GROUND ENGINEERING
Newark Road
Peterborough PE1 5UA
Tel: 01733 566566 Fax: 01733 315280

GROUND INVESTIGATION REPORT
GREENWOOD PLACE
KENTISH TOWN
LONDON NW5
(Factual)
Report Reference No. C12974

On behalf of:-

London Borough of Camden
c/o CampbellReith
Friars Bridge Court
41-45 Blackfriars Road
London
SE1 8NZ

June 2013

LONDEN BOROUGH OF CAMDEN

CAMPBELLREITH HILL LLP

CONSULTING ENGINEERS

FACTUAL REPORT ON A GROUND INVESTIGATION

HIGHGATE AND GREENWOOD DAY CENTRES

GREENWOOD PLACE

KENTISH TOWN

LONDON NW5

Report Reference No. C12974 **June 2013**

INTRODUCTION

The London Borough of Camden, the client, intends to demolish their existing Highgate Day Centre and Greenwood Community Centre buildings, Greenwood Place, Kentish Town, London NW5, and construct two new buildings of three and six storeys in height with new access ways, cycle parking and soft landscaped areas.

Ground Engineering Limited was commissioned by the client, under the guidance of consulting engineers CampbellReith Hill LLP, the 'Engineer' to carry out a ground investigation and produce a factual report. The investigation was to determine the nature and geotechnical properties of the underlying soils in addition to environmental sampling, monitoring and analysis.

LOCATION, TOPOGRAPHY, GEOLOGY AND HYDROGEOLOGY OF THE SITE

The site is bisected by the north-west to south-east trending part of Greenwood Place and is positioned on the south-western side of Highgate Road, London NW5, approximately 200m north-west of Kentish Town London Underground railway station. The site is centred at National Grid Reference TQ 2884 8540. A site location plan is presented in Appendix 1.

The near-rectangular site has an approximately 75m long frontage along the south-western side of Highgate Road and extends to the south-west by up to 80m. Greenwood Place crosses the site near centrally in a south-east to north-west orientation, then turns to border the north-western edge of the site and forms a junction with Highgate Road to the immediate north of the site. A church, named Christ Apostolic Church, was to the immediate south-east.

At the time of the investigation the north-eastern half of the site area contained Highgate Day Centre and Lensham House. Both of these buildings were in use at the time of the investigation. Lensham House was adorned with signs marked A&A Storage and Business Centre. This building, although located within the site, does not form part of the proposed redevelopment area which it bisects. The south-western half of the site contained Greenwood Community Centre that was disused. The day centre and community centre buildings were single and two storey structures whereas Lensham House was up to three storeys high with several large metal roller shutter doors and loading bays at ground level. All three buildings were of brick construction.

A car park was positioned in the north-eastern corner of the site, associated with Highgate Day Centre. Four car parking spaces, some loading bays and motorcycle bays were positioned along the south-western side of Greenwood Place. Remaining parts of the site comprised pathways and peripheral soft landscaping.

Various immature to mature trees were located in landscaped areas along the north-eastern boundary and in the northern corner of the site including Eucalyptus, Beech, Cherry, Cotoneaster, Laburnum, Laurel and Maple. A row of mature Cypress trees was

positioned immediately beyond the southern corner of the site and along the south-western side of Greenwood Place. A small garden to the rear of Highgate Day Centre in the eastern corner of the site contained abundant Bamboo. A stand of Japanese Knotweed was to the rear of Lensham House beyond the southern corner of the site and was established behind and on top of a brick retaining wall that bordered the lower level of the Greenwood Place roadway.

Ground levels generally fell across the site towards the south-west from approximately 38mOD alongside Highgate Road, reducing to some 36.5mOD to the rear of Greenwood Community Centre. The site was largely surrounded by brick walls, some of which were retaining walls of up to 1.5m high to accommodate the change in levels between higher ground to the north-east and lower ground to the south-west.

The 1934 geological map for the area shows the site to be immediately underlain by the solid geology of the London Clay. A tributary of the River Fleet is indicated to flow towards the south-west along the north-eastern edge of the site beneath Greenwood Place and turn beneath the western corner of the site to flow towards the south. This tributary has since been apparently re-routed and culverted. Service plans provided by the Engineer include a sewer plan depicting a trunk combined sewer and a storm relief sewer flowing to the south-east of the site beneath Highgate Road.

The 2006 geological map for the area at 1:50,000 scale, Sheet 256, shows the site to be immediately underlain by the London Clay Formation, but with areas of higher ground to the north-east also indicated with a propensity for Head or 'hill wash' deposits. An area of worked ground is also marked immediately beyond the western corner or the site.

SITE WORK

The locations of the intrusive works were agreed on site with the Engineer.

The investigation was undertaken following the protocols detailed in British Standards (BS) 'Code of Practice for Site Investigations' (BS5930:1999+A2:2010) and 'Methods of test for soils for engineering purposes' (BS1377:1990). All of the intrusive works were undertaken under the supervision of a Geo-environmental Engineer. The works were carried out making due reference to generic and site specific risk assessments, and method statements. Prior to commencement of intrusive works, available statutory service plans were sourced by Ground Engineering Limited and consulted, and a cable avoidance tool (CAT) was used to confirm the absence of buried services at each exploratory hole position.

The exploratory hole positions are depicted on the site plan in Appendix 1. The working areas for two of the exploratory holes (BH2 and DCS1) comprised four parking spaces and a motorcycle bay alongside the roadway of Greenwood Place. These boreholes were undertaken under the supervision of an operative provided by Ground Engineering Limited with New Roads and Street Works Act accreditation. Parking suspensions for all four parking spaces and the motorcycle bays, a building licence and a hoarding licence were obtained by Ground Engineering Limited to facilitate the works for these areas as required by the London Borough of Camden. Traffic management with appropriate roadway works signage and temporary fences were also employed for the duration of the works where required.

The exploratory hole records are presented in Appendix 2 and give the descriptions and depths of the various strata encountered, details of all samples taken, results of the in-situ tests, installation details and the groundwater conditions observed during boring/excavation and on completion. The ground levels at each exploratory hole position were related to Ordnance Datum (OD) using levelling equipment and the National Grid co-ordinates for each position were calculated from on-site measurements, as presented on the exploratory hole records.

Cable Percussive Boreholes

Two boreholes (BH1 to BH2) were undertaken by a standard cable percussive boring rig between 29th April and 2nd May 2013. Prior to boring at each position, starter pits were dug to 1.20m below ground level using hand tools, in order to ensure the absence of buried services. Diamond drilling equipment with 200mm diameter core barrel was employed to remove the surface asphalt, near surface granite setts and concrete at the location of BH2.

The boreholes were then advanced using weighted shell and claycutter tools, initially working within 150mm diameter casing. The boreholes were completed at the intended depths of 35.00m (BH1) and 20.00m (BH2) below ground level.

Standard penetration tests were undertaken in order to give an indication of the in-situ relative density/shear strength of the soils encountered at the instructed intervals. The test was made by driving a 50mm diameter solid cone point (C) or similar diameter open shoe and split spoon sampler (S) into the soil at the base of the borehole by means of an automatic trip hammer weighing 63.50kg falling freely through 760mm. The penetration resistance was determined as the number of blows (N) required to drive the tool the final 300mm of a total penetration of 450mm into the soil ahead of the borehole. Where the full penetration was not achieved the actual penetration and the number of blows were recorded.

Undisturbed samples (U) nominally 100mm in diameter were taken in clay, using thin wall steel samplers (UT100s), at the instructed intervals. The ends of the samples were capped and sealed to maintain them in as representative condition as possible during transit to the laboratory.

Representative small (D) and bulk (B) disturbed samples of soil were taken from the boring tools at regular intervals throughout the depth of the boreholes. The supervising Geo-environmental Engineer also took environmental samples (ES) in polycarbonate pots, glass jars and vials at regular intervals within made ground and underlying naturally deposited soil.

On-site screening of soil samples was undertaken by the Geo-environmental Engineer using a photo-ionisation detector (PID). The results of the PID screening are tabulated to the rear of the exploratory hole records.

Within BH1, an indication of the shear strength of clay soils within the recovered samples to 6m depth was made using a hand shear vane (V) at regular intervals and the readings are presented on the BH1 record. A pocket penetrometer was also used to provide an indication of apparent cohesion of clay soils at regular intervals on recovered samples from BH1. These tests were not undertaken on the in-situ clay soils, and the results should only be used as a guide to the shear strength.

Samples of groundwater (W) were recovered from the boreholes once sufficient water had accumulated for collection.

On completion of the boreholes, 50mm diameter pipes were installed with gravel response zones to depths of 4.70m in BH1 and 4.15m in BH2 as instructed by the Engineer. Above this, each borehole was backfilled with bentonite. A gas tap was installed in the top of the standpipes, as instructed. A protective stopcock cover was concreted into the ground flush with the surface over each installation. Below the installations, the boreholes were backfilled with bentonite. Excess spoil was removed from site and disposed of at a licensed facility.

Window Sample Boreholes

Five window sample boreholes, DCS1, DCS2, DCS2A, DCS3 and DCS4, were undertaken by a dynamic continuous sampling rig on 29th and 30th April 2013. Prior to window sampling at each position a starter pit was dug to 1.20mbgl using hand tools in order to ensure the absence of buried services. Diamond drilling equipment with 200mm diameter core barrels was employed to remove the surface asphalt and concrete at the locations of DCS1 and DCS4. Representative small disturbed samples of soil were taken in the starter pits at regular intervals.

The window sample boreholes were then formed by a small track-mounted window sampling and super heavy dynamic probing rig. Personal gas monitors and fume

extraction equipment was employed when undertaking DCS4 that was located inside the Greenwood Community Centre Building that was a confined space.

Exploratory hole DCS2 was abandoned due to refusal in concrete at 2.22mbgl, and an alternative location, DCS2A was completed at the intended 6.00m depth, as were DCS1, DCS3 and DCS4. Casing was installed to 4.00mbgl in DCS1 to maintain the hole sidewalls.

The window sampling equipment consisted of drive-in sample tubes of specially constructed and strengthened steel, lined with a plastic core-liner. The barrels were initially of 87mm internal diameter and were reduced in diameter with successive barrels with increasing depth. Upon extraction, a continuous profile of the soil was obtained within the plastic liners.

Standard penetration tests (SPTs) were undertaken at regular intervals in order to give an indication of the in-situ density or strength of the material. Each test was made by driving a 50mm diameter split spoon sampler into the soil at the base of the borehole by means of an automatic trip hammer weighing 63.50kg falling freely through 750mm. The penetration resistance was determined as the number of blows 'N' required to drive the tool the final 300mm of a total penetration of 450mm into the soil ahead of the window sample hole. In coarse or hard soils, the split tube sampler (SPT(S)) was replaced by a 60° apex cone (SPT(C)). The SPT results are tabulated to the rear of the exploratory hole records.

The plastic liners recovered from the window sample boreholes were logged and sampled on-site by a supervising Geo-environmental Engineer. Representative small disturbed (D) samples of soil were taken at regular intervals throughout the depth of each borehole. Environmental samples (ES) were taken in polycarbonate pots and glass jars at regular intervals within made ground and into the top layer of underlying naturally deposited soils.

On-site screening of soil samples was undertaken by the Geo-environmental Engineer using a photo-ionisation detector (PID). The results of the PID screening are tabulated to the rear of the exploratory hole records.

An indication of the shear strength of clay soils within the recovered liners was made using a hand shear vane (V) at regular intervals and the readings are presented on the window sample hole records. A pocket penetrometer was also used to provide an indication of

apparent cohesion of clay soils at regular intervals in DCS1, DCS3 and DCS4. These tests were not undertaken on the in-situ clay soils, and the results should only be used as a guide to the shear strength.

On completion 50mm diameter standpipes were installed to depths of 3.00m in DCS1; 2.00m in DCS2A and DCS4; and 1.00m in DCS3, for future gas and groundwater monitoring. The standpipes were slotted to within 1.00m depth (DCS1, DCS2A and DCS4) or 0.60m depth (DCS3) and surrounded with a pea gravel annulus. A bentonite seal was placed above the pea gravel annulus, a gas tap inserted and a protective steel stopcock cover concreted in place at ground level.

Monitoring

Four return visits were made on 13th, 20th, 29th May and 3rd June 2013 to monitor methane, carbon dioxide and oxygen gas levels in the standpipes using a GasData GFM 430 series gas monitor. Ambient pressures and flow rates were recorded together with the depth to groundwater. A photo-ionisation detector (PID) was used to monitor for volatile organic compounds (VOCs). Groundwater samples were obtained where possible from each standpipe during each visit and were sealed within 1 litre glass bottles. Due to vehicles obstructing the location of BH2 during these four visits, additional visits were undertaken for the BH2 standpipe that was successfully monitored on 13th June 2013. The results of all monitoring visits monitoring are presented in Appendix 3.

LABORATORY TESTING

The samples were inspected in the laboratory and assessments of the soil characteristics have been taken into account during preparation of the exploratory hole records. The soils have been described in accordance with BS5930:1999+A2:2010. The geotechnical and chemical testing schedules were devised by the Engineer. The testing was completed within UKAS accredited laboratories.

The geotechnical test results are presented in Appendix 4 whilst the results of the chemical tests and gas sample tests are presented in Appendix 5.

Geotechnical Laboratory Testing

The samples recovered from the exploratory holes were tested in accordance with the recommendations of British Standard BS1377:1990 'Methods of tests for soils for civil engineering purposes'.

The moisture contents and index properties of selected soil samples were determined as a guide to soil classification and behaviour. The liquid limit was determined by a cone penetrometer.

The particle size distribution of a selected sample was obtained by wet sieve analysis and sedimentation by pipette. The results of this tests are given as combined particle size distribution curve.

The particle size distribution of a selected sample was determined by wet sieve analysis. The results of this test is given as a particle size distribution curve.

Immediate undrained triaxial compression tests were made on selected undisturbed samples at single confining cell pressures specified by the Engineer. The moisture content and bulk density of the specimens were also determined. A single undisturbed sample of fissured clay fragmented on extrusion in the laboratory and the recovered specimen was not suitable for triaxial testing. A hand shear vane test was undertaken as an alternative and the result, taken as an average of three readings, is presented in the summary table.

Selected samples of soil and water were analysed to determine the concentration of soluble sulphates. The pH values were determined using an electrometric method. Selected samples of soil were also tested for total sulphur and acid soluble sulphate. The testing was undertaken using the methods prescribed in BRE Digest SD1 (2005).

Chemical Laboratory Testing

The UKAS MCERTs accredited laboratory, Chemtest, was used for the analysis of soil samples recovered during the site work.

Twelve soil samples were tested for a suite that included arsenic, cadmium, chromium, copper, nickel, lead, mercury, selenium, zinc, moisture content, speciated PAH (16 plus benzo[j]fluoranthene), gasoline range organics (>C6-C10), extractable petroleum hydrocarbons (>C10-C25 and >C25-C40), sulphate (total), sulphide, phenols monohydric (total of phenol, cresol and xylenol), total cyanide and pH. A single sample was separately tested for speciated PAH.

Eleven soil samples were screened for the presence of asbestos. Four soil samples were tested for speciated TPH CWG, three soil samples were tested for total organic carbon and three soil samples were tested for the fraction of organic carbon.

Selected water samples were tested for a suite that included arsenic, cadmium, chromium, copper, nickel, lead, mercury, selenium, zinc, hexavalent chromium, total cyanide, free cyanide, thiocyanate, total PAH, total TPH, total phenol, soluble sulphate, sulphide, free sulphur and pH. These samples were also tested for speciated TPH CWG and VOCs.

GROUND ENGINEERING LIMITED

J. E. M. DAVIES
B.Sc. (Hons.), M.Sc.,
C.Geol., F.G.S.,
Senior Geotechnical Engineer

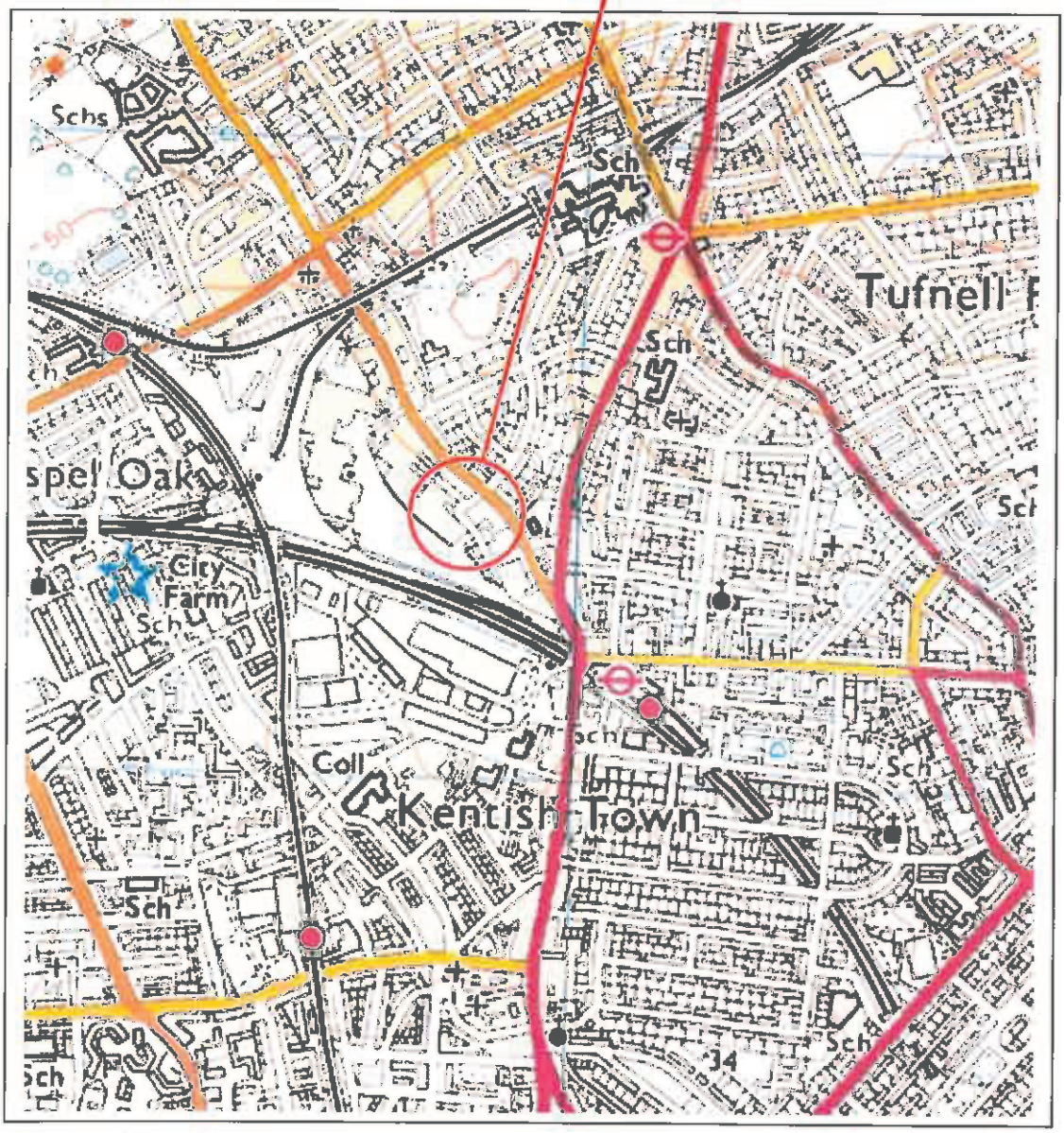
C. M. J. EBELING
M.Sc.(Eng.), M.A.E.G.,
C.Geol., F.G.S.,
Director

Appendix 1

Site Location Plan

Exploratory Hole Location Plan

Site Location Plan

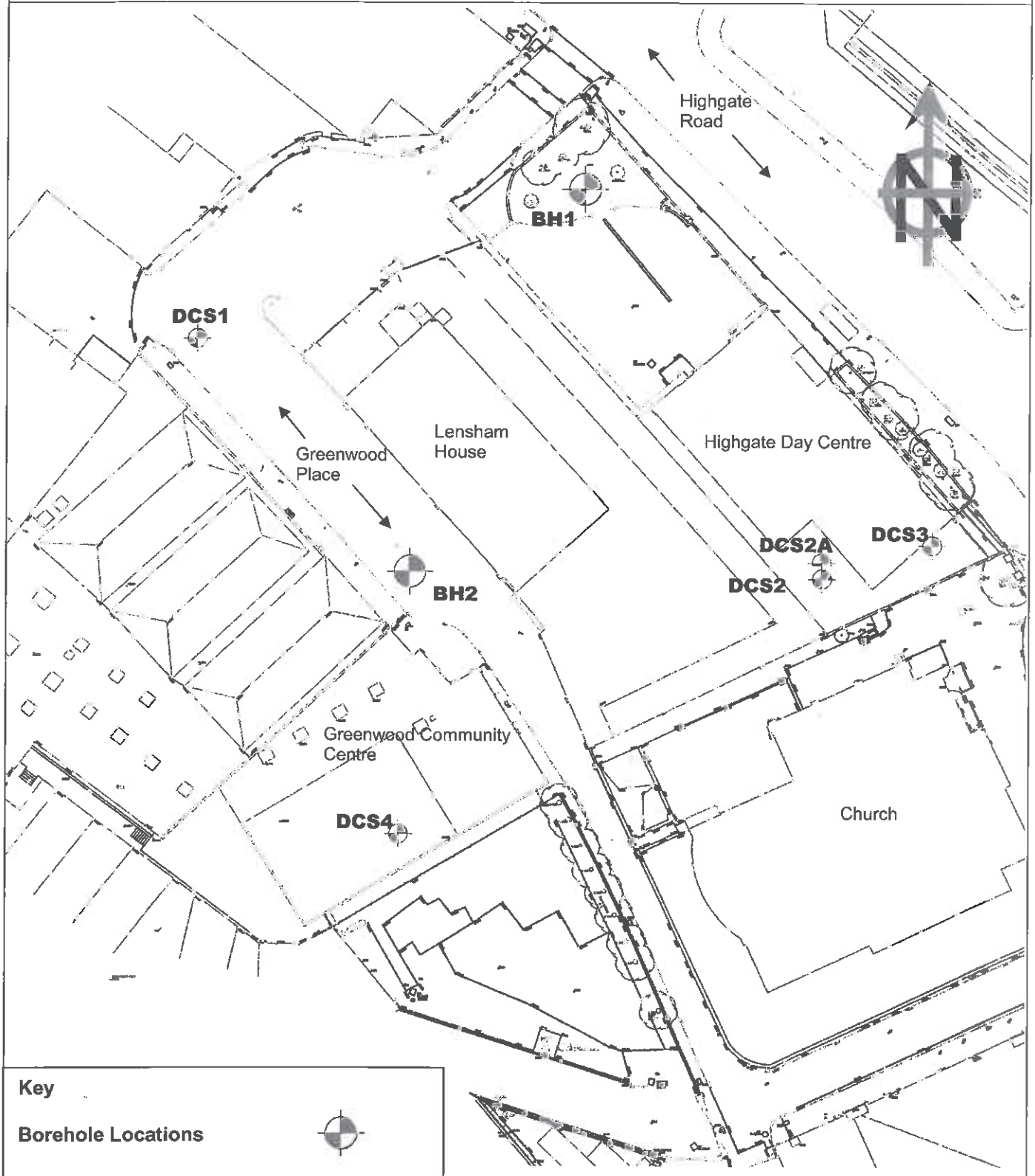


Not to Scale

Project : Greenwood Place, London NW5 **Client : London Borough of Camden**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No. C12974**

Exploratory Hole Location Plan

Taken from plan provided by the engineer



Key

Borehole Locations

Window Sample Hole Locations

Not to Scale

Project : Greenwood Place, London NW5 **Client : London Borough of Camden**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No. C12974**

Appendix 2

Exploratory Hole Records

Results of On-site PID Screening

GROUND ENGINEERING LIMITED

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www.groundengineering.co.uk

Site: GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

BOREHOLE BH1

Date: 29/04/13 to 30/04/13

Hole Size: 150mm dia to 35.00m

528855 mE 185432 mN
Ground Level: 36.90m. O.D.

Samples and in-situ Tests			(Date) Casing	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Blows						
0.10	D1				MADE GROUND - Firm, friable, brown, slightly sandy, gravelly CLAY. Gravel consists of angular to rounded brick, flint, concrete, slate, coal, ash and rare smoker's pipe fragments.		0.25	36.65
0.10	ES1							
0.50-1.00	B1							
0.50	D2							
0.50	ES2							
1.10	D3				MADE GROUND - Firm, friable, dark brown, slightly sandy, gravelly CLAY with occasional brick cobbles. Gravel consists of angular to rounded brick, flint, concrete, slate, ash and coal. Occasional brown asbestos fragments at 0.50m depth.		1.10	35.80
1.20-1.60	U1	30	1.20					
1.20	PP1	(1.50)						
1.20	V1	(81)						
1.35	ES3							
1.70	D4							
1.70	PP2	(0.50)						
1.70	V2	(23)						
1.80	ES4							
1.95	D5							
2.20	PP3	(0.25)	1.50		MADE GROUND - Firm, locally stiff, becoming soft below 1.55m, brown, orange brown and grey mottled, slightly sandy, slightly gravelly CLAY. Gravel of angular brick, coal, flint and ash.			
2.20	V3	(34)		▼s				
2.35-2.65	S	N9		▼s				
2.45	D6							
2.60	ES5							
2.70	PP4	(1.50)					2.40	34.50
2.70	V4	(91)			Firm, becoming stiff, brown, orange brown and grey mottled gravelly CLAY. Gravel of rounded flint and quartzite.			
2.95	D7		1.50					
3.20-3.60	U2	30					3.15	33.75
3.20	PP5	(1.75)		▼s	Firm, becoming stiff below 4.00m depth, fissured, brown and grey mottled CLAY with occasional sand size selenite crystals and orange brown silt partings.			
3.20	V5	(66)						
3.40	ES6			▼s				
3.70	D8							
3.70	PP6	(1.75)						
3.70	V6	(72)						
3.95	D9							
4.20	V7	(96)	1.50					
4.20	PP7	(2.00)						
4.35-4.65	S	N11						
4.65	D10							
4.70	PP8	(2.00)						
4.70	V8	(125)						
4.95	D11							
5.20-5.60	U3	35	1.50					
5.20	PP9	(2.25)						
5.20	V9	(124)						
5.70	D12							
5.70	PP10	(2.75)						
5.70	V10	(108)						
5.95	D13							
6.35-6.65	S	N15	1.50					
6.65	D14							
7.20-7.60	U4	35	1.50					
7.70	D15							
8.35-8.45	S	N18	1.50					
8.65	D16							
9.20-9.60	U5	45	1.50					
9.70	D17				Very stiff, fissured, brown grey CLAY with occasional grey silt partings and rare gravel size pyrite nodules.		9.70	27.20
10.00	ES7						10.00	26.90

REMARKS
1. Excavating a pit from 0.00m to 1.20m
2. Live roots observed to 2.70m depth
3. Borehole cased to 1.50m depth
4. Gas monitoring standpipe installed to 4.70m depth
5. PP = Pocket Penetrometer reading (Kg/cm2)
6. ES = Environmental Sample

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KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
S/C - SPT Spoon/Cone
▽ Water Strike
▼ Water Rise
N - SPT Blows for 0.3m
* - Blows for quoted penetration
V - Vane Shear Test Cohesion ( ) kPa
▽c Level on completion
c▽w Level casing withdrawn
▼s Standpipe Level

Groundwater Strikes

No	Struck	Rose to	Depth m Rate	Cased	Sealed

Groundwater Observations

Date	Depth m Hole	Casing	Water
29/04/13	14.15	1.50	dry
30/04/13	14.15	1.50	dry
30/04/13	35.00	1.50	dry
30/04/13	35.00	0.00	dry
13/05/13	4.70		3.75

GROUND ENGINEERING LIMITED

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Site: GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

BOREHOLE
BH1

Date: 29/04/13 to 30/04/13

Hole Size: 150mm dia to 35.00m

528855 mE 185432 mN
Ground Level: 36.90m. O.D.

Samples and in-situ Tests			(Date) Casing	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Blows						
10.20	D18				Very stiff, fissured, brown grey CLAY with occasional grey silt partings and rare gravel size pyrite nodules.		10.00	26.90
10.85-11.15	S	N24	1.50					
11.15	D19							
11.70	D20							
12.20-12.30	U6	60	1.50		...Concretionary limestone nodule at 12.30m to 12.45m depth.			
12.40 12.50	D21 D22							
13.20	D23							
13.85-14.15	S	N33	1.50					
14.15	D24							
14.70	D25							
15.20-15.60	U7	45	1.50					
15.70	D26							
16.20	D27							
16.85-17.15	S	N36	1.50					
17.15	D28							
17.70	D29				...Becoming hard below 18.00m depth.			
18.20-18.60	U8	50	1.50					
18.70	D30							
19.20	D31							
19.85-20.15	S	N38	1.50				20.00	16.90

REMARKS

Project No 12974

Scale 1:50 | Page 2/4

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N - SPT Blows for 0.3m
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V - Vane Shear Test Cohesion ( ) kPa
▼c Level on completion
c▼w Level casing withdrawn
▼s Standpipe Level

Groundwater Strikes

No	Depth m Struck	Rose to	Rate	Cased	Sealed

Groundwater Observations

Date	Depth m Hole	Casing	Water
20/05/13	4.70		3.49
29/05/13	4.70		2.72
03/06/13	4.70		2.56

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BOREHOLE
BH1

Date: 29/04/13 to 30/04/13

Hole Size: 150mm dia to 35.00m

528855 mE 185432 mN
Ground Level: 36.90m. O.D.

Samples and in-situ Tests			(Date) Casing	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Blows						
20.15	D32				Hard, fissured, brown grey CLAY with occasional grey silt partings and rare gravel size pyrite nodules.		20.00	16.90
20.70	D33							
21.20-21.60	U9	55	1.50					
21.70	D34							
22.20	D35							
22.85-23.15	S	N37	1.50					
23.15	D36							
23.70	D37							
24.20-24.60	U10	55	1.50					
24.70	D38							
25.20	D39							
25.85-26.15	S	N39	1.50					
26.15	D40							
26.70	D41							
27.20-27.60	U11	65	1.50					
27.70	D42							
28.20	D43							
28.85-29.15	S	N41	1.50					
29.15	D44							
29.70	D45						30.00	6.90

REMARKS

Project No
12974

Scale 1:50 | Page 3/4

KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
S/C - SPT Spoon/Cone
▽ Water Strike
▼ Water Rise
N - SPT Blows for 0.3m
* - Blows for quoted penetration
V - Vane Shear Test Cohesion ( ) kPa
▼c Level on completion
c▼w Level casing withdrawn
▼s Standpipe Level

Groundwater Strikes					
	Depth m				
No	Struck	Rose to	Rate	Cased	Sealed

Groundwater Observations			
	Depth m		
Date	Hole	Casing	Water

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Site: GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

BOREHOLE
BH1

Date: 29/04/13 to 30/04/13

Hole Size: 150mm dia to 35.00m

528855 mE 185432 mN
Ground Level: 36.90m. O.D.

Samples and in-situ Tests			(Date) Casing	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Blows						
30.20-30.60	U12	75	1.50		Hard, fissured, brown grey CLAY with occasional grey silt partings and rare gravel size pyrite nodules.		30.00	6.90
30.70	D46							
31.20	D47							
31.85-32.15	S	N47	1.50					
32.15	D48							
32.70	D49							
33.20-33.60	U13	75	1.50					
33.70	D50							
34.20	D51							
34.65-34.95	S	N53	1.50					
34.95	D52						35.00	1.90
					Borehole completed at 35.00m depth			

REMARKS

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12974

Scale 1:50 | Page 4/4

KEY

- D - Disturbed Sample
- B - Bulk Sample
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- W - Water Sample
- S/C - SPT Spoon/Cone
- ▽ Water Strike
- ▼ Water Rise
- N - SPT Blows for 0.3m
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- V - Vane Shear Test Cohesion ( ) kPa
- ▼c Level on completion
- c▼w Level casing withdrawn
- ▼s Standpipe Level

Groundwater Strikes						Groundwater Observations			
	Depth m						Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water

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Site: GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

BOREHOLE **BH2**

Date: 01/05/13 to 02/05/13

Hole Size: 200mm dia to 0.42m
150mm dia to 20.00m

528836 mE 185390 mN
Ground Level: 36.55m. O.D.

Samples and in-situ Tests			(Date) Casing	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Blows						
					MADE GROUND - ASPHALT.		0.05	36.50
					MADE GROUND - GRANITE SETTS in concrete.		0.25	36.30
					MADE GROUND - CONCRETE.		0.42	36.13
0.67	ES1				MADE GROUND - Very soft, brown, slightly sandy, very gravelly CLAY. Gravel consists of angular to sub-rounded brick, concrete, ceramic, shell fragments and ash.			
1.00	ES2						1.00	35.55
1.20-1.70	B1				MADE GROUND - Very soft, grey, slightly gravelly, sandy, organic CLAY. Gravel consists of angular to sub-rounded brick, flint and ash. Occasional black organic patches.			
1.20	ES3		1.20					
1.35-1.65	C	N2		▼s				
1.50	ES4							
1.70	D1							
1.80-2.30	B2							
1.95-2.25	S	N3	1.50					
2.25	D2							
2.40	ES5							
2.55	D3							
2.60	D4		2.70	1 ▼				
2.70-3.10	U1	25						
				1 ▽			3.10	33.45
3.20-3.70	B3				Medium dense, brown, slightly clayey, very sandy GRAVEL. Gravel consists of sub-angular to rounded flint.			
3.35-3.65	C	N15	3.00					
3.35	ES6							
3.70	D5						3.70	32.85
3.80-4.20	U2	25	3.80		Firm, brown, orange brown and grey mottled, gravelly CLAY. Gravel consists of angular to rounded flint.			
3.95	ES7						4.15	32.40
4.30	D6				Stiff, fissured, brown and grey mottled CLAY with occasional sand size selenite crystals and orange brown silt partings.			
4.40	ES8							
4.55	D7							
4.95-5.25	S	N11	4.20					
5.25	D8							
5.55	D9							
5.80-5.20	U3	30	4.20					
6.30	D10							
6.80	D11							
7.45-7.75	S	N14	4.20					
7.75	D12							
8.30	D13							
8.80-9.20	U4	35	4.20					
9.30	D14							
9.80	D15						10.00	26.55

REMARKS
1. Excavating a pit from 0.00m to 1.20m
2. Borehole cased to 4.15m depth
3. Gas monitoring standpipe installed to 4.15m depth
4. ES = Environmental Sample

Project No 12974

Scale 1:50 | Page 1/2

KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
S/C - SPT Spoon/Cone
▽ Water Strike
▼ Water Rise
N - SPT Blows for 0.3m
* - Blows for quoted penetration
V - Vane Shear Test Cohesion ( ) kPa
▼c Level on completion
c▼w Level casing withdrawn
▼s Standpipe Level

Groundwater Strikes

No	Depth m Struck	Rose to	Rate	Cased	Sealed
1	3.10	2.70	very slow seepage	4.20	3.70
2	0.00				

Groundwater Observations

Date	Depth m Hole	Casing	Water
01/05/13	15.30	4.20	dry
02/05/13	15.30	4.20	dry
02/05/13	20.00	4.20	dry
02/05/13	20.00	0.00	dry
13/05/13	4.50		-

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Site: GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

BOREHOLE
BH2

Date: 01/05/13 to 02/05/13

Hole Size: 200mm dia to 0.42m
150mm dia to 20.00m

528836 mE 185390 mN
Ground Level: 36.55m. O.D.

Samples and in-situ Tests			(Date) Casing	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Blows						
					Stiff, fissured, brown and grey mottled CLAY with occasional sand size selenite crystals and orange brown silt partings.		10.00	26.55
10.45-10.75	S	N15	4.20					
10.75	D16							
					Very stiff, fissured, locally fissured to stiff, brown, grey CLAY with occasional grey silt partings and rare gravel size pyrite nodules.		11.00	25.55
11.30	D17							
11.80-12.20	U5	50	4.20					
12.30	D18							
12.80	D19							
13.45-13.75	S	N34	4.20					
13.75	D20							
14.30	D21							
14.80-15.20	U6	50	4.20					
15.30	D22							
15.80	D23							
16.45-16.75	S	N36	14.20					
16.65	D24							
17.30	D25							
17.80-18.20	U7	55	4.20					
18.30	D26							
18.65-18.95	S	N38	14.20					
18.95	D27							
19.50-19.90	U8	55	4.20					
19.95	D28						20.00	16.55

REMARKS

Borehole completed at 20.00m depth

Project No
12974

Scale 1:50

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KEY

- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- W - Water Sample
- S/C - SPT Spoon/Cone
- ▽ Water Strike
- ▼ Water Rise
- N - SPT Blows for 0.3m
- * - Blows for quoted penetration
- V - Vane Shear Test Cohesion ( ) kPa
- ▽c Level on completion
- c▽w Level casing withdrawn
- ▽s Standpipe Level

Groundwater Strikes

No	Struck	Rose to	Depth m Rate	Cased	Sealed

Groundwater Observations

Date	Depth m Hole	Casing	Water
20/05/13	4.50		-
29/05/13	4.50		-
03/06/13	4.50		-
13/06/13	4.50		1.53

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Site: GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

WINDOW SAMPLE
DCS1

Date: 30/04/13

Hole Size: 87mm dia to 2.00m
67mm dia to 4.00m
57mm dia to 6.00m

528813 mE 185416 mN
Ground Level: 36.50m. O.D.

Samples and in-situ Tests			(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result						
					MADE GROUND - ASPHALT.		0.05	36.45
					MADE GROUND - GRANITE SETTS in concrete.		0.24	36.26
					MADE GROUND - CONCRETE.		0.39	36.11
0.50	D1				MADE GROUND - Brown and grey mottled, slightly clayey, sandy GRAVEL. Gravel consists of angular to sub-angular concrete, brick and ash.		0.65	35.85
0.52	ES1							
0.90	D2				MADE GROUND - Very soft, locally firm brown, orange brown and dark brown mottled, slightly sandy, gravelly CLAY. Gravel consists of angular to sub-rounded concrete, brick, coal, ceramic and ash.			
0.90	ES2							
1.20	D3		▼s					
1.20-2.00	U1		▼s					
1.20	ES3							
1.35-1.65	S	N3						
1.40	V1	(49)						
1.40	PP1	(0.25)						
1.50	ES5				...Becoming organic below 2.00m depth.			
1.80	U1A							
1.90	V2	(7)						
2.00	D4							
2.00-3.00	U2							
1.90	PP2	(0.25)						
2.15-2.45	S	N2						
2.30	ES6							
3.00	D5			1 ▽				
3.00-4.00	U3						3.10	33.40
3.15-3.45	S	N7	3.00		Firm, becoming stiff, brown, orange brown and grey mottled CLAY with occasional orange brown silt partings and gravel size calcareous concretions.			
3.15	U3A							
3.30	PP3	(1.50)						
3.30	V3	(54)						
3.40	V4	(88)						
3.35	ES7							
3.55-3.75	U3B							
3.80	PP4	(1.50)						
4.00	D6		4.00				4.20	32.30
4.00-5.00	U4				Firm, locally stiff, fissured, brown and grey mottled CLAY with occasional orange brown silt partings and sand size selenite crystals from 4.55m depth.			
3.80	V4	(88)						
3.90	U3C							
4.15-4.45	S	N10						
4.30	PP5	(1.75)					4.80	31.70
4.30	V5	(71)						
4.40	U4A				Stiff, fissured, brown CLAY with orange brown stains and occasional sand size selenite crystals. Concretionary limestone nodule at 5.63m-5.66m depth.			
4.60-4.80	U4B		4.00					
4.80	PP6	(2.25)						
4.80	V6	(102)						
5.00	D7							
5.00-6.00	U5							
4.90	U4C							
5.15-5.45	S	N17					6.00	30.50
5.30	U5A							
5.30	PP7	(2.25)	4.00		Hole completed at 6.00m depth			
5.30	V7	(101)						
5.60	U5B							
5.70-5.95	U5C							
5.95	V8	(98)						
6.00	D8							
5.95	PP8	(2.75)						
6.15-6.45	S	N18						

REMARKS
1. Starter pit excavated from GL to 1.20m depth (Diamond cored 200mm diameter to 0.39m depth)
2. No live roots observed, dead roots observed to 4.20m depth
3. Hole cased to 4.00m depth
4. Gas monitoring standpipe installed to 3.00m depth
5. PP = Pocket Penetrometer reading (Kg/cm2)
6. ES - Enviromental Sample

Project No 12974

Scale 1:50 | Page 1/1

KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▽ Water Strike
▼ Depth to Water on completion
J - Jar Sample
M - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▼s Standpipe Level

Groundwater Strikes

No	Struck	Rose to	Rate	Cased	Sealed
	Depth m				
1	3.00				

Groundwater Observations

Date	Depth m Hole	Casing	Water
13/05/13	3.00		dry
20/05/13	3.00		1.34
29/05/13	3.00		1.21
03/06/13	3.00		-

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Site: GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

WINDOW SAMPLE
DCS2

Date: 29/04/13

Hole Size: 87mm dia to 2.00m
77mm dia to 2.22m

528880 mE 185394 mN
Ground Level: 37.50m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
				MADE GROUND - CONCRETE paving slab.		0.05	37.45
				MADE GROUND - CONCRETE.		0.10	37.40
				MADE GROUND - Orange brown, silty, gravelly SAND. Gravel consists of sub-angular to rounded flint.		0.24	37.26
0.40	D1			MADE GROUND - Soft, locally firm, brown and grey, mottled, slightly sandy, gravelly CLAY. Gravel consists of angular to sub-rounded concrete, brick, ironstone, metal, coal, flint and ash.			
0.40	ES1						
0.50	V1	(28)					
0.70	D2						
0.70	ES2						
1.00	D3						
1.00	V2	(41)					
1.00	ES3						
1.20	D4						
1.20-2.00	U1						
1.30	ES4						
1.50	V3	(31)					
1.85	ES5					2.20	35.30
				MADE GROUND - CONCRETE.		2.22	35.28
				Hole abandoned at 2.22m depth			

REMARKS
1. Starter pit excavated from GL to 1.20m depth
2. No live roots observed
3. Hole sides stable
4. Concrete obstruction at 2.22m depth
5. ES = Environmental Sample

Project No 12974

Scale 1:50

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KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▽ Water Strike
▼ Depth to Water on completion
J - Jar Sample
M - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▼s Standpipe Level

Groundwater Strikes						Groundwater Observations			
	Depth m						Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
						02/05/13	2.22		dry

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Site: GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

WINDOW SAMPLE
DCS2A

Date: 29/04/13

Hole Size: 87mm dia to 2.00m
77mm dia to 3.00m
57mm dia to 6.00m

528880 mE 185395 mN
Ground Level: 37.50m. O.D.

Samples and in-situ Tests			(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result						
					MADE GROUND - CONCRETE paving slab.		0.05	37.45
0.28	ES1				MADE GROUND - CONCRETE.		0.09	37.41
0.30	D1				MADE GROUND - Orange brown, slightly gravelly SAND. Gravel consists of angular to sub-rounded flint.		0.16	37.34
0.60	D2				MADE GROUND - Dark brown, slightly clayey SAND AND GRAVEL with occasional cobbles of brick. Gravel consists of angular to sub-rounded brick, concrete and ash.		0.40	37.10
0.65	ES2							
1.00	D3							
1.00	ES3							
1.20	D4				MADE GROUND - Firm, brown, slightly sandy, gravelly CLAY with occasional cobbles of brick and concrete. Gravel consists of angular to sub-rounded brick, concrete, flint and ash.		1.25	36.25
1.20-1.80	U1							
1.50	ES4							
1.50	V1	(52)						
1.80-2.00	U2				Firm, brown, orange brown and grey mottled CLAY with occasional orange brown silt partings and gravel size calcareous concretions.			
2.00	D5							
2.00-3.00	U3							
2.00	V2	(55)						
2.05	ES5							
2.15-2.45	S	N10						
2.50	D6							
2.50	V3	(61)						
2.60-2.85	U4							
2.90	D7							
3.00-4.00	U5							
3.00	V4	(60)					3.20	34.30
3.00	D8				Stiff, fissured, brown and grey mottled CLAY with occasional sand size selenite crystals and orange brown silt partings.			
3.15-3.45	S	N9						
3.40	D9							
3.50	V5	(78)						
3.60-3.90	U6							
3.95	D10							
4.00-5.00	U7							
4.00	V6	(86)						
4.00	D11							
4.15-4.45	S	N12						
4.30	D12							
4.50-4.70	U8							
4.50	V7	(104)						
4.85	D13							
5.00	D14							
5.00-6.00	U9							
5.00	V8	(96)						
5.15-5.45	S	N18						
5.20	D15							
5.40	D16							
5.50	V9	(98)						
5.60-5.90	U10						6.00	31.50
5.95	D17							
6.00	V10	(102)			Hole completed at 6.00m depth			
6.00	D18							
6.15-6.45	S	N21						

REMARKS
1. Starter pit excavated from GL to 1.20m depth
2. Live roots observed to 1.25m depth
3. Hole sides stable
4. Gas monitoring standpipe installed to 2.00m depth
5. ES = Environmental Sample

Project No 12974

Scale 1:50 | Page 1/1

KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▽ Water Strike
▼ Depth to Water on completion
J - Jar Sample
M - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▽s Standpipe Level

Groundwater Strikes

No	Depth m Struck	Rose to	Rate	Cased	Sealed

Groundwater Observations

Date	Depth m Hole	Casing	Water
29/04/13	6.00		dry
13/05/13	2.00		dry
20/05/13	2.00		dry
29/05/13	2.00		dry
03/06/13	2.00		dry

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Site: GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

WINDOW SAMPLE
DCS3

Date: 30/04/13

Hole Size: 87mm dia to 2.00m
77mm dia to 3.00m
57mm dia to 6.00m

528891 mE 185394 mN
Ground Level: 37.50m. O.D.

Samples and in-situ Tests			(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result						
					MADE GROUND - CONCRETE paving slab.		0.05	37.45
0.30	D1				MADE GROUND - Brown and orange brown, gravelly SAND. Gravel consists of angular to sub-rounded concrete and flint.		0.30	37.20
0.30	ES1							
0.60	D2				MADE GROUND - Soft, dark brown, slightly sandy, gravelly CLAY. Gravel consists of angular to sub-rounded concrete, brick, flint, metal, ceramic and ash.		0.70	36.80
0.60	ES2							
0.90	D3							
0.90	ES3				MADE GROUND - Brown and dark brown, silty SAND AND GRAVEL. Gravel consists of angular to sub-rounded brick, concrete, coal, ash, flint and glass.		1.10	36.40
1.20	D4							
1.20-2.00	U1				Firm, brown and grey mottled CLAY with occasional calcareous concretions and orange brown silt partings.			
1.20	PP1	(0.75)						
1.20	V1	(51)						
1.35-1.65	S	N4						
1.35	ES4							
1.50	U1A							
1.65-1.95	U1B						2.00	35.50
1.95	V2	(75)			Stiff, fissured, brown and grey mottled CLAY with occasional sand size selenite crystals and orange brown silt partings.			
2.00	D5							
2.00-3.00	U2							
1.95	PP2	(1.25)						
2.15-2.45	S	N11			...Concretionary limestone nodule at 2.85m depth			
2.30	U1							
2.30	PP3	(1.75)						
2.50-2.70	U2A							
2.80	U2B							
2.80	PP4	(1.75)						
3.00	D6							
3.00-4.00	U3							
3.15-3.45	S	N13						
3.30	U3A							
3.30	V5	(79)						
3.30	PP5	(1.75)						
3.60-3.80	U3B							
3.90	U3C							
4.00	D7							
4.00-5.00	U4							
3.90	V6	(86)						
3.90	PP6	(2.00)						
4.15-4.45	S	N16						
4.30	U4A							
4.30	V7	(124)						
4.30	PP7	(2.25)						
4.60	U4B							
4.80	PP8	(2.25)						
4.80	V8	(120)						
5.00	D8							
5.00-6.00	U5						6.00	31.50
4.85-5.00	U4C							
5.15-5.45	S	N22			Hole completed at 6.00m depth			
5.30	U5A							
5.30	V9	(78)						
5.30	PP9	(2.50)						
5.60-5.80	U5B							
5.80	V10	(134)						
5.85	PP10	(2.75)						
6.00	D9							
5.90	U5C							
6.15-6.45	S	N21						

REMARKS
1. Starter pit excavated from GL to 1.20m depth
2. Live roots observed to 1.10m depth
3. Gas monitoring standpipe installed to 1.10m depth
4. PP = Pocket Penetrometer reading (Kg/cm2)
5. ES = Environmental Sample

Project No 12974

Scale 1:50 | Page 1/1

KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▼ Water Strike
▼ Depth to Water on completion
J - Jar Sample
M - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▼s Standpipe Level

Groundwater Strikes

No	Struck	Rose to	Depth m Rate	Cased	Sealed

Groundwater Observations

Date	Depth m Hole	Casing	Water
30/04/13	6.00		dry
13/05/13	1.10		dry
20/05/13	1.10		dry
29/05/13	1.10		dry
03/06/13	1.10		dry

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Site: GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

WINDOW SAMPLE
DCS4

Date: 29/04/13

Hole Size: 87mm dia to 2.00m
77mm dia to 3.00m
57mm dia to 6.00m

528838 mE 185364 mN
Ground Level: 36.70m. O.D.

Samples and in-situ Tests			(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result						
					MADE GROUND - CONCRETE.		0.20	36.50
0.40	ES1				MADE GROUND - Brown, slightly silty SAND AND GRAVEL. Gravel consists of angular to sub-rounded brick, flint and concrete.		0.56	36.14
					MADE GROUND - CONCRETE.		0.70	36.00
0.95	ES2				MADE GROUND - Firm, black, brown and dark brown mottled, slightly sandy, gravelly, silty CLAY. Gravel consists of angular to sub-angular brick, concrete, ash and coal.		1.00	35.70
1.20	D1				MADE GROUND - Firm, brown and grey mottled, slightly gravelly CLAY. Gravel consists of angular to sub-angular brick, concrete and ash.		1.50	35.20
1.20-2.00	U1				Firm, brown, grey and orange brown mottled, gravelly CLAY. Gravel consists of sub-angular to rounded flint.		2.10	34.60
1.20	ES3				Firm, brown and grey mottled CLAY with abundant calcareous concretions and orange brown silt partings.		4.60	32.10
1.35-1.65	S	N5			Stiff, fissured, brown and grey mottled CLAY with occasional orange brown mottled silt partings and sand size selenite crystals.		6.00	30.70
1.50	PP1	(0.75)			Hole completed at 6.00m depth			
1.50	V1	(32)						
1.75	ES4							
1.90	U1A							
2.00-3.00	U2							
2.00	V2	(41)						
2.00	PP2	(1.00)						
2.15-2.45	C	N7						
2.20	U2A							
2.35	ES5							
2.40	PP3	(1.50)						
2.40	V3	(56)						
2.60-2.80	U2B							
2.90	V4	(79)						
3.00	D2							
3.00-4.00	U3							
3.15-3.45	S	N11						
4.00	D3							
4.00-5.00	U4							
4.15-4.45	S	N10						
5.00	D4							
5.00-6.00	U5							
5.15-5.45	S	N14						
6.00	D5							
6.15-6.45	S	N19						

REMARKS
1. Starter pit excavated from GL to 1.20m depth
2. No live roots observed
3. Gas monitoring standpipe installed to 2.00m depth
4. PP = Pocket Penetrometer reading (Kg/cm2)
5. ES = Environmental Sample

Project No 12974

Scale 1:50 | Page 1/1

KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▽ Water Strike
▼ Depth to Water on completion
J - Jar Sample
M - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▼s Standpipe Level

Groundwater Strikes

No	Struck	Rose to	Depth m Rate	Cased	Sealed

Groundwater Observations

Date	Depth m Hole	Casing	Water
29/04/13	6.00		dry
13/05/13	2.00		dry
20/05/13	2.00		dry
29/05/13	2.00		dry
03/06/13	2.00		dry

Borehole Number	Depth (m)	Casing Depth (m)	Depth to Water (m)	Type of Test *	Seating Drive: Blows/Penetration (mm)	Test Drive: 300mm Blows for each successive 75 mm Penetration				N Value	Extrapolated Value
BH1	2.20 - 2.65	1.50		S	3/150	2	2	2	3	9	
	4.20 - 4.65	1.50		S	3/150	2	3	3	3	11	
	6.20 - 6.65	1.50		S	4/150	3	4	4	4	15	
	8.20 - 8.45	1.50		S	4/150	4	4	5	5	18	
	10.70 - 11.15	1.50		S	7/150	5	6	6	7	24	
	13.70 - 14.15	1.50		S	10/150	8	8	8	9	33	
	16.70 - 17.15	1.50		S	10/150	8	9	9	10	36	
	19.70 - 20.15	1.50		S	10/150	8	9	10	11	38	
	22.70 - 23.15	1.50		S	10/150	8	9	10	10	37	
	25.70 - 26.15	1.50		S	10/150	8	10	10	11	39	
	28.70 - 29.15	1.50		S	10/150	8	10	11	12	41	
	31.70 - 32.15	1.50		S	12/150	10	11	12	14	47	
	34.50 - 34.95	1.50		S	13/150	11	13	13	16	53	
BH2	1.20 - 1.65	1.20		C	1/150	0	1	0	1	2	
	1.80 - 2.25	1.50		S	1/150	0	1	1	1	3	
	3.20 - 3.65	3.00		C	3/150	3	4	4	4	15	
	4.80 - 5.25	4.20		S	2/150	2	3	3	3	11	
	7.30 - 7.75	4.20		S	3/150	3	3	4	4	14	
	10.30 - 10.75	4.20		S	4/150	3	4	4	4	15	
	13.30 - 13.75	4.20		S	9/150	8	8	9	9	34	
	16.30 - 16.75	14.20		S	10/150	8	9	9	10	36	
	18.50 - 18.95	14.20		S	10/150	8	9	10	11	38	
DCS1	1.20 - 1.65			S	1/150	0	1	1	1	3	
	2.00 - 2.45			S	2/150	1	0	1	0	2	
	3.00 - 3.45	3.00	3.00	S	3/150	1	2	2	2	7	
	4.00 - 4.45	4.00		S	3/150	2	2	2	4	10	
	5.00 - 5.45	4.00		S	4/150	4	4	4	5	17	
	6.00 - 6.45	4.00		S	4/150	4	4	5	5	18	
DCS2A	2.00 - 2.45			S	3/150	2	2	3	3	10	
	3.00 - 3.45			S	3/150	2	2	2	3	9	
	4.00 - 4.45			S	4/150	2	3	3	4	12	
	5.00 - 5.45			S	5/150	4	4	5	5	18	
	6.00 - 6.45			S	7/150	5	5	6	5	21	
DCS3	1.20 - 1.65			S	2/150	2	1	0	1	4	
	2.00 - 2.45			S	4/150	2	3	3	3	11	
	3.00 - 3.45			S	5/150	3	3	3	4	13	
	4.00 - 4.45			S	5/150	4	4	4	4	16	
	5.00 - 5.45			S	7/150	5	6	5	6	22	
	6.00 - 6.45			S	7/150	4	5	6	6	21	
DCS4	1.20 - 1.65			S	1/150	1	1	2	1	5	
	2.00 - 2.45			C	4/150	1	1	2	3	7	
	3.00 - 3.45			S	3/150	2	2	3	4	11	
	4.00 - 4.45			S	3/150	2	2	3	3	10	
	5.00 - 5.45			S	4/150	4	3	4	3	14	
	6.00 - 6.45			S	5/150	5	4	5	5	19	

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* C denotes test using a solid cone
S denotes test using a split barrel sampler

Results of Standard/Cone Penetration Tests

12974

GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

Table No 1.1

Results of On-Site PID Screening

	Photo-ionisation Detector Reading (ppm)						
Depth (m)	**BH1**	**BH2**	**DCS1**	**DCS2**	**DCS2A**	**DCS3**	**DCS4**
0.10	<0.1						
0.30					<0.1	<0.1	
0.40				<0.1			<0.1
0.50	<0.1		<0.1				
0.60						<0.1	
0.65		<0.1			<0.1		
0.70				<0.1			
0.90			<0.1			<0.1	
0.95							0.4
1.00		<0.1		<0.1	<0.1		
1.20		<0.1	<0.1				<0.1
1.30				<0.1			
1.35	<0.1					<0.1	
1.50		<0.1	<0.1		<0.1		
1.75							<0.1
1.80	<0.1						
1.85				<0.1			
2.05					<0.1		
2.30			<0.1				
2.35							<0.1
2.40		<0.1					
2.65	<0.1						
3.35		<0.1	<0.1				
3.40	<0.1						
3.95		<0.1					
4.40		<0.1					

Appendix 3

Results of Gas and Groundwater Monitoring

Gas Monitoring Record

Site: Greenwood Place, London NW5

Report Ref: C12974

Date	Borehole No.	Methane (% v/v)		Methane LEL %		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Flow Rate (l/hr)	Atmosph. Pressure (mb)	Dp (mb)	Depth of Well (mbgl)	VOCs (ppm)	Depth to Groundwater (mbgl)	Comments
		Peak	Steady	Peak	Steady	Peak	Steady	Min.	Max.							
13/05/13	BH1	<0.1	<0.1	<0.1	<0.1	1.6	1.6	19.2	19.2	<0.1	1008	<0.1	4.70	4.9	3.75	Water sample taken & described as clear
13/05/13	BH2	Installation obstructed by vehicle														
13/05/13	DCS1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	20.9	20.9	<0.1	1008	<0.1	3.00	0.4	Dry	-
13/05/13	DCS2	<0.1	<0.1	<0.1	<0.1	1.9	1.9	18.9	18.9	<0.1	1008	<0.1	2.00	1.9	Dry	-
13/05/13	DCS3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	20.9	20.9	<0.1	1008	<0.1	1.10	0.8	Dry	-
13/05/13	DCS4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	20.7	20.7	<0.1	1008	<0.1	2.00	0.4	Dry	-

Note - Air temperature 12^{0}C
- **Weather = Overcast**
- **Barometric pressures on 10/05/13= 1010mb**
- **11/05/13= 1010mb**
- **12/05/13= 1009mb**

LEL – Lower Explosive Limit

Gas Monitoring Record

Site: Greenwood Place, London NW5

Report Ref: C12974

Date	Borehole No.	Methane (% v/v)		Methane LEL %		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Flow Rate (l/hr)	Atmosph. Pressure (mb)	Dp (mb)	Depth of Well (mbgl)	VOCs (ppm)	Depth to Groundwater (mbgl)	Comments
		Peak	Steady	Peak	Steady	Peak	Steady	Min.	Max.							
20/05/13	BH1	<0.1	<0.1	<0.1	<0.1	1.6	1.6	19.4	19.4	<0.1	1007	<0.1	4.70	<0.1	3.49	Water sample taken & described as clear
20/05/13	BH2	Installation obstructed by vehicle														
20/05/13	DCS1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	20.1	20.1	<0.1	1007	<0.1	3.00	<0.1	1.34	Water sample taken & described as clear
20/05/13	DCS2	<0.1	<0.1	<0.1	<0.1	1.8	1.8	19.2	19.2	<0.1	1007	<0.1	2.00	<0.1	Dry	-
20/05/13	DCS3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	20.7	20.7	<0.1	1007	<0.1	1.10	<0.1	Dry	-
20/05/13	DCS4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	20.7	20.7	<0.1	1007	<0.1	2.00	<0.1	Dry	-

Note - Air temperature 11^{0}C
- **Weather = Partly Cloudy**
- **Barometric pressures on 17/05/13= 1008mb**
- **18/05/13= 1006mb**
- **19/05/13= 1007mb**

LEL – Lower Explosive Limit

Gas Monitoring Record

Site: Greenwood Place, London NW5

Report Ref: C12974

Date	Borehole No.	Methane (% v/v)		Methane LEL %		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Flow Rate (l/hr)	Atmosph. Pressure (mb)	Dp (mb)	Depth of Well (mbgl)	VOCs (ppm)	Depth to Groundwater (mbgl)	Comments
		Peak	Steady	Peak	Steady	Peak	Steady	Min.	Max.							
29/05/13	BH1	<0.1	<0.1	<0.1	<0.1	1.7	1.7	19.4	19.4	<0.1	1001	<0.1	4.70	<0.1	2.72	Water sample taken & described as clear
29/05/13	BH2	Installation obstructed by vehicle														
29/05/13	DCS1	<0.1	<0.1	<0.1	<0.1	0.4	0.3	20.0	20.1	<0.1	1001	<0.1	4.70	<0.1	1.21	Water sample taken & described as clear
29/05/13	DCS2	<0.1	<0.1	<0.1	<0.1	1.3	1.3	19.4	19.4	<0.1	1001	<0.1	2.00	<0.1	Dry	-
29/05/13	DCS3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	20.6	20.6	<0.1	1007	<0.1	1.10	<0.1	Dry	-
29 /05/13	DCS4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	20.7	20.7	<0.1	1007	<0.1	2.00	<0.1	Dry	-

Note - Air temperature 16^{0}C
- **Weather = Partly Cloudy**
- **Barometric pressures on 26/05/13= 1010mb**
- **27/05/13= 1008mb**
- **28/05/13= 1004mb**

LEL – Lower Explosive Limit

Gas Monitoring Record

Site: Greenwood Place, London NW5

Report Ref: C12974

Date	Borehole No.	Methane (% v/v)		Methane LEL %		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Flow Rate (l/hr)	Atmosph. Pressure (mb)	Dp (mb)	Depth of Well (mbgl)	VOCs (ppm)	Depth to Groundwater (mbgl)	Comments
		Peak	Steady	Peak	Steady	Peak	Steady	Min.	Max.							
03/06/13	BH1	<0.1	<0.1	<0.1	<0.1	1.6	1.6	19.2	19.2	<0.1	1028	<0.1	4.70	<0.1	2.56	Water sample taken & described as clear
03/06/13	BH2	Installation obstructed by vehicle														
03/06/13	DCS1	Installation obstructed by vehicle														
03/06/13	DCS2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	20.7	20.7	<0.1	1028	<0.1	2.00	<0.1	Dry	-
03/06/13	DCS3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	20.7	20.7	<0.1	1028	<0.1	1.10	<0.1	Dry	-
03/06/13	DCS4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	20.7	20.7	<0.1	1028	<0.1	2.00	<0.1	Dry	-

Note - **Air temperature 16^{0}C**
- **Weather = Partly Cloudy**
- **Barometric pressures on 31/05/13= 1015mb**
- **01/06/13= 1018mb**
- **02/06/13= 1025mb**

LEL – Lower Explosive Limit

Gas Monitoring Record

Site: Greenwood Place, London NW5

Report Ref: C12974

Date	Borehole No.	Methane (% v/v)		Methane LEL %		Carbon Dioxide (% v/v)		Oxygen (% v/v)		Flow Rate (l/hr)	Atmosph. Pressure (mb)	Dp (mb)	Depth of Well (mbgl)	VOCs (ppm)	Depth to Groundwater (mbgl)	Comments
		Peak	Steady	Peak	Steady	Peak	Steady	Min.	Max.							
13/06/13	BH2	<0.1	<0.1	<0.1	<0.1	0.8	0.8	19.2	19.2	<0.1	1005	<0.1	4.50	<0.1	1.53	Water sample taken & described as clear

Note - Air temperature 18^{0}C
- **Weather =Sunny with some light showers**
- **Barometric pressures on 10/06/13= 1015mb**
- **11/06/13= 1014mb**
- **12/06/13= 1006mb**

LEL – Lower Explosive Limit

Appendix 4

Geotechnical Laboratory Test Results

LABORATORY TEST RESULTS

CONTRACT GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

Bore-hole	Sample	Depth m	Classification				Density		Triaxial Compression					Sulphates (SO_4)				Remarks
			Liquid Limit %	Plastic Limit %	Plasticity Index %	Moisture Content %	Bulk Mg/m^3	Dry Mg/m^3	Type	Principal Stress Difference kPa	Cell Pressure kPa	Shear Strength kPa	Angle of Shear Resistance degrees	Soil Total % Dry Wt.	Soil Aqueous Extract mg/l	Water mg/l	pH	
BH1	D1	0.10				13												
	D2	0.50				19									971		7.6	
	D3	1.10				22												
	U1	1.20 - 1.60				27	2.06	1.62	Q	84	24	42	0					
	D4	1.70	40	16	24	24												SOIL CLASSIFICATION = CI 1% retained on 425μm sieve
	D5	1.95				24									420		7.0	
	D6	2.45				21												
	D7	2.95	65	20	45	24												SOIL CLASSIFICATION = CH 2% retained on 425μm sieve
	U2	3.20 - 3.60				32	1.99	1.51	Q	113	128	57	0					
	D8	3.70				31												
	D9	3.95				31												
	D10	4.65				29												
	D11	4.95				29												

U - UNDISTURBED SAMPLE
D - DISTURBED SAMPLE
B - BULK SAMPLE
W - WATER SAMPLE

C.U. - CONSOLIDATED UNDRAINED
C.D. - CONSOLIDATED DRAINED
Q. - IMMEDIATE UNDRAINED
Q.M. - IMMEDIATE UNDRAINED MULTISTAGE

Aqueous Extract 2:1 Water:Soil

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LABORATORY TEST RESULTS

CONTRACT GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

Bore-hole	Sample	Depth m	Classification				Density		Triaxial Compression					Sulphates (SO_4)				Remarks
			Liquid Limit %	Plastic Limit %	Plasticity Index %	Moisture Content %	Bulk Mg/m^3	Dry Mg/m^3	Type	Principal Stress Difference kPa	Cell Pressure kPa	Shear Strength kPa	Angle of Shear Resistance degrees	Soil Total % Dry Wt.	Soil Aqueous Extract mg/l	Water mg/l	pH	
BH1	U3	5.20 - 5.60				32	1.99	1.51	Q	157	208	78	0					
	D12	5.70				30												
	D13	5.95				30												
	U4	7.20 - 7.60				29	2.01	1.56	Q	201	288	101	0					
	U5	9.50 - 9.60				28	2.03	1.58	Q	380	368	190	0					
	D18	10.20													1176		7.8	
	U6	12.20 - 12.30				29						130+						Hand Vane Test
	U7	15.20 - 15.60				30	2.02	1.55	Q	346	608	173	0					
	U8	18.20 - 18.60				25	2.05	1.64	Q	680	728	340	0					
	D30	18.70													1070		7.7	
	U9	21.20 - 21.60				24	1.91	1.51	Q	606	848	303	0					
	D35	22.20													973		8.0	

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Bore-hole	Sample	Depth m	Classification				Density		Triaxial Compression					Sulphates (SO_4)				Remarks
			Liquid Limit %	Plastic Limit %	Plasticity Index %	Moisture Content %	Bulk Mg/m^3	Dry Mg/m^3	Type	Principal Stress Difference kPa	Cell Pressure kPa	Shear Strength kPa	Angle of Shear Resistance degrees	Soil: Total % Dry Wt.	Soil: Aqueous Extract mg/l	Water mg/l	pH	
BH1	U10	24.20 - 24.60				25	1.90	1.52	Q	684	968	342	0					
	D40	26.15													902		7.8	
	U11	27.20 - 27.60				23	1.93	1.56	Q	867	108	434	0					
	U12	30.20 - 30.60				25	1.96	1.57	Q	676	120	338	0					
	D46	30.70													871		7.9	
	U13	33.20 - 33.60				25	1.92	1.54	Q	588	132	294	0					
BH2	D1	1.70													82		7.1	
	D2	2.25	55	20	35	26												SOIL CLASSIFICATION = CH 0% retained on 425μm sieve
	U1	2.70 - 3.10				22	2.15	1.76	Q	109	54	54	0					
	D5	3.70													179		7.3	
	U2	3.80 - 4.20	71	25	46	32	1.95	1.48	Q	105	152	52	0					SOIL CLASSIFICATION = CV 1% retained on 425μm sieve

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CONTRACT GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

Bore-hole	Sample	Depth m	Classification				Density		Triaxial Compression					Sulphates (SO_4)				Remarks
			Liquid Limit %	Plastic Limit %	Plasticity Index %	Moisture Content %	Bulk Mg/m^3	Dry Mg/m^3	Type	Principal Stress Difference kPa	Cell Pressure kPa	Shear Strength kPa	Angle of Shear Resistance degrees	Soil		Water	pH	
														Total % Dry Wt.	Aqueous Extract mg/l	mg/l		
BH2	U3	5.80 - 6.20				31	1.99	1.52	Q	183	232	91	0					
	D12	7.75													2799		7.7	
	U4	8.80 - 9.20				28	2.02	1.58	Q	248	352	124	0					
	U5	11.80 - 12.20				28	2.04	1.59	Q	410	472	205	0					
	D21	14.30													1067		7.9	
	U6	14.80 - 15.20				30	2.00	1.53	Q	224	592	112	0					
	U7	17.80 - 18.20				27	2.05	1.61	Q	197	712	99	0					
	U8	19.50 - 19.90				26	2.06	1.64	Q	367	780	184	0					

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Aqueous Extract 2:1 Water:Soil

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LABORATORY TEST RESULTS

CONTRACT GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

Bore-hole	Sample	Depth m	Classification				Density		Triaxial Compression					Sulphates (SO_4)				Remarks
			Liquid Limit %	Plastic Limit %	Plasticity Index %	Moisture Content %	Bulk Mg/m^3	Dry Mg/m^3	Type	Principal Stress Difference kPa	Cell Pressure kPa	Shear Strength kPa	Angle of Shear Resistance degrees	Soil Total % Dry Wt.	Soil Aqueous Extract mg/l	Water mg/l	pH	
DCS1	D1	0.50				32									140		8.6	
	D2	0.90	25	18	7	20												SOIL CLASSIFICATION = CL 52% retained on 425µm sieve
	D3	1.20				32												
	U1A	1.80				34									156		6.8	
	D4	2.00	56	22	34	27												SOIL CLASSIFICATION = CH 7% retained on 425µm sieve
	D5	3.00				24												
	U3B	3.55 - 3.75				32												
	D6	4.00				26												
	U4B	4.60 - 4.80				31												
	D7	5.00				29												
	U5B	5.60				24												
	D8	6.00				27												

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LABORATORY TEST RESULTS

CONTRACT GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

Bore-hole	Sample	Depth m	Classification				Density		Triaxial Compression					Sulphates (SO_4)				Remarks
			Liquid Limit %	Plastic Limit %	Plasticity Index %	Moisture Content %	Bulk Mg/m^3	Dry Mg/m^3	Type	Principal Stress Difference kPa	Cell Pressure kPa	Shear Strength kPa	Angle of Shear Resistance degrees	Soil: Total % Dry Wt.	Soil: Aqueous Extract mg/l	Water mg/l	pH	
DCS2	D3	1.00	59	20	39	28												SOIL CLASSIFICATION = CH 17% retained on 425μm sieve
DCS2A	U1	1.20 - 1.80	72	23	49	25									274		7.4	SOIL CLASSIFICATION = CV 16% retained on 425μm sieve
	D6	2.50	66	22	44	27												SOIL CLASSIFICATION = CH 0% retained on 425μm sieve
DCS3	D1	0.30				11												
	D2	0.60													181		8.6	
	D3	0.90													288		8.0	
	D4	1.20				25												
	U1B	1.65 - 1.95				30												
	D5	2.00	73	24	49	30												SOIL CLASSIFICATION = CV 0% retained on 425μm sieve
	U2B	2.50 - 2.70				32												
	D6	3.00				29												

U - UNDISTURBED SAMPLE
D - DISTURBED SAMPLE
B - BULK SAMPLE
W - WATER SAMPLE

C.U. - CONSOLIDATED UNDRAINED
C.D. - CONSOLIDATED DRAINED
Q. - IMMEDIATE UNDRAINED
Q.M. - IMMEDIATE UNDRAINED MULTISTAGE

Aqueous Extract 2:1 Water:Soil

12974

GROUND ENGINEERING LIMITED
Tel: 01733-566566
www.groundengineering.co.uk

LABORATORY TEST RESULTS

CONTRACT GREENWOOD PLACE COMMUNITY CENTRE, LONDON SE6

Bore-hole	Sample	Depth m	Classification				Density		Triaxial Compression					Sulphates (SO_4)				Remarks
			Liquid Limit %	Plastic Limit %	Plasticity Index %	Moisture Content %	Bulk Mg/m^3	Dry Mg/m^3	Type	Principal Stress Difference kPa	Cell Pressure kPa	Shear Strength kPa	Angle of Shear Resistance degrees	Soil: Total % Dry Wt.	Soil: Aqueous Extract mg/l	Water mg/l	pH	
DCS3	D8	5.00				27												
	U5B	5.60 - 5.80				28												
	U5C	5.90													3136		7.7	
	D9	6.00				28												
DCS4	U1	1.20 - 1.50	41	20	21	23												SOIL CLASSIFICATION = CV 3% retained on 425μm sieve
	U1A	1.90													181		7.4	
	U2A	2.20	88	25	63	32												SOIL CLASSIFICATION = CV 2% retained on 425μm sieve
	D3	4.00													669		7.5	

U - UNDISTURBED SAMPLE
D - DISTURBED SAMPLE
B - BULK SAMPLE
W - WATER SAMPLE

C.U. - CONSOLIDATED UNDRAINED
C.D. - CONSOLIDATED DRAINED
Q. - IMMEDIATE UNDRAINED
Q.M. - IMMEDIATE UNDRAINED MULTISTAGE

Aqueous Extract 2:1 Water:Soil

12974

GROUND ENGINEERING LIMITED
Tel: 01733-566566
www.groundengineering.co.uk

2304

Enverity

Newark Road Peterborough
t: 01733 555525 f: 01733 315280
e: peterborough@enverity.co.uk

TEST CERTIFICATE

Determination of Particle Size Distribution

Tested in Accordance with BS 1377-2: 1990: Clause 9.2 & 9.4
Sieved Grading and Sedimentation by Pipette

Client: Ground Engineering Ltd
Client Address: Newark Road, Peterborough, PE1 5UA

Contact: James Davies

Site Name: Greenwood Place Community Centre
Site Address: London SE6

Certificate Number: PL4139-1/32/710-2
Client Reference: C12971
Lab Job Number: PL4139-1
Date Sampled: Unknown
Date Received: 15.05.2013
Date Tested: 29.05.2013
Certificate of Sampling: N/A
Sampling Certificate No.: N/A
Sampled By: Client

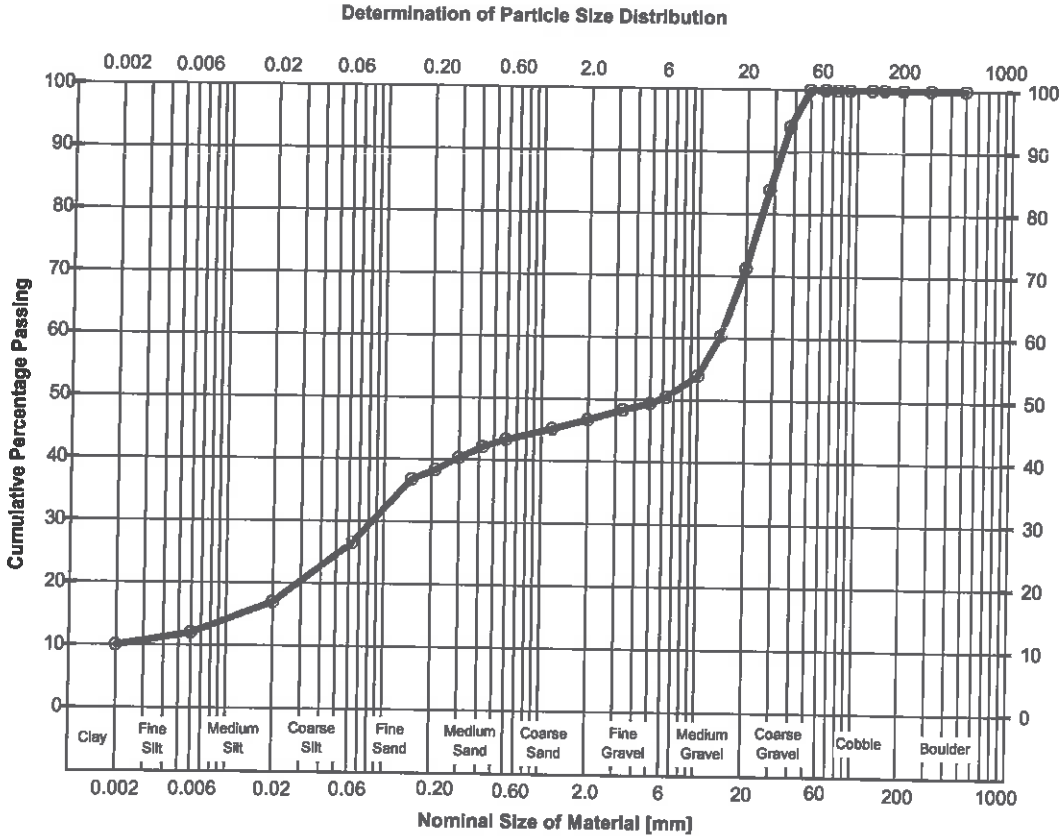
TEST RESULTS

Laboratory Reference: PL4139-1/32
Client Reference: B3
Sample Description: Brown clayey silty sandy GRAVEL

Pre-treatment for organic material: No

Material Specification: Not Required
Location: BH2
Source:

Depth Top: 3.20m
Depth Base: 3.70m
Supplier:



Sieve Analysis

Sieve mm	%Passing
125	100
90	100
75	100
63	100
50	100
37.5	94
28	84
20	71
14	60
10	54
6.3	50
5.0	49
3.35	48
2.00	47
1.18	45
0.600	43
0.425	42
0.300	40
0.212	38
0.150	37
0.063	27
0.020	17
0.006	12
0.002	10

Comments: Data relevant to material below 63 microns is outside the current scope of UKAS accreditation

Approved Signatory: M. Hartnup - Laboratory Manager

Signed:

for and on behalf of Enverity Ltd

Date Reported: 06.06.2013 Page 1 of 1
Form Number: EN/C/709-2 Version 31

Registered in England & Wales
Registration Number: 6930692
Reg Office: Diasma, Willie Snaith Rd
Newmarket, Suffolk, CB8 7SQ

Chemtest
The right chemistry to deliver results

Depot Road
Newmarket
CB8 0AL
Tel: 01633 606070

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies
03 June 2013

Dear James Davies

Test Report Number **230731**
Your Project Reference **C12974 Greenwood Place, London NW5**

Please find enclosed the results of analysis for the samples received 23 May 2013.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely

Darrell Hall, Director

UKAS TESTING
2183

ISO 14001 sira UKAS ENVIRONMENTAL MANAGEMENT

Notes to accompany report:

- *The sign < means 'less than'*
- *Tests marked 'U' hold UKAS accreditation*
- *Tests marked 'M' hold MCertS (and UKAS) accreditation*
- *Tests marked 'N' do not currently hold UKAS accreditation*
- *Tests marked 'S' were subcontracted to an approved laboratory*
- *n/e means 'not evaluated'*
- *i/s means 'insufficient sample'*
- *u/s means 'unsuitable sample'*
- *Comments or interpretations are beyond the scope of UKAS accreditation*
- *The results relate only to the items tested*
- *All results are expressed on a dry weight basis*
- *The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, phenols*
- *For all other tests the samples were dried at < 37°C prior to analysis*
- *Uncertainties of measurement for the determinands tested are available upon request*
- *None of the test results included in this report have been recovery corrected*

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies

LABORATORY TEST REPORT

Results of analysis of 6 samples received 23 May 2013

C12974 Greenwood Place, London NW5

Chemtest
The right chemistry to deliver results

Report Date
03 June 2013

Login Batch No					230731					
Chemtest LIMS ID					AI72295	AI72296	AI72297	AI72298	AI72299	AI72300
Sample ID					BH1	BH2	DCS1	DCS2	DCS3	DCS4
Sample No					6	4	3B	2	1A	1
Sampling Date					2/5/2013	2/5/2013	2/5/2013	2/5/2013	2/5/2013	2/5/2013
Depth					2.45m	2.60m	3.55m - 3.75m	0.70m	1.50m	1.20m
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*						
2010	pH			M	7.8	7.7	8.1	8.2	8.1	7.8
2175	Sulfur (total TRL report 447)		%	M	0.021	<0.010	0.65	0.047	0.019	0.024
2120	Sulfate (2:1 water soluble) as SO4	14808798	g l-1	M	0.24	<0.01	1.4	<0.01	0.07	0.06
2430	Sulfate (total BS1377 HCl extract)	14808798	%	M	0.05	<0.01	0.64	0.07	0.05	0.05

All tests undertaken between 23/05/2013 and 31/05/2013

* Accreditation status

This report should be interpreted in conjuction with the notes on the accompanying cover page.

Appendix 5

Chemical Laboratory Test Results

Chemtest
The right chemistry to deliver results

Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies
21 May 2013

Dear James Davies

Test Report Number **229885**
Your Project Reference **C12974 - Greenwood Place, London NW5**

Please find enclosed the results of analysis for the samples received 13 May 2013.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely

Darrell Hall, Director

UKAS TESTING
2183

ISO 14001 sira UKAS ENVIRONMENTAL MANAGEMENT

Notes to accompany report:

- *The sign < means 'less than'*
- *Tests marked 'U' hold UKAS accreditation*
- *Tests marked 'M' hold MCertS (and UKAS) accreditation*
- *Tests marked 'N' do not currently hold UKAS accreditation*
- *Tests marked 'S' were subcontracted to an approved laboratory*
- *n/e means 'not evaluated'*
- *i/s means 'insufficient sample'*
- *u/s means 'unsuitable sample'*
- *Comments or interpretations are beyond the scope of UKAS accreditation*
- *The results relate only to the items tested*
- *All results are expressed on a dry weight basis*
- *The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, phenols*
- *For all other tests the samples were dried at < 37°C prior to analysis*
- *Uncertainties of measurement for the determinands tested are available upon request*
- *None of the test results included in this report have been recovery corrected*

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies

LABORATORY TEST REPORT

Results of analysis of 12 samples received 13 May 2013

C12974 - Greenwood Place, London NW5

Chemtest
The right chemistry to deliver results

Report Date
21 May 2013

Login Batch No						229885					
Chemtest LIMS ID						AI67544	AI67545	AI67546	AI67547	AI67548	AI67549
Sample ID						BH1	BH1	BH1	BH2	BH2	DCS1
Sample No						2	3	4	2	5	2
Sampling Date						9/5/2013	9/5/2013	9/5/2013	9/5/2013	9/5/2013	9/5/2013
Depth						0.50m	1.35m	1.80m	1.00m	2.50m	0.90m
Matrix						*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*							
2010	pH				M	8.3	7.5	7.7	8.3	8.0	8.4
2300	Cyanide (total)	57125	mg kg-1		M	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2325	Sulfide (Easily Liberatable)	18496258	mg kg-1		M	4.8	1.9	1.7	1.8	5.7	8.0
2625	Fraction of Organic Carbon				M	0.019					
	Total Organic Carbon		%		M	1.9	1.3			1.6	
2430	Sulfate (total) as SO4	14808798	%		M	0.33	0.22	0.14	0.10	0.11	0.12
2450	Arsenic	7440382	mg kg-1		M	24	12	14	17	15	15
	Cadmium	7440439	mg kg-1		M	0.92	0.16	<0.10	<0.10	0.11	<0.10
	Chromium	7440473	mg kg-1		M	30	19	29	14	25	14
	Copper	7440508	mg kg-1		M	140	24	12	55	23	47
	Mercury	7439976	mg kg-1		M	1.2	0.56	0.11	1.1	0.25	0.87
	Nickel	7440020	mg kg-1		M	38	14	19	17	19	13
	Lead	7439921	mg kg-1		M	1400	170	49	510	85	430
	Selenium	7782492	mg kg-1		M	0.82	0.70	0.71	0.44	0.79	0.81
	Zinc	7440666	mg kg-1		M	330	71	53	56	50	75
2670	TPH >C6-C10		mg kg-1		N	< 1	< 1	< 1	< 1	< 1	< 1
	TPH >C10-C25		mg kg-1		N	24	22	< 1	< 1	< 1	< 1
	TPH >C25-C40		mg kg-1		N	20	13	< 1	< 1	< 1	< 1
	Total Petroleum Hydrocarbons		mg kg-1		M	44	35	< 10	< 10	< 10	< 10
2675	TPH aliphatic >C5-C6		mg kg-1		N			< 0.1			
	TPH aliphatic >C6-C8		mg kg-1		N			< 0.1			
	TPH aliphatic >C8-C10		mg kg-1		N			< 0.1			
	TPH aliphatic >C10-C12		mg kg-1		M			< 1			
	TPH aliphatic >C12-C16		mg kg-1		M			< 1			

All tests undertaken between 14/05/2013 and 21/05/2013

* Accreditation status

This report should be interpreted in conjuction with the notes on the accompanying cover page.

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies

LABORATORY TEST REPORT

Results of analysis of 12 samples received 13 May 2013

C12974 - Greenwood Place, London NW5

Chemtest
The right chemistry to deliver results

Report Date
21 May 2013

Login Batch No					229885						
Chemtest LIMS ID					AI67550	AI67552	AI67553	AI67554	AI67555	AI67556	
Sample ID					DCS1	DCS2	DCS2A	DCS3	DCS4	DCS4	
Sample No					5	3	3	1	1	2	
Sampling Date					9/5/2013	9/5/2013	9/5/2013	9/5/2013	9/5/2013	9/5/2013	
Depth					1.50m	1.00m	1.00m	0.30m	0.40m	0.95m	
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	
SOP↓	Determinand↓	CAS No↓	Units↓	*							
2010	pH			M	8.2	8.4	8.4	11.2	9.9	8.2	
2300	Cyanide (total)	57125	mg kg^{-1}	M	<0.50	<0.50	<0.50	<0.50	0.50	<0.50	
2325	Sulfide (Easily Liberatable)	18496258	mg kg^{-1}	M	13	7.7	3.9	2.4	2.7	1.8	
2625	Fraction of Organic Carbon			M		0.017					
	Total Organic Carbon		%	M							
2430	Sulfate (total) as SO4	14808798	%	M	0.13	0.17	0.14	0.18	1.4	0.23	
2450	Arsenic	7440382	mg kg^{-1}	M	11	22	20	30	23	28	
	Cadmium	7440439	mg kg^{-1}	M	<0.10	0.33	0.25	0.31	0.18	0.82	
	Chromium	7440473	mg kg^{-1}	M	18	36	30	27	18	12	
	Copper	7440508	mg kg^{-1}	M	14	49	50	35	61	170	
	Mercury	7439976	mg kg^{-1}	M	0.27	1.1	1.1	0.74	1.2	1.2	
	Nickel	7440020	mg kg^{-1}	M	16	34	31	26	19	19	
	Lead	7439921	mg kg^{-1}	M	53	2500	550	510	560	770	
	Selenium	7782492	mg kg^{-1}	M	0.45	0.30	0.39	<0.20	0.26	0.72	
	Zinc	7440666	mg kg^{-1}	M	34	250	170	130	150	460	
2670	TPH >C6-C10		mg kg^{-1}	N	< 1	< 1	< 1	< 1	< 1	< 1	
	TPH >C10-C25		mg kg^{-1}	N	< 1	< 1	< 1	9.3	< 1	4.4	
	TPH >C25-C40		mg kg^{-1}	N	< 1	< 1	< 1	4.3	< 1	< 1	
	Total Petroleum Hydrocarbons		mg kg^{-1}	M	< 10	< 10	< 10	14	< 10	< 10	
2675	TPH aliphatic >C5-C6		mg kg^{-1}	N	< 0.1	< 0.1				< 0.1	
	TPH aliphatic >C6-C8		mg kg^{-1}	N	< 0.1	< 0.1				< 0.1	
	TPH aliphatic >C8-C10		mg kg^{-1}	N	< 0.1	< 0.1				< 0.1	
	TPH aliphatic >C10-C12		mg kg^{-1}	M	< 1	< 1				< 1	
	TPH aliphatic >C12-C16		mg kg^{-1}	M	< 1	< 1				< 1	

* Accreditation status

This report should be interpreted in conjuction with the notes on the accompanying cover page.

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies

LABORATORY TEST REPORT

Results of analysis of 12 samples received 13 May 2013

C12974 - Greenwood Place, London NW5

Chemtest
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Report Date
21 May 2013

					229885					
					AI67544	AI67545	AI67546	AI67547	AI67548	AI67549
					BH1	BH1	BH1	BH2	BH2	DCS1
					2	3	4	2	5	2
					9/5/2013	9/5/2013	9/5/2013	9/5/2013	9/5/2013	9/5/2013
					0.50m	1.35m	1.80m	1.00m	2.50m	0.90m
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2675	TPH aliphatic >C16-C21		mg kg-1	M			< 1			
	TPH aliphatic >C21-C35		mg kg-1	M			< 1			
	TPH aliphatic >C35-C44		mg kg-1	N			< 1			
	TPH aromatic >C5-C7		mg kg-1	N			< 0.1			
	TPH aromatic >C7-C8		mg kg-1	N			< 0.1			
	TPH aromatic >C8-C10		mg kg-1	N			< 0.1			
	TPH aromatic >C10-C12		mg kg-1	M			< 1			
	TPH aromatic >C12-C16		mg kg-1	M			< 1			
	TPH aromatic >C16-C21		mg kg-1	M			< 1			
	TPH aromatic >C21-C35		mg kg-1	M			< 1			
	TPH aromatic >C35-C44		mg kg-1	N			< 1			
	Total Petroleum Hydrocarbons		mg kg-1	N			< 10			
2700	Naphthalene	91203	mg kg-1	N	0.15	< 0.010	< 0.010	0.16	0.030	0.099
	Acenaphthylene	208968	mg kg-1	N	0.23	0.034	< 0.010	0.25	0.16	0.057
	Acenaphthene	83329	mg kg-1	N	0.25	0.075	< 0.010	0.63	0.15	0.18
	Fluorene	86737	mg kg-1	N	0.13	0.031	< 0.010	0.13	0.089	0.11
	Phenanthrene	85018	mg kg-1	N	1.1	0.21	0.061	0.31	0.22	1.0
	Anthracene	120127	mg kg-1	N	0.57	0.12	0.035	0.18	0.20	0.18
	Fluoranthene	206440	mg kg-1	N	2.3	0.46	0.12	0.29	0.084	0.95
	Pyrene	129000	mg kg-1	N	2.0	0.38	0.11	0.44	0.12	0.67
	Benzo[a]anthracene	56553	mg kg-1	N	1.4	0.23	0.072	0.26	< 0.010	0.34
	Chrysene	218019	mg kg-1	N	1.7	0.28	0.084	0.34	< 0.010	0.39
	Benzo[b]fluoranthene	205992	mg kg-1	N	2.0	0.39	0.17	0.35	< 0.010	0.38
	Benzo[k]fluoranthene	207089	mg kg-1	N	1.2	0.24	0.16	0.31	< 0.010	0.28
	Benzo[a]pyrene	50328	mg kg-1	N	1.8	0.34	0.083	0.24	< 0.010	0.31

All tests undertaken between 14/05/2013 and 21/05/2013

* Accreditation status

This report should be interpreted in conjuction with the notes on the accompanying cover page.

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies

LABORATORY TEST REPORT

Results of analysis of 12 samples received 13 May 2013

C12974 - Greenwood Place, London NW5

Chemtest
The right chemistry to deliver results

Report Date
21 May 2013

					229885					
					AI67550	AI67552	AI67553	AI67554	AI67555	AI67556
					DCS1	DCS2	DCS2A	DCS3	DCS4	DCS4
					5	3	3	1	1	2
					9/5/2013	9/5/2013	9/5/2013	9/5/2013	9/5/2013	9/5/2013
					1.50m	1.00m	1.00m	0.30m	0.40m	0.95m
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2675	TPH aliphatic >C16-C21		mg kg-1	M	< 1	< 1				< 1
	TPH aliphatic >C21-C35		mg kg-1	M	< 1	< 1				< 1
	TPH aliphatic >C35-C44		mg kg-1	N	< 1	< 1				< 1
	TPH aromatic >C5-C7		mg kg-1	N	< 0.1	< 0.1				< 0.1
	TPH aromatic >C7-C8		mg kg-1	N	< 0.1	< 0.1				< 0.1
	TPH aromatic >C8-C10		mg kg-1	N	< 0.1	< 0.1				< 0.1
	TPH aromatic >C10-C12		mg kg-1	M	< 1	< 1				< 1
	TPH aromatic >C12-C16		mg kg-1	M	< 1	< 1				< 1
	TPH aromatic >C16-C21		mg kg-1	M	< 1	< 1				5.2
	TPH aromatic >C21-C35		mg kg-1	M	< 1	< 1				6.9
	TPH aromatic >C35-C44		mg kg-1	N	< 1	< 1				< 1
	Total Petroleum Hydrocarbons		mg kg-1	N	< 10	< 10				12
2700	Naphthalene	91203	mg kg-1	N	0.042	0.11	0.076	< 0.010	0.098	0.14
	Acenaphthylene	208968	mg kg-1	N	0.025	0.12	0.098	0.054	0.17	0.17
	Acenaphthene	83329	mg kg-1	N	0.051	0.25	0.15	0.067	0.15	0.18
	Fluorene	86737	mg kg-1	N	0.020	0.12	0.055	0.015	0.13	0.051
	Phenanthrene	85018	mg kg-1	N	0.16	0.32	0.16	0.30	1.0	0.43
	Anthracene	120127	mg kg-1	N	0.070	0.27	0.085	0.13	0.51	0.22
	Fluoranthene	206440	mg kg-1	N	0.15	0.61	0.34	0.78	1.6	0.55
	Pyrene	129000	mg kg-1	N	0.11	0.45	0.25	0.67	1.2	0.45
	Benzo[a]anthracene	56553	mg kg-1	N	0.070	0.30	0.14	0.49	0.83	0.29
	Chrysene	218019	mg kg-1	N	0.076	0.44	0.22	0.66	1.0	0.41
	Benzo[b]fluoranthene	205992	mg kg-1	N	< 0.010	0.79	< 0.010	0.69	0.87	0.44
	Benzo[k]fluoranthene	207089	mg kg-1	N	< 0.010	0.45	< 0.010	0.42	0.72	0.30
	Benzo[a]pyrene	50328	mg kg-1	N	< 0.010	0.53	< 0.010	0.51	0.53	0.42

* Accreditation status

This report should be interpreted in conjuction with the notes on the accompanying cover page.

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies

LABORATORY TEST REPORT

Results of analysis of 12 samples received 13 May 2013

C12974 - Greenwood Place, London NW5

Chemtest
The right chemistry to deliver results

Report Date
21 May 2013

					229885					
					AI67544	AI67545	AI67546	AI67547	AI67548	AI67549
					BH1	BH1	BH1	BH2	BH2	DCS1
					2	3	4	2	5	2
					9/5/2013	9/5/2013	9/5/2013	9/5/2013	9/5/2013	9/5/2013
					0.50m	1.35m	1.80m	1.00m	2.50m	0.90m
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2700	Dibenzo[a,h]anthracene	53703	mg kg-1	N	0.38	0.047	< 0.010	0.040	< 0.010	0.043
	Indeno[1,2,3-cd]pyrene	193395	mg kg-1	N	1.6	0.21	< 0.010	0.13	< 0.010	0.31
	Benzo[g,h,i]perylene	191242	mg kg-1	N	1.5	0.26	< 0.010	0.10	< 0.010	0.14
	Total (of 16) PAHs		mg kg-1	N	18	3.3	0.90	4.2	1.1	5.4
	Benzo[j]fluoranthene low level	205823	mg kg-1	N	1.1	0.21	0.11	0.22	<0.01	0.22
2920	Phenols (total)		mg kg-1	N	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3

All tests undertaken between 14/05/2013 and 21/05/2013

* Accreditation status

This report should be interpreted in conjuction with the notes on the accompanying cover page.

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies

LABORATORY TEST REPORT

Results of analysis of 12 samples received 13 May 2013

C12974 - Greenwood Place, London NW5

Chemtest
The right chemistry to deliver results

Report Date
21 May 2013

					229885					
					AI67550	AI67552	AI67553	AI67554	AI67555	AI67556
					DCS1	DCS2	DCS2A	DCS3	DCS4	DCS4
					5	3	3	1	1	2
					9/5/2013	9/5/2013	9/5/2013	9/5/2013	9/5/2013	9/5/2013
					1.50m	1.00m	1.00m	0.30m	0.40m	0.95m
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2700	Dibenzo[a,h]anthracene	53703	mg kg^{-1}	N	< 0.010	< 0.010	< 0.010	0.11	0.11	0.033
	Indeno[1,2,3-cd]pyrene	193395	mg kg^{-1}	N	< 0.010	< 0.010	< 0.010	0.32	0.43	0.22
	Benzo[g,h,i]perylene	191242	mg kg^{-1}	N	< 0.010	< 0.010	< 0.010	0.28	0.45	0.25
	Total (of 16) PAHs		mg kg^{-1}	N	0.77	4.8	1.6	5.5	9.8	4.6
	Benzo[j]fluoranthene low level	205823	mg kg^{-1}	N	<0.01	0.41	<0.01	0.37	0.53	0.25
2920	Phenols (total)		mg kg^{-1}	N	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3

* Accreditation status

This report should be interpreted in conjuction with the notes on the accompanying cover page.

Chemtest
The right chemistry to deliver results

Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies
21 May 2013

Dear James Davies

Test Report Number **229885**
Your Project Reference **C12974 - Greenwood Place, London NW5**

Please find enclosed the results of analysis for the samples received 13 May 2013.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely

Darrell Hall, Director

UKAS TESTING
2183

ISO 14001
sira
UKAS ENVIRONMENTAL MANAGEMENT

Notes to accompany report:

- *The in-house procedure is employed to identify materials and fibres in soils*
- *The sample is examined by stereo-binocular and polarised light microscopy*
- *Sample size is reduced by coning and quartering to obtain a representative sub-sample if necessary*
- *The bulk identification is in accordance with the requirements of the analyst guide (HSG 248)*
- *Samples associated with asbestos are retained for six months*
- *The results relate only to the items tested as supplied by the client*
- *Comments or interpretations are beyond the scope of UKAS accreditation*

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies

LABORATORY TEST REPORT
Asbestos in Soils

Chemtest

Results of analysis of 11 samples
received 13 May 2013
C12974 - Greenwood Place, London NW5

Report Date
21 May 2013

Login Batch No: 229885

Qualitative Results

				SOP 2190	
				ACM Type	Asbestos Identification
Chemtest ID	Sample ID	Sample Desc	Depth (m)		
AI67544	BH1	2	0.50	Free Fibres	Amosite
AI67545	BH1	3	1.35	-	No Asbestos Detected
AI67547	BH2	2	1.00	-	No Asbestos Detected
AI67548	BH2	5	2.50	-	No Asbestos Detected
AI67549	DCS1	2	0.90	-	No Asbestos Detected
AI67550	DCS1	5	1.50	-	No Asbestos Detected
AI67551	DCS1	6	2.30	-	No Asbestos Detected
AI67552	DCS2	3	1.00	-	No Asbestos Detected
AI67553	DCS2A	3	1.00	-	No Asbestos Detected
AI67554	DCS3	1	0.30	-	No Asbestos Detected
AI67555	DCS4	1	0.40	-	No Asbestos Detected

The detection limit for this method is 0.001%

Signed

Steve McGrath
Asbestos Analyst

All tests undertaken between 21-May-2013 and 21-May-2013

LIMS sample ID range AI67544 to AI67555

Chemtest
The right chemistry to deliver results

Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies
23 May 2013

Dear James Davies

Test Report Number **230134**
Your Project Reference **C12974 Greenwood Place, London NW5**

Please find enclosed the results of analysis for the samples received 15 May 2013.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely

Phil Hellier, Director

UKAS TESTING
2183

ISO 14001 sira UKAS ENVIRONMENTAL MANAGEMENT

Notes to accompany report:

- *The sign < means 'less than'*
- *Tests marked 'U' hold UKAS accreditation*
- *Tests marked 'M' hold MCertS (and UKAS) accreditation*
- *Tests marked 'N' do not currently hold UKAS accreditation*
- *Tests marked 'S' were subcontracted to an approved laboratory*
- *n/e means 'not evaluated'*
- *i/s means 'insufficient sample'*
- *u/s means 'unsuitable sample'*
- *Comments or interpretations are beyond the scope of UKAS accreditation*
- *The results relate only to the items tested*
- *All results are expressed on a dry weight basis*
- *The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, phenols*
- *For all other tests the samples were dried at < 37°C prior to analysis*
- *Uncertainties of measurement for the determinands tested are available upon request*
- *None of the test results included in this report have been recovery corrected*

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies

LABORATORY TEST REPORT

Results of analysis of 1 sample
received 15 May 2013

C12974 Greenwood Place, London NW5

Chemtest
The right chemistry to deliver results

Report Date
23 May 2013

Login Batch No					230134
Chemtest LIMS ID					AI68908
Sample ID					BH1
Sample No					W1
Sampling Date					13/5/2013
Depth					3.75m
Matrix					*WATER*
SOP↓	Determinand↓	CAS No↓	Units↓		
1010	pH	PH		U	7.0
1180	Sulfur	7704349	mg l-1	N	1100
1300	Cyanide (total)	57125	mg l-1	U	< 0.05
	Cyanide (free)	57125	mg l-1	U	< 0.05
	Thiocyanate	302045	mg l-1	U	< 0.5
1325	Sulfide	18496258	mg l-1	U	<0.050
1220	Sulfate	14808798	mg l-1	U	3400
1450	Arsenic	7440382	µg l-1	U	4.6
	Boron	7440428	µg l-1	U	360
	Cadmium	7440439	µg l-1	U	<0.080
	Chromium	7440473	µg l-1	U	6.5
	Copper	7440508	µg l-1	U	7.9
	Mercury	7439976	µg l-1	U	<0.50
	Nickel	7440020	µg l-1	U	18
	Lead	7439921	µg l-1	U	<1.0
	Selenium	7782492	µg l-1	U	17
	Zinc	7440666	µg l-1	U	120
1490	Chromium (hexavalent)	18540299	µg l-1	U	<20
1675	TPH aliphatic >C5-C6		µg l-1	N	< 0.1
	TPH aliphatic >C6-C8		µg l-1	N	< 0.1
	TPH aliphatic >C8-C10		µg l-1	N	< 0.1
	TPH aliphatic >C10-C12		µg l-1	N	< 0.1
	TPH aliphatic >C12-C16		µg l-1	N	< 0.1
	TPH aliphatic >C16-C21		µg l-1	N	< 0.1

[1]The sample container/fill level was not appropriate for the specified analysis - these results may be compromised. The accreditation for these results remains unaffected.

All tests undertaken between 16/05/2013 and 23/05/2013

* Accreditation status

This report should be interpreted in conjuction with the notes on the accompanying cover page.

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies

LABORATORY TEST REPORT

Results of analysis of 1 sample received 15 May 2013

C12974 Greenwood Place, London NW5

Chemtest
The right chemistry to deliver results

Report Date
23 May 2013

					230134
					AI68908
					BH1
					W1
					13/5/2013
					3.75m
					WATER
1675	TPH aliphatic >C21-C35		µg l-1	N	< 0.1
	TPH aliphatic >C35-C44		µg l-1	N	< 0.1
	TPH aromatic >C5-C7		µg l-1	N	< 0.1
	TPH aromatic >C7-C8		µg l-1	N	< 0.1
	TPH aromatic >C8-C10		µg l-1	N	< 0.1
	TPH aromatic >C10-C12		µg l-1	N	< 0.1
	TPH aromatic >C12-C16		µg l-1	N	< 0.1
	TPH aromatic >C16-C21		µg l-1	N	< 0.1
	TPH aromatic >C21-C35		µg l-1	N	< 0.1
	TPH aromatic >C35-C44		µg l-1	N	< 0.1
	Total Petroleum Hydrocarbons		µg l-1	N	< 10
	Total Aliphatic Hydrocarbons		µg l-1	N	< 5
	Total Aromatic Hydrocarbons		µg l-1	N	< 5
1701	PAH (total EPA 16)		µg l-1	U	<2
1760	Methyl tert-butylether	1634044	µg l-1	N	<1.0 [1]
	Dichlorodifluoromethane	75718	µg l-1	U	<1.0 [1]
	Chloromethane	74873	µg l-1	U	<1.0 [1]
	Vinyl chloride	75014	µg l-1	U	<1.0 [1]
	Bromomethane	74839	µg l-1	U	<20 [1]
	Chloroethane	75003	µg l-1	U	<2.0 [1]
	Trichlorofluoromethane	75694	µg l-1	U	<1.0 [1]
	1,1-Dichloroethene	75354	µg l-1	U	<1.0 [1]
	Dichloromethane	75092	µg l-1	N	ne [1]
	trans-1,2-Dichloroethene	156605	µg l-1	U	<1.0 [1]
	1,1-Dichloroethane	75343	µg l-1	U	<1.0 [1]

[1]The sample container/fill level was not appropriate for the specified analysis - these results may be compromised. The accreditation for these results remains unaffected.

All tests undertaken between 16/05/2013 and 23/05/2013

* Accreditation status

This report should be interpreted in conjuction with the notes on the accompanying cover page.

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies

LABORATORY TEST REPORT

Results of analysis of 1 sample
received 15 May 2013

C12974 Greenwood Place, London NW5

Chemtest
The right chemistry to deliver results

Report Date
23 May 2013

					230134 AI68908 BH1 W1 13/5/2013 3.75m *WATER*
1760	cis-1,2-Dichloroethene	156592	µg l-1	U	<1.0 [1]
	Bromochloromethane	74975	µg l-1	U	<1.0 [1]
	Trichloromethane	67663	µg l-1	U	<1.0 [1]
	1,1,1-Trichloroethane	71556	µg l-1	U	<1.0 [1]
	Tetrachloromethane	56235	µg l-1	U	<1.0 [1]
	1,1-Dichloropropene	563586	µg l-1	U	<1.0 [1]
	Benzene	71432	µg l-1	U	<1.0 [1]
	1,2-Dichloroethane	107062	µg l-1	U	<2.0 [1]
	Trichloroethene	79016	µg l-1	N	<1.0 [1]
	1,2-Dichloropropane	78875	µg l-1	U	<1.0 [1]
	Dibromomethane	74953	µg l-1	U	<10 [1]
	Bromodichloromethane	75274	µg l-1	U	<5.0 [1]
	cis-1,3-Dichloropropene	10061015	µg l-1	U	<10 [1]
	Toluene	108883	µg l-1	U	<1.0 [1]
	trans-1,3-Dichloropropene	10061026	µg l-1	U	<10 [1]
	1,1,2-Trichloroethane	79005	µg l-1	U	<10 [1]
	Tetrachloroethene	127184	µg l-1	U	<1.0 [1]
	1,3-Dichloropropane	142289	µg l-1	U	<2.0 [1]
	Dibromochloromethane	124481	µg l-1	U	<10 [1]
	1,2-Dibromoethane	106934	µg l-1	U	<5.0 [1]
	Chlorobenzene	108907	µg l-1	U	<1.0 [1]
	1,1,1,2-Tetrachloroethane	630206	µg l-1	U	<2.0 [1]
	Ethylbenzene	100414	µg l-1	U	<1.0 [1]
	m- & p-Xylene	1330207	µg l-1	U	<1.0 [1]
	o-Xylene	95476	µg l-1	U	<1.0 [1]

[1]The sample container/fill level was not appropriate for the specified analysis - these results may be compromised. The accreditation for these results remains unaffected.

All tests undertaken between 16/05/2013 and 23/05/2013

* Accreditation status

This report should be interpreted in conjuction with the notes on the accompanying cover page.

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies

LABORATORY TEST REPORT

Results of analysis of 1 sample
received 15 May 2013

C12974 Greenwood Place, London NW5

Chemtest
The right chemistry to deliver results

Report Date
23 May 2013

					230134
					AI68908
					BH1
					W1
					13/5/2013
					3.75m
					WATER
1760	Styrene	100425	µg l-1	U	<1.0 [1]
	Tribromomethane	75252	µg l-1	U	<10 [1]
	Isopropylbenzene	98828	µg l-1	U	<1.0 [1]
	Bromobenzene	108861	µg l-1	U	<1.0 [1]
	1,2,3-Trichloropropane	96184	µg l-1	U	<50 [1]
	n-Propylbenzene	103651	µg l-1	U	<1.0 [1]
	2-Chlorotoluene	95498	µg l-1	U	<1.0 [1]
	1,2,4-Trimethylbenzene	95636	µg l-1	U	<1.0 [1]
	4-Chlorotoluene	106434	µg l-1	U	<1.0 [1]
	tert-Butylbenzene	98066	µg l-1	U	<1.0 [1]
	1,3,5-Trimethylbenzene	108678	µg l-1	U	<1.0 [1]
	sec-Butylbenzene	135988	µg l-1	U	<1.0 [1]
	1,3-Dichlorobenzene	541731	µg l-1	U	<1.0 [1]
	4-Isopropyltoluene	99876	µg l-1	U	<1.0 [1]
	1,4-Dichlorobenzene	106467	µg l-1	U	<1.0 [1]
	n-Butylbenzene	104518	µg l-1	U	<1.0 [1]
	1,2-Dichlorobenzene	95501	µg l-1	U	<1.0 [1]
	1,2-Dibromo-3-chloropropane	96128	µg l-1	U	<50 [1]
	1,2,4-Trichlorobenzene	120821	µg l-1	U	<1.0 [1]
	Hexachlorobutadiene	87683	µg l-1	U	<1.0 [1]
1920	Phenols (total)		mg l-1	N	< 0.03

[1]The sample container/fill level was not appropriate for the specified analysis - these results may be compromised. The accreditation for these results remains unaffected.

All tests undertaken between 16/05/2013 and 23/05/2013

* Accreditation status

This report should be interpreted in conjuction with the notes on the accompanying cover page.

Chemtest
The right chemistry to deliver results

Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies
20 June 2013

Dear James Davies

Test Report Number **232404**
Your Project Reference **C12974 - Greenwood Place, London NW5**

Please find enclosed the results of analysis for the samples received 14 June 2013.

All soil samples will be retained for a period of one month and all water samples will be retained for 7 days following the date of the test report. Should you require an extended retention period then please detail your requirements in an email to customerservices@chemtest.co.uk. Please be aware that charges may be applicable for extended sample storage.

If you require any further assistance, please do not hesitate to contact the Customer Services team.

Yours sincerely

Darrell Hall, Director

UKAS TESTING
2183

ISO 14001 sira UKAS ENVIRONMENTAL MANAGEMENT

Notes to accompany report:

- *The sign < means 'less than'*
- *Tests marked 'U' hold UKAS accreditation*
- *Tests marked 'M' hold MCertS (and UKAS) accreditation*
- *Tests marked 'N' do not currently hold UKAS accreditation*
- *Tests marked 'S' were subcontracted to an approved laboratory*
- *n/e means 'not evaluated'*
- *i/s means 'insufficient sample'*
- *u/s means 'unsuitable sample'*
- *Comments or interpretations are beyond the scope of UKAS accreditation*
- *The results relate only to the items tested*
- *All results are expressed on a dry weight basis*
- *The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, phenols*
- *For all other tests the samples were dried at < 37°C prior to analysis*
- *Uncertainties of measurement for the determinands tested are available upon request*
- *None of the test results included in this report have been recovery corrected*

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies

LABORATORY TEST REPORT

Results of analysis of 3 samples received 14 June 2013

C12974 - Greenwood Place, London NW5

Chemtest
The right chemistry to deliver results

Report Date
20 June 2013

Login Batch No					232404		
Chemtest LIMS ID					AI82511	AI82512	AI82513
Sample ID					DCS1	BH1	BH2
Sample No					W1	W1	W1
Sampling Date					29/5/2013	3/6/2013	13/6/2013
Depth					1.21m	2.56m	1.53m
Matrix					*WATER*	*WATER*	*WATER*
SOP↓	Determinand↓	CAS No↓	Units↓	*			
1010	pH	PH		U	6.5	6.9	6.8
1300	Cyanide (total)	57125	mg l-1	U	< 0.05		< 0.05
	Cyanide (free)	57125	mg l-1	U	< 0.05		< 0.05
	Thiocyanate	302045	mg l-1	U	< 0.5		< 0.5
1180	Sulfur	7704349	mg l-1	N	63		80
1325	Sulfide	18496258	mg l-1	U	<0.050		<0.050
1220	Sulfate	14808798	mg l-1	U	190	1700	240
1450	Arsenic	7440382	µg l-1	U	9.6		3.0
	Boron	7440428	µg l-1	U	320		210
	Cadmium	7440439	µg l-1	U	<0.080		<0.080
	Chromium	7440473	µg l-1	U	13		8.3
	Copper	7440508	µg l-1	U	3.1		3.1
	Mercury	7439976	µg l-1	U	<0.50		<0.50
	Nickel	7440020	µg l-1	U	25		13
	Lead	7439921	µg l-1	U	<1.0		<1.0
	Selenium	7782492	µg l-1	U	5.5		3.6
	Zinc	7440666	µg l-1	U	17		11
1490	Chromium (hexavalent)	18540299	µg l-1	U	<20 [1]		<20
1675	TPH aliphatic >C5-C6		µg l-1	N	< 0.1 [1]		< 0.1
	TPH aliphatic >C6-C8		µg l-1	N	< 0.1 [1]		< 0.1
	TPH aliphatic >C8-C10		µg l-1	N	< 0.1 [1]		< 0.1
	TPH aliphatic >C10-C12		µg l-1	N	< 0.1 [1]		< 0.1
	TPH aliphatic >C12-C16		µg l-1	N	< 0.1 [1]		< 0.1
	TPH aliphatic >C16-C21		µg l-1	N	< 0.1 [1]		< 0.1

[1]The stability time for this analyte has been exceeded - these results may be compromised. The accreditation for these results remains unaffected.

All tests undertaken between 14/06/2013 and 20/06/2013

* Accreditation status

This report should be interpreted in conjuction with the notes on the accompanying cover page.

Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies

LABORATORY TEST REPORT

Results of analysis of 3 samples received 14 June 2013

C12974 - Greenwood Place, London NW5

Chemtest
The right chemistry to deliver results

Report Date
20 June 2013

					232404		
					AI82511	AI82512	AI82513
					DCS1	BH1	BH2
					W1	W1	W1
					29/5/2013	3/6/2013	13/6/2013
					1.21m	2.56m	1.53m
					WATER	*WATER*	*WATER*
1675	TPH aliphatic >C21-C35		µg l-1	N	< 0.1 [1]		< 0.1
	TPH aliphatic >C35-C44		µg l-1	N	< 0.1 [1]		< 0.1
	TPH aromatic >C5-C7		µg l-1	N	< 0.1 [1]		< 0.1
	TPH aromatic >C7-C8		µg l-1	N	4.6 [1]		< 0.1
	TPH aromatic >C8-C10		µg l-1	N	8.5 [1]		< 0.1
	TPH aromatic >C10-C12		µg l-1	N	12 [1]		< 0.1
	TPH aromatic >C12-C16		µg l-1	N	8.0 [1]		< 0.1
	TPH aromatic >C16-C21		µg l-1	N	< 0.1 [1]		< 0.1
	TPH aromatic >C21-C35		µg l-1	N	< 0.1 [1]		< 0.1
	TPH aromatic >C35-C44		µg l-1	N	< 0.1 [1]		< 0.1
	Total Petroleum Hydrocarbons		µg l-1	N	33 [1]		< 10
	Total Aliphatic Hydrocarbons		µg l-1	N	< 5 [1]		< 5
	Total Aromatic Hydrocarbons		µg l-1	N	33 [1]		< 5
1701	PAH (total EPA 16)		µg l-1	U	<2		<2
1760	Methyl tert-butylether	1634044	µg l-1	N	<1.0 [1]		<1.0
	Dichlorodifluoromethane	75718	µg l-1	U	<1.0 [1]		<1.0
	Chloromethane	74873	µg l-1	U	<1.0 [1]		<1.0
	Vinyl chloride	75014	µg l-1	U	6100 [1]		<1.0
	Bromomethane	74839	µg l-1	U	<20 [1]		<20
	Chloroethane	75003	µg l-1	U	<2.0 [1]		<2.0
	Trichlorofluoromethane	75694	µg l-1	U	<1.0 [1]		<1.0
	1,1-Dichloroethene	75354	µg l-1	U	190 [1]		<1.0
	Dichloromethane	75092	µg l-1	N	ne [1]		ne
	trans-1,2-Dichloroethene	156605	µg l-1	U	180 [1]		1.4
	1,1-Dichloroethane	75343	µg l-1	U	<1.0 [1]		<1.0

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* Accreditation status

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Ground Engineering Limited
Newark Road
Peterborough

PE1 5UA

FAO James Davies

LABORATORY TEST REPORT

Results of analysis of 3 samples received 14 June 2013

C12974 - Greenwood Place, London NW5

Chemtest
The right chemistry to deliver results

Report Date
20 June 2013

					232404		
					AI82511	AI82512	AI82513
					DCS1	BH1	BH2
					W1	W1	W1
					29/5/2013	3/6/2013	13/6/2013
					1.21m	2.56m	1.53m
					WATER	*WATER*	*WATER*
1760	cis-1,2-Dichloroethene	156592	µg l-1	U	140000 [1]		36
	Bromochloromethane	74975	µg l-1	U	<1.0 [1]		<1.0
	Trichloromethane	67663	µg l-1	U	<1.0 [1]		<1.0
	1,1,1-Trichloroethane	71556	µg l-1	U	<1.0 [1]		<1.0
	Tetrachloromethane	56235	µg l-1	U	<1.0 [1]		<1.0
	1,1-Dichloropropene	563586	µg l-1	U	<1.0 [1]		<1.0
	Benzene	71432	µg l-1	U	8.1 [1]		<1.0
	1,2-Dichloroethane	107062	µg l-1	U	6.2 [1]		<2.0
	Trichloroethene	79016	µg l-1	N	5600 [1]		59
	1,2-Dichloropropane	78875	µg l-1	U	<1.0 [1]		<1.0
	Dibromomethane	74953	µg l-1	U	<10 [1]		<10
	Bromodichloromethane	75274	µg l-1	U	<5.0 [1]		<5.0
	cis-1,3-Dichloropropene	10061015	µg l-1	U	<10 [1]		<10
	Toluene	108883	µg l-1	U	27 [1]		<1.0
	trans-1,3-Dichloropropene	10061026	µg l-1	U	<10 [1]		<10
	1,1,2-Trichloroethane	79005	µg l-1	U	<10 [1]		<10
	Tetrachloroethene	127184	µg l-1	U	120 [1]		3.4
	1,3-Dichloropropane	142289	µg l-1	U	<2.0 [1]		<2.0
	Dibromochloromethane	124481	µg l-1	U	<10 [1]		<10
	1,2-Dibromoethane	106934	µg l-1	U	<5.0 [1]		<5.0
	Chlorobenzene	108907	µg l-1	U	<1.0 [1]		<1.0
	1,1,1,2-Tetrachloroethane	630206	µg l-1	U	<2.0 [1]		<2.0
	Ethylbenzene	100414	µg l-1	U	<1.0 [1]		<1.0
	m- & p-Xylene	1330207	µg l-1	U	3.4 [1]		<1.0
	o-Xylene	95476	µg l-1	U	1.9 [1]		<1.0

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20 June 2013

					232404		
					AI82511	AI82512	AI82513
					DCS1	BH1	BH2
					W1	W1	W1
					29/5/2013	3/6/2013	13/6/2013
					1.21m	2.56m	1.53m
					WATER	*WATER*	*WATER*
1760	Styrene	100425	µg l-1	U	<1.0 [1]		<1.0
	Tribromomethane	75252	µg l-1	U	<10 [1]		<10
	Isopropylbenzene	98828	µg l-1	U	<1.0 [1]		<1.0
	Bromobenzene	108861	µg l-1	U	<1.0 [1]		<1.0
	1,2,3-Trichloropropane	96184	µg l-1	U	<50 [1]		<50
	n-Propylbenzene	103651	µg l-1	U	<1.0 [1]		<1.0
	2-Chlorotoluene	95498	µg l-1	U	<1.0 [1]		<1.0
	1,2,4-Trimethylbenzene	95636	µg l-1	U	1.3 [1]		<1.0
	4-Chlorotoluene	106434	µg l-1	U	<1.0 [1]		<1.0
	tert-Butylbenzene	98066	µg l-1	U	<1.0 [1]		<1.0
	1,3,5-Trimethylbenzene	108678	µg l-1	U	<1.0 [1]		<1.0
	sec-Butylbenzene	135988	µg l-1	U	<1.0 [1]		<1.0
	1,3-Dichlorobenzene	541731	µg l-1	U	<1.0 [1]		<1.0
	4-Isopropyltoluene	99876	µg l-1	U	<1.0 [1]		<1.0
	1,4-Dichlorobenzene	106467	µg l-1	U	<1.0 [1]		<1.0
	n-Butylbenzene	104518	µg l-1	U	<1.0 [1]		<1.0
	1,2-Dichlorobenzene	95501	µg l-1	U	<1.0 [1]		<1.0
	1,2-Dibromo-3-chloropropane	96128	µg l-1	U	<50 [1]		<50
	1,2,4-Trichlorobenzene	120821	µg l-1	U	<1.0 [1]		<1.0
	Hexachlorobutadiene	87683	µg l-1	U	<1.0 [1]		<1.0
1920	Phenols (total)		mg l-1	N	< 0.03		< 0.03

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