

Appendix J

DCP-TRL Results

TRL Dynamic Cone Penetration Test Results

Car Park 14, Basildon

Cumulative Blow Count	Penetration (mm)	Penetration Index (DPI) mm/blow	Estimated CBR[1] (%)	Adjusted CBR[2] (%)
0	11			
1	34	23.0	11.0	7.9
2	37	3.0	94.6	68.1
3	40	3.0	94.6	68.2
4	45	5.0	55.1	39.8
5	48	3.0	94.6	68.4
6	51	3.0	94.6	68.5
7	79	28.0	8.9	6.5
8	88	9.0	29.6	21.8
9	106	18.0	14.2	10.5
10	135	29.0	8.6	6.4
11	150	15.0	17.3	13.0
12	183	33.0	7.5	5.7
13	201	18.0	14.2	10.9
14	244	43.0	5.7	4.4
15	282	38.0	6.5	5.1
16	341	59.0	4.1	3.3
17	376	35.0	7.0	5.8
18	411	35.0	7.0	5.8
19	444	33.0	7.5	6.3
20	484	40.0	6.1	5.2
21	513	29.0	8.6	7.4
22	538	25.0	10.1	8.7
23	550	12.0	21.8	19.0
24	568	18.0	14.2	12.4
25	645	77.0	3.1	2.7
26	688	43.0	5.7	5.2
27	745	57.0	4.2	3.9
28	791	46.0	5.3	5.0
29	834	43.0	5.7	5.4
30	844	10.0	26.5	25.3
31	871	27.0	9.3	8.9
32	904	33.0	7.5	7.3
33	943	39.0	6.3	6.2
34	956	13.0	20.1	19.8
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DCP01

Project:	Car Park 14, Basildon
Project No.	2009004.001
Client:	Sempra Homes Ltd
Test No.	DCP01
Test Date:	30/10/2020
Surface Moisture:	Moderate
Soil Type	Made ground (clayey gravel) over sandy clay.

Notes/Comments

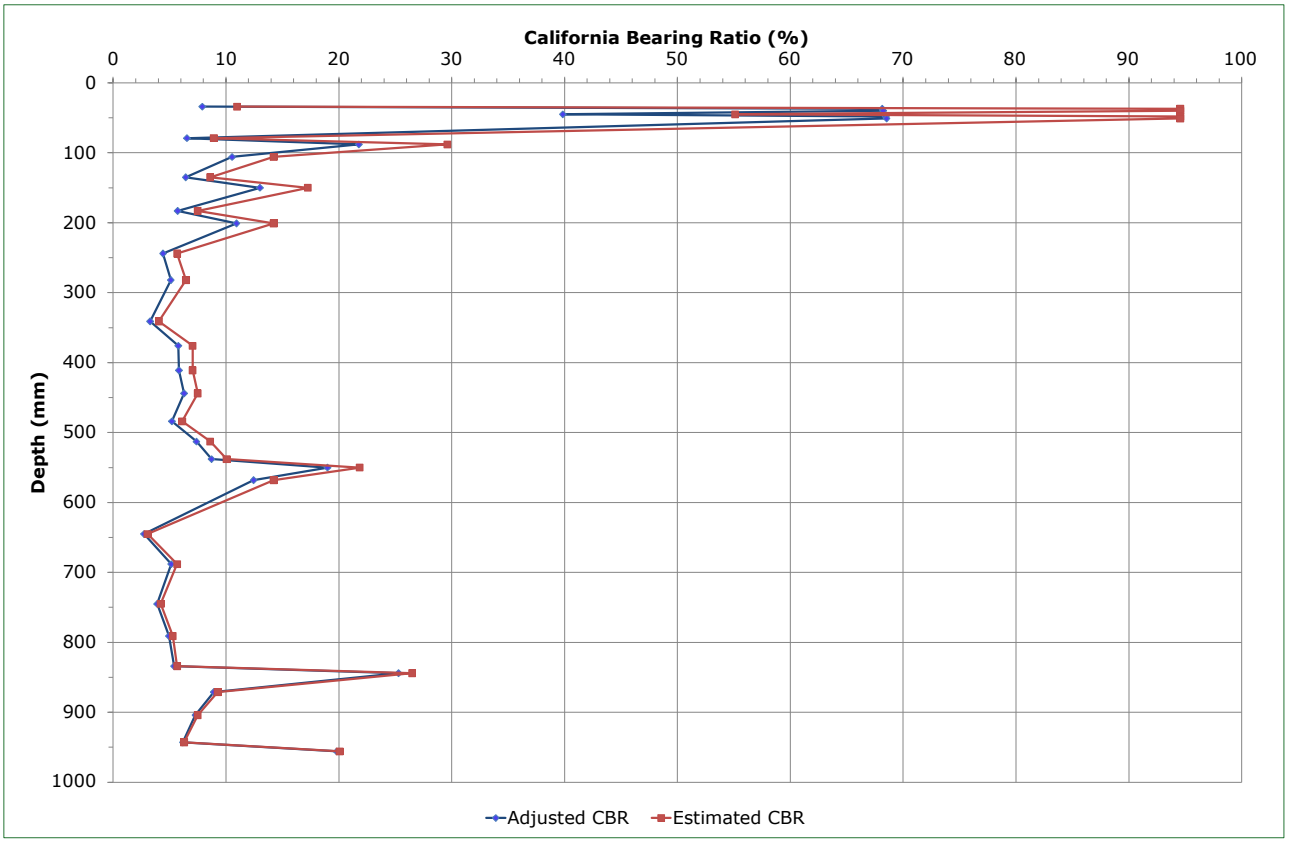
Notes:

1. CBR Value calculated using Jones C R and J Rolt (1991), "*Operating instructions for the TRL dynamic cone penetrometer*" (2nd edition). Information Note. Crowthorne: Transport Research Laboratory, as follows:

$$\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057\ \text{Log}_{10}(\text{DPI})$$

2. Adjusted CBR vaules obtined from Table 4.2 of Simon Done and Piouslin Samuel (2006), "*Measuring Road Pavement Strength and Designing Low Volume Sealed Roads using the Dynamic Cone Penetrometer*" Unpublished TRL Project Report UPR/IE/76/06 Project Record No R7783.

The CBR Adjustment Factors are applied to unpaved roads on the assumption that the effect of moisture will be a maximum at the top surface and will reduce linearly to zero at a depth of 1000 mm.



TRL Dynamic Cone Penetration Test Results

Car Park 14, Basildon

Cumulative Blow Count	Penetration (mm)	Penetration Index (DPI) mm/blow	Estimated CBR[1] (%)	Adjusted CBR[2] (%)
0	8			
1	54	46.0	5.3	3.8
2	67	13.0	20.1	14.6
3	83	16.0	16.1	11.8
4	108	25.0	10.1	7.5
5	135	27.0	9.3	6.9
6	165	30.0	8.3	6.3
7	180	15.0	17.3	13.2
8	203	23.0	11.0	8.4
9	254	51.0	4.7	3.7
10	340	86.0	2.7	2.2
11	405	65.0	3.7	3.0
12	450	45.0	5.4	4.5
13	493	43.0	5.7	4.8
14	533	40.0	6.1	5.3
15	570	37.0	6.6	5.8
16	598	28.0	8.9	7.9
17	609	11.0	23.9	21.2
18	624	15.0	17.3	15.4
19	655	31.0	8.0	7.2
20	684	29.0	8.6	7.8
21	745	61.0	3.9	3.6
22	783	38.0	6.5	6.1
23	833	50.0	4.8	4.6
24	888	55.0	4.4	4.2
25	924	36.0	6.8	6.7
26	953	29.0	8.6	8.5
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DCP02

Project:	Car Park 14, Basildon
Project No.	2009004.001
Client:	Sempra Homes Ltd
Test No.	DCP02
Test Date:	30/10/2020
Surface Moisture:	Moderate
Soil Type	Made ground (clayey gravel) over sandy clay.

Notes/Comments

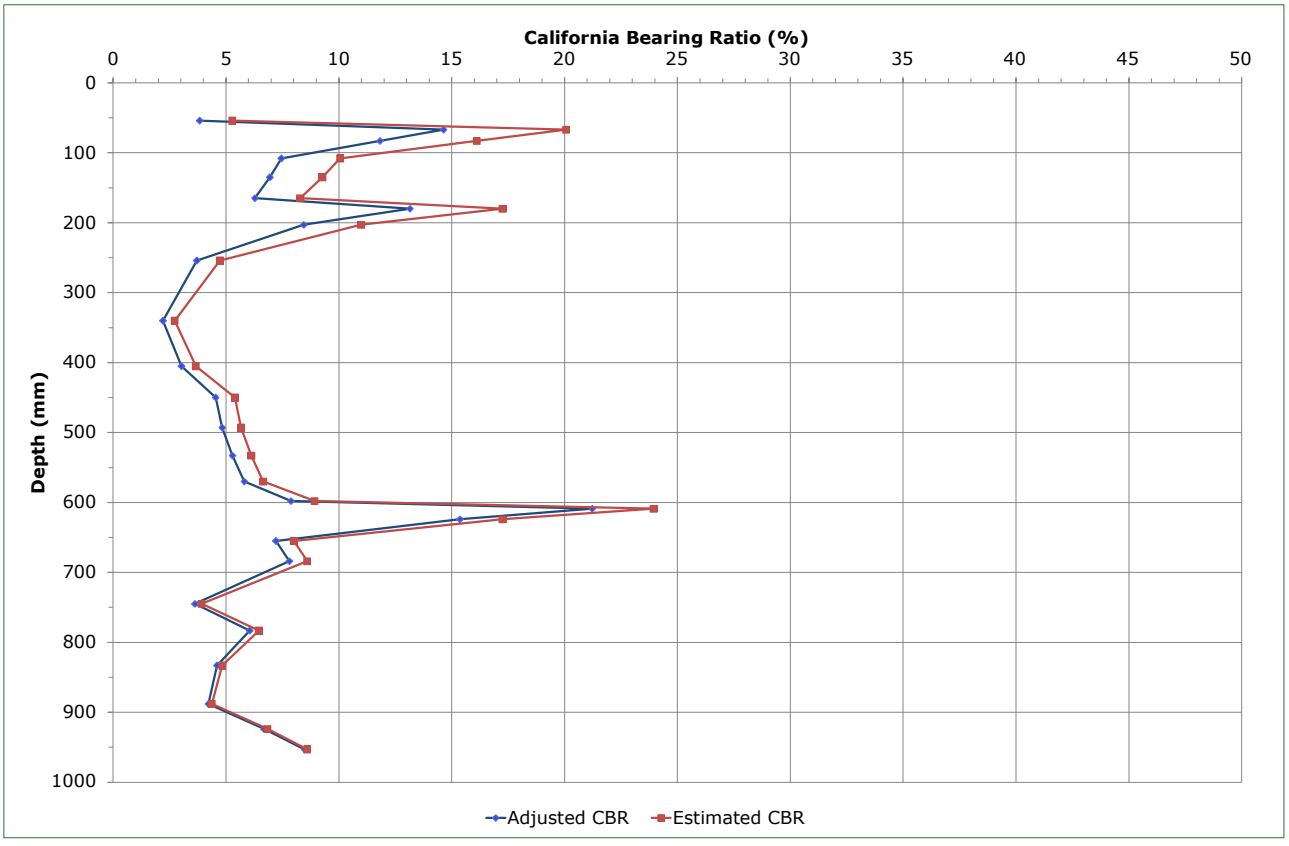
Notes:

1. CBR Value calculated using Jones C R and J Rolt (1991), "*Operating instructions for the TRL dynamic cone penetrometer*" (2nd edition). Information Note. Crowthorne: Transport Research Laboratory, as follows:

$$\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057\ \text{Log}_{10}(\text{DPI})$$

2. Adjusted CBR vaules obtined from Table 4.2 of Simon Done and Piouslin Samuel (2006), "*Measuring Road Pavement Strength and Designing Low Volume Sealed Roads using the Dynamic Cone Penetrometer*" Unpublished TRL Project Report UPR/IE/76/06 Project Record No R7783.

The CBR Adjustment Factors are applied to unpaved roads on the assumption that the effect of moisture will be a maximum at the top surface and will reduce linearly to zero at a depth of 1000 mm.



TRL Dynamic Cone Penetration Test Results

Car Park 14, Basildon

Cumulative Blow Count	Penetration (mm)	Penetration Index (DPI) mm/blow	Estimated CBR[1] (%)	Adjusted CBR[2] (%)
0	15			
1	35	20.0	12.7	9.2
2	47	12.0	21.8	15.8
3	64	17.0	15.1	11.0
4	79	15.0	17.3	12.6
5	94	15.0	17.3	12.7
6	113	19.0	13.4	10.0
7	158	45.0	5.4	4.1
8	243	85.0	2.8	2.2
9	314	71.0	3.3	2.7
10	376	62.0	3.8	3.2
11	425	49.0	4.9	4.1
12	444	19.0	13.4	11.3
13	467	23.0	11.0	9.3
14	481	14.0	18.6	15.8
15	500	19.0	13.4	11.5
16	567	67.0	3.5	3.1
17	605	38.0	6.5	5.7
18	663	58.0	4.1	3.7
19	721	58.0	4.1	3.8
20	776	55.0	4.4	4.1
21	836	60.0	4.0	3.8
22	895	59.0	4.1	3.9
23	951	56.0	4.3	4.2
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DCP03

Project:	Car Park 14, Basildon
Project No.	2009004.001
Client:	Sempra Homes Ltd
Test No.	DCP03
Test Date:	30/10/2020
Surface Moisture:	Moderate
Soil Type	Made ground (clayey gravel) over sandy clay.

Notes/Comments

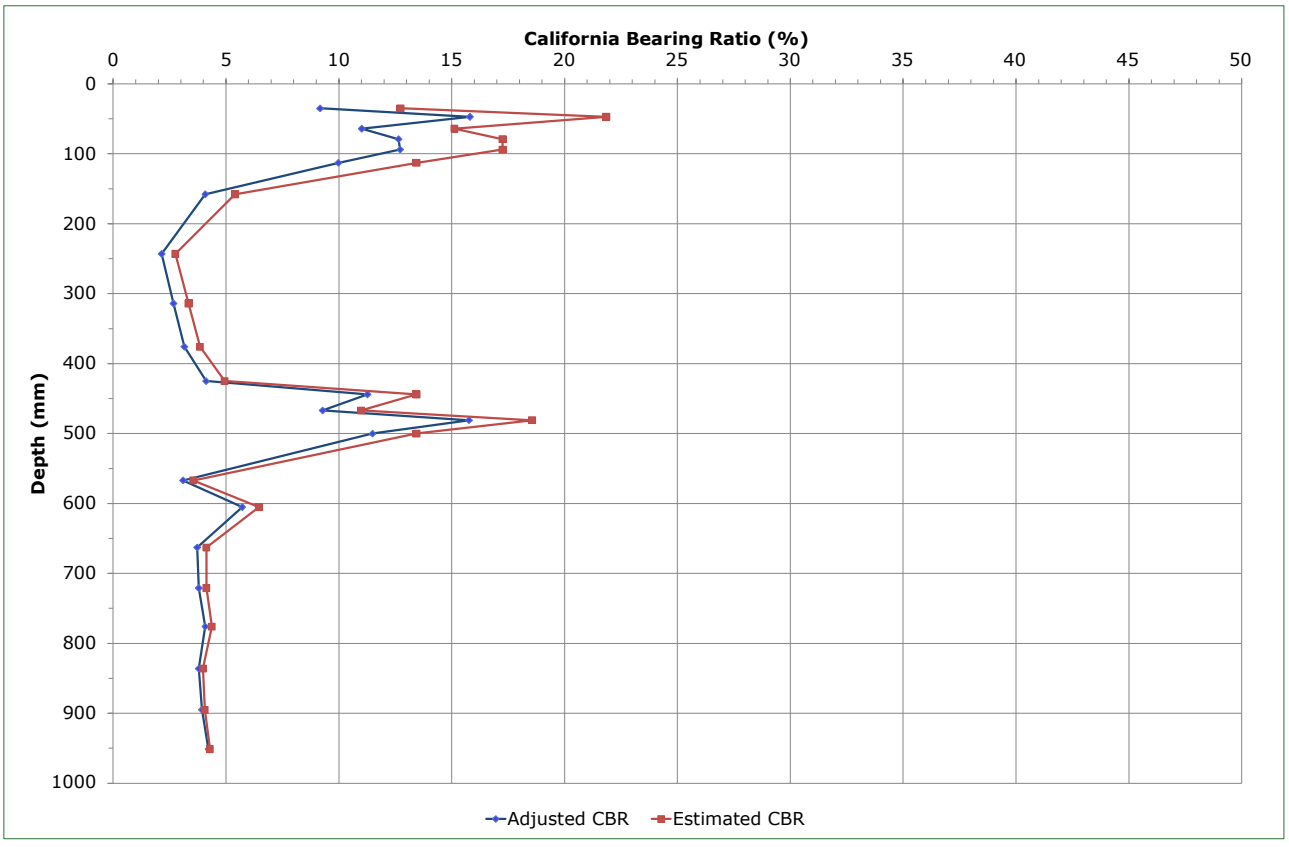
Notes:

1. CBR Value calculated using Jones C R and J Rolt (1991), "*Operating instructions for the TRL dynamic cone penetrometer*" (2nd edition). Information Note. Crowthorne: Transport Research Laboratory, as follows:

$$\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057\ \text{Log}_{10}(\text{DPI})$$

2. Adjusted CBR vaules obtined from Table 4.2 of Simon Done and Piouslin Samuel (2006), "*Measuring Road Pavement Strength and Designing Low Volume Sealed Roads using the Dynamic Cone Penetrometer*" Unpublished TRL Project Report UPR/IE/76/06 Project Record No R7783.

The CBR Adjustment Factors are applied to unpaved roads on the assumption that the effect of moisture will be a maximum at the top surface and will reduce linearly to zero at a depth of 1000 mm.



TRL Dynamic Cone Penetration Test Results

Car Park 14, Basildon

Cumulative Blow Count	Penetration (mm)	Penetration Index (DPI) mm/blow	Estimated CBR[1] (%)	Adjusted CBR[2] (%)
0	35			
1	78	43.0	5.7	4.2
2	122	44.0	5.5	4.1
3	146	24.0	10.5	7.9
4	165	19.0	13.4	10.2
5	190	25.0	10.1	7.7
6	240	50.0	4.8	3.8
7	265	25.0	10.1	7.9
8	292	27.0	9.3	7.4
9	313	21.0	12.1	9.7
10	330	17.0	15.1	12.2
11	340	10.0	26.5	21.4
12	389	49.0	4.9	4.1
13	490	101.0	2.3	2.0
14	565	75.0	3.1	2.8
15	600	35.0	7.0	6.2
16	678	78.0	3.0	2.7
17	740	62.0	3.8	3.6
18	794	54.0	4.5	4.2
19	835	41.0	6.0	5.7
20	890	55.0	4.4	4.2
21	923	33.0	7.5	7.3
22	946	23.0	11.0	10.8

DCP04

Project:	Car Park 14, Basildon
Project No.	2009004.001
Client:	Sempra Homes Ltd
Test No.	DCP04
Test Date:	30/10/2020
Surface Moisture:	Moderate
Soil Type	Made ground (clayey gravel) over sandy clay.

Notes/Comments

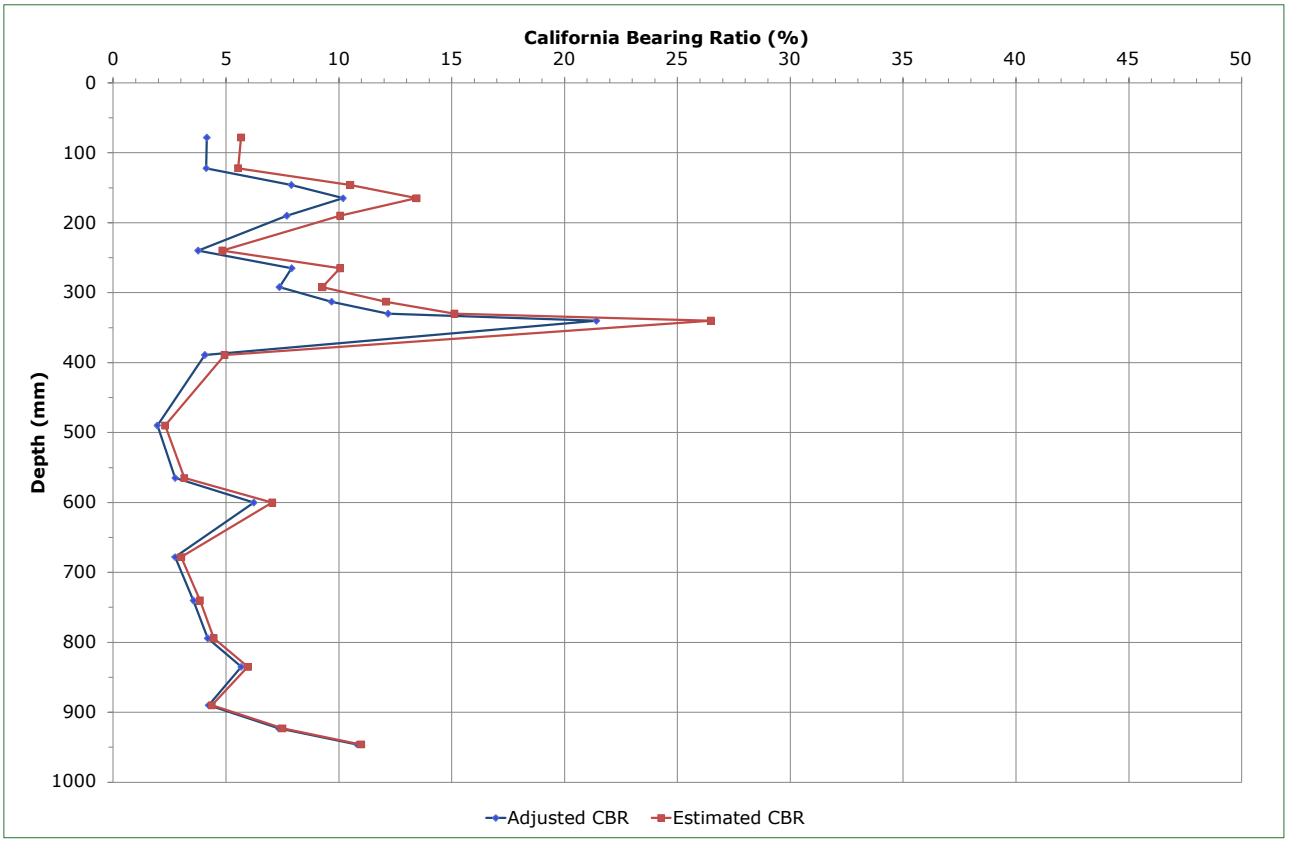
Notes:

1. CBR Value calculated using Jones C R and J Rolt (1991), "*Operating instructions for the TRL dynamic cone penetrometer*" (2nd edition). Information Note. Crowthorne: Transport Research Laboratory, as follows:

$$\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057\ \text{Log}_{10}(\text{DPI})$$

2. Adjusted CBR vaules obtined from Table 4.2 of Simon Done and Piouslin Samuel (2006), "*Measuring Road Pavement Strength and Designing Low Volume Sealed Roads using the Dynamic Cone Penetrometer*" Unpublished TRL Project Report UPR/IE/76/06 Project Record No R7783.

The CBR Adjustment Factors are applied to unpaved roads on the assumption that the effect of moisture will be a maximum at the top surface and will reduce linearly to zero at a depth of 1000 mm.



TRL Dynamic Cone Penetration Test Results

Car Park 14, Basildon

Cumulative Blow Count	Penetration *(mm)*	Penetration Index *(DPI) mm/blow*	Estimated CBR[1] (%)	Adjusted CBR[2] (%)
0	113			
1	240	127.0	1.8	1.4
2	400	160.0	1.4	1.2
3	580	180.0	1.2	1.1
4	660	80.0	2.9	2.7
5	727	67.0	3.5	3.3
6	814	87.0	2.7	2.5
7	908	94.0	2.5	2.4
8	960	52.0	4.6	4.6
9	1010	50.0	4.8	4.8
10	1034	24.0	10.5	10.6
11	1224	190.0	1.2	1.3
12	1264	40.0	6.1	6.6
13	1324	60.0	4.0	4.4
14	1379	55.0	4.4	4.8
15	1424	45.0	5.4	6.1
16	1504	80.0	2.9	3.4
17	1544	40.0	6.1	7.1
18	1594	50.0	4.8	5.7
19	1619	25.0	10.1	11.9
20	1704	85.0	2.8	3.3
21	1749	45.0	5.4	6.6
22	1784	35.0	7.0	8.6
23	1809	25.0	10.1	12.4
24	1822	13.0	20.1	24.9
25	1834	12.0	21.8	27.1
26	1847	13.0	20.1	25.0

DCP05

Project:	Car Park 14, Basildon
Project No.	2009004.001
Client:	Sempra Homes Ltd
Test No.	DCP05
Test Date:	03/11/2020
Surface Moisture:	Moderate
Soil Type	Made ground (clayey gravel) over sandy clay.

Notes/Comments

Notes:

1. CBR Value calculated using Jones C R and J Rolt (1991), "*Operating instructions for the TRL dynamic cone penetrometer*" (2nd edition). Information Note. Crowthorne: Transport Research Laboratory, as follows:

$$\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057\ \text{Log}_{10}(\text{DPI})$$

2. Adjusted CBR vaules obtined from Table 4.2 of Simon Done and Piouslin Samuel (2006), "*Measuring Road Pavement Strength and Designing Low Volume Sealed Roads using the Dynamic Cone Penetrometer*" Unpublished TRL Project Report UPR/IE/76/06 Project Record No R7783.

The CBR Adjustment Factors are applied to unpaved roads on the assumption that the effect of moisture will be a maximum at the top surface and will reduce linearly to zero at a depth of 1000 mm.