REPORT ON
DESK STUDY AND CONTAMINATION ASSESSMENT
AT
248 KILBURN HIGH ROAD
LONDON NW6 2BS

CLIENT: INSIDE-OUT ARCHITECTURE

DATE: 21 JANUARY 2013 **REF:** G/121224/002

K F GEOTECHNICAL

CONSULTING GEOTECHNICAL ENGINEERS

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1. INTRODUCTION

1.1 We were instructed by Inside Out Architecture Limited, to carry out a contamination assessment including desk study and the testing of eight samples across the site for 248 Kilburn High Road, London NW6 2BS.

1.2 The site until recently has been a car sales business and the proposal is to construct a block of flats with car parking and with small areas of landscaping.

1.3 We attended the site to take the eight samples on the 18 December 2012. We also put down a single hand augered borehole with preliminary gas monitoring carried out within this.

2. THE SITE

2.1 Kilburn High Road forms part of the A5 leading to the north from the centre of London. No. 248 is a yard which used to be used for second-hand car sales and lies at the side and behind No. 250 on the eastern side of the road.

2.2 The site is basically level and is concrete clad. At the rear of the yard there are building that back on to Kilburn Grange Park.

2.3 There is no vegetation on the site itself but there are hedges and small trees close to the rear boundary with Kilburn Grange Park.

2.4 The Geological Survey Sheet for the area, Sheet No. 256 (North London), indicates that the naturally occurring subsoil is London Clay.

3. DESK STUDY

3.1 We carried out an internet based desk study including a study of historical maps.

3.2 Historical Maps

3.2.1 We have accessed maps to the 1:2500 and 1:10560 (later 1:10000) scale extending back to 1874 on the 1:10560 scale, with the latest map being 2012 on the 1:10000 scale. We will refer primarily to the 1:2500 scale maps only referring to the 1:10560 (later 1:10000) scale maps if these show anything materially different.

3.2.2 The oldest map to 1:2500 scale is 1879 and this shows the site as being open, possibly forming parts of gardens for houses or retail outlets facing onto the main road which at this time is called Watling Street. The site is surrounded by orchards and greenhouses.

3.2.3 The next available map to this scale is 1896. This shows the site as being a yard surrounded by outbuildings. The orchards are now absent and the area to the rear is shown as open fields or ornamental gardens.

3.2.4 The 1915 map shows the site as being occupied by a picture theatre. A large house known as The Grange which used to be nearby to the southeast is now demolished but the area is unchanged.

3.2.5 The 1935 map shows the picture theatre now being labelled as a hall. There is a timber yard shown immediately adjacent to the site to the left behind properties facing onto Kilburn High Road. Further houses have been built in what was The Grange including a cinema within 75m to the southeast. The area to the rear of the site is now labelled Kilburn Grange Park.

3.2.6 The 1937 map shows the site being occupied by a billiards hall. After that, the maps to this scale are poor but do not appear to show any significant change to the site. It is not clear when the building was demolished.

3.2.7 The 1:10560 (later 1:10000) scale maps show nothing that is different or relevant.

3.3 Environmental Data Sheets

3.3.1 Dealing now with the Envirocheck Data Sheets. The detailed sheets are appended at the rear of this report but the salient points are as follows.

3.3.2 There are no surface water features within 250m of the site.

3.3.3 There are three local authority pollution prevention and controls in place within 172m. All of these relate to dry cleaning business nearby.

3.3.4 The site lies within a non-aquifer.

3.3.5 There is no risk of tidal or fluvial flooding.

3.3.6 There are no landfill sites within 250m.

3.3.7 The site does not lie within a coal mining affected area and there is no hazard from compressible ground, ground dissolution or running sand. There is a very low potential for collapsible ground and landslide. There is a moderate potential for shrinking or swelling clay.

3.3.8 The site does not lie within a radon-affected area and no radon protection measures are required for the construction of new dwellings or extensions.

3.3.9 Due to the commercial nature of the area there are several contemporary trade directory entries. The nearest is an inactive cleaning services. The nearest active is an oven cleaning business at No. 274 Kilburn High Road and there is an active builders merchants at 147m. All other trades are more than 170m distance.

3.4 Risk Assessment and Conceptual Model

3.4.1 The desk study, in particular the historic maps, indicate that the site has been occupied through most of its history by a hall that was originally used as a cinema and more latterly a billiard hall before being demolished at some point in the 1950s or 1960s. More recently it has been a car sales business.

3.4.2 Based on this history, the most likely source of contamination would be fill material possibly following demolition and this would be a potential source of heavy metals and PAH. Other than that there have been cars parked on the site for some years. There is no record of there being any car repair or maintenance having been carried out on the site but this is always a possibility and there is, therefore, the risk of some hydrocarbon contamination due to spillages of fuel and oil. There are no underground tanks on the site.

3.4.3 The site is hard covered but there is always the potential of runoff to verges and into the underlying natural ground via leaking gullies and drains. This would be a potential source of heavy metals, PAH and TPH.

3.4.4 We give below a graphical representation of our conceptual model.

Table 1 – Conceptual Model

Potential Contamination Source	Potential Contaminands	Potential Pathways	Likely Receptors
Fill Material	• Heavy metals • PAH	• Digestion • Ingestion • Dermal contact	• End users • Groundworkers
Fuel Spillages	• PAH • TPH • Heavy Metals	• Digestion • Ingestion • Dermal contact	• End users • Groundworkers • Services

3.4.5 The site is to be redeveloped for at least in part, a residential end use and based on this the most vulnerable group would be end users of the site that might come in contact with the soil and any proposed landscaped or garden areas. This would especially apply to small children.

3.4.6 We would consider the risk of some contamination on this site as moderate and therefore without remediation there would be a correspondingly moderate risk of harm to this group if there are to be any gardens or landscaped areas.

3.4.7 The site lies within a non-aquifer and there are no controlled waters within 250m. There is, therefore, no risk of harm to these receptors. Similarly, because the site is underlain by impermeable London Clay there is a very low risk of migration of any contaminands from this site onto nearby sites or onto the site from adjoining properties.

3.4.8 There are no landfill sites within the vicinity of the site and again, due to the impermeability of the clay there is a negligible risk of soil gas.

3.4.9 There is a potential risk of harm to groundworkers during the course of the work should they come in contact with any contaminated soil. However, any such contact will be short-lived and harm can be largely prevented by the appropriate use of personal protective equipment and a sensible hygiene regime.

3.4.10 In the absence of any obvious source of contamination on the site our samples were taken on an even spread across the site as indicated on our Location Plan.

4. SITE WORK

4.1 The layout of the site and the location of out eight sampling points together with the 3.0m deep hand augered borehole and gas monitoring is indicated on our Location Plan G/121224/101.

4.2 The borehole revealed 100mm of loose broken tarmac over hardcore to 300mm. Below this is made ground consisting of a soft silty sandy clay with gravel and brick. The natural ground encountered at 1.2m consists of a firm silty sandy clay becoming a firm silty clay at 1.7m and proved to the base of the borehole at 3.0m.

4.3 Gas monitoring was carried out within the borehole and no traces of methane or carbon dioxide were measured and there was no measurable flow.

4.4 Each of the eight samples for contamination testing were taken from the top 300mm and these were placed in suitable sealed containers and sent via cool box to our specialist laboratories for contamination analysis.

5. LABORATORY WORK

5.1 Contamination Analysis

5.1.1 The samples were placed in suitable sealed containers and sent via cool box to our specialist laboratories, Chemtest, for analysis.

5.1.2 Each sample was tested for the range of common toxic metals and metalloids, phytotoxic elements and organics, pH and sulphates plus total petroleum hydrocarbons. The results are appended.

5.1.3 There has been recent updated Soil Guideline Values (SGV) issued for arsenic, cadmium, mercury, nickel, selenium and phenol. The results have been compared against appropriate SGV for these determinands. Where new values have not been issued, then the results have been compared against previous SGVs, which relate to lead and chromium or against Generic Assessment Criteria based on the CLEA model produced by LQM and others.

5.1.4 The proposed development of the site is for a four storey block of flats with very small areas of landscaping. The most appropriate SGVs based on the latest CLEA model is, therefore, Residential.

5.1.5 When the results are compared against the appropriate threshold there are undue concentrations of:

Arsenic. The threshold is currently 32mg/kg and this is exceeded in sample S8 with a concentration of 140mg/kg.

Lead. The threshold is 450mg/kg and this is exceeded in the sample from S8 with 2300mg/kg.

Benzo[a]pyrene. The target figure is currently 1.1mg/kg and this is exceeded in all samples except for sample S7 with concentrations ranging from 1.5mg/kg in borehole 1 up to a high of 41mg/kg in sample S2.

5.1.6 There are also relatively high total petroleum hydrocarbon figures in sample S2 of 790mg/kg against a normally accepted target figure for a residential end use of 500mg/kg.

6. DISCUSSION

6.1 Apart from the sample S8 close to the entrance of the site and in an area which will be car parking, there are relatively low levels of contamination across the site consistent with the fill material found in our borehole and in-line with expectations based on our conceptual model.

6.2 The results would indicate that remediation will have to be undertaken within any proposed landscaped areas and we attached a remediation method statement for these areas.

6.3 In addition, further investigation might be required in the vicinity of S2 due to the elevated levels of petroleum hydrocarbons with the associated potential for producing vapours which might permeate into the proposed building.

6.4 It is likely that the area of such contamination is confined for two reasons; the first being that the underlying subsoil is impermeable London Clay which will largely prevent migration of contaminands and gases and vapours, but also because of the spread of testing carried out across the site and the fact that S2 is the only sample to have elevated levels.

6.5 It might be worthwhile on this basis to carry out further testing on, say, a 3.0m radius from S2 to determine the lateral and vertical extent of the hydrocarbon contamination with a view to its removal. The alternative might be that a vapour barrier is installed within the floor slab construction but this can be relatively expensive.

6.6 The test results indicate that any soil taken off this site will have to be removed as non-reactive hazardous waste but this will relate only to the fill material as it is very unlikely that there is any contamination to the natural underlying silty clay.

6.7 It is possible that the receiving landfill sites might require Waste Acceptance Criteria (WAC) testing on selected samples and we would suggest that this sampling is carried out on samples taken during any future visits.

6.8 The single round of gas monitoring revealed no undue concentrations of any soil gas and this is in-line with expectations based on our conceptual model. In the absence of any flow this leads to a Characteristic Situation 1 according to CIRIA Publication C665 'Assessing Risks Posed by Hazardous Ground Gases to Buildings'. This means that no special precautions are required to prevent the ingress of gas into the building.

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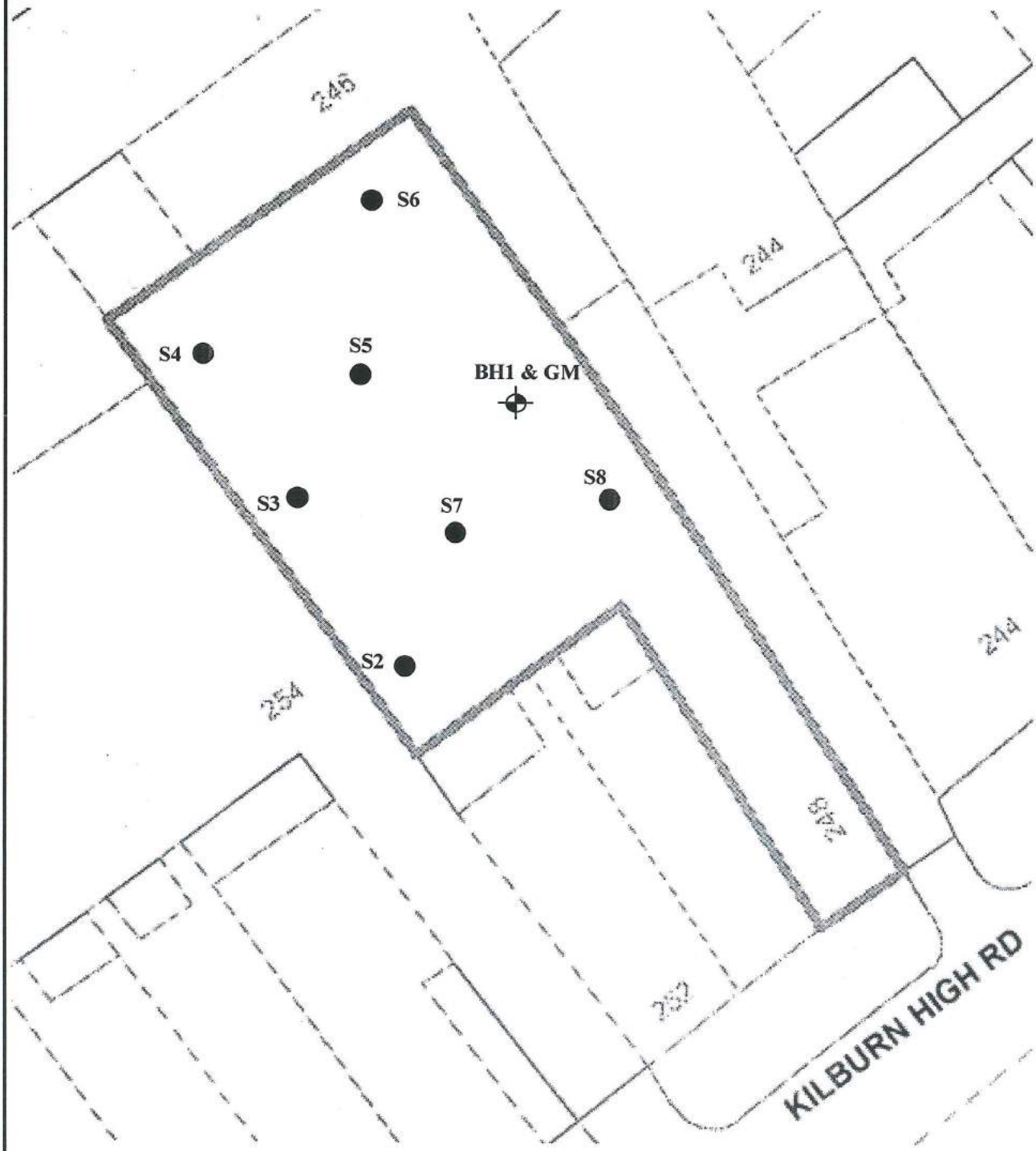
SITE LOCATION PLAN

Ref: G/121224/101

Sheet: 1 of 1 | Scale: N/A | Date: 18 December 2012

Client: Inside-Out Architecture Limited

Location: **248 KILBURN HIGH ROAD, LONDON, NW6 2BS**



Remarks:

Key:

⊕	Borehole (BH)	SVP	Soil Vent Pipe	MH	Manhole
⊠	Trial pit (TP)	RWP	Rainwater Pipe	G	Gully
●	Samples (S)	⊠	Soakaway (SW)	◇	Tree/Bush (approx. ht in m)

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Borehole 1		Ref: G121224
Sheet: 1	Scale: 1:20	Date: 18/12/12
Client: INSIDE-OUT ARCHITECTURE LTD		
Equipment & Method : Hand Auger	Location: 248 KILBURN HIGH ROAD, LONDON NW6	

Description of Strata [thickness]	Reduced Level	Legend	Depth	Samples Type	Samples Depth	Tests Type	Tests Value	Field Notes
Loose broken tarmac (0.10)	-0.10		0.10					
HARDCORE: compact concrete, brick and gravel (0.20)	-0.30		0.30					
MADE GROUND:soft brown/orange silty sandy clay with gravel and brick (0.90)				D	0.60			
Firm grey/blue sandy silty CLAY (0.50)	-1.20		1.20	D	1.20	V	82	
Firm brown silty CLAY (1.30)	-1.70		1.70	D	1.70	V	68	
					2.00	V	72	
				D	2.50	V	80	
Base of Borehole	-3.00		3.00	D	3.00			

Where 0.3m penetration has not been achieved, the number of blows for the quoted penetration is given. (Not the N value)
All depths and reduced levels are in metres.
Water level observations during boring are given on the last sheet of the log.

U Undisturbed Sample
D Disturbed Sample
B Bulk Sample
W Water Sample
S Standard Penetration Test
V Vane Test
MP Mackintosh Probe

Remarks
Borehole dry and open on completion

Chemtest
The right chemistry to deliver results

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Newmarket
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FAO Bill Wallace
17 January 2013

Dear Bill Wallace

Test Report Number **220211**
Your Project Reference **248 Kilburn High Road**

Please find enclosed the results of analysis for the samples received 11 January 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

Keith Jones, Technical Manager

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*

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FAO Bill Wallace

LABORATORY TEST REPORT

Results of analysis of 8 samples
received 11 January 2013

248 Kilburn High Road

Chemtest
The right chemistry to deliver results

Report Date
17 January 2013

Login Batch No					220211					
Chemtest LIMS ID					AI14321	AI14322	AI14323	AI14324	AI14325	AI14326
Sample ID					BH1	S2	S3	S4	S5	S6
Sample No										
Sampling Date					Not Provided	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided
Depth					0.300m - 1.000m	0.200m - 0.300m	0.200m - 0.300m	0.200m - 0.300m	0.200m - 0.300m	0.200m - 0.300m
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*						
2010	pH			M	7.7	7.9	8.5	8.4	8.3	8.2
2300	Cyanide (free)	57125	mg kg-1	M	2.2	<0.50	<0.50	<0.50	<0.50	<0.50
	Cyanide (total)	57125	mg kg-1	M	1.3	<0.50	<0.50	<0.50	<0.50	<0.50
	Thiocyanate	302045	mg kg-1	M	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2325	Sulfide (Easily Liberatable)	18496258	mg kg-1	M	1.8	41	29	16	14	4.6
2625	Organic matter		%	M	4.3	1.9	6.0	4.5	5.2	16
2120	Boron (hot water soluble)	7440428	mg kg-1	M	2.2	1.3	2.1	1.6	1.8	2.0
	Sulfate (2:1 water soluble) as SO4	14808798	g l-1	M	0.23	1.5	1.8	1.6	0.88	1.0
2490	Chromium (hexavalent)	18540299	mg kg-1	N	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2430	Sulfate (total) as SO4	14808798	%	M	0.11	2.1	0.93	1.2	0.37	0.39
2450	Arsenic	7440382	mg kg-1	M	21	21	11	14	15	14
	Cadmium	7440439	mg kg-1	M	<0.10	0.77	<0.10	0.31	<0.10	<0.10
	Chromium	7440473	mg kg-1	M	18	19	12	13	15	14
	Copper	7440508	mg kg-1	M	70	42	27	28	27	34
	Mercury	7439976	mg kg-1	M	0.94	0.40	<0.10	0.76	0.96	0.68
	Nickel	7440020	mg kg-1	M	24	19	16	12	15	19
	Lead	7439921	mg kg-1	M	350	320	260	350	390	370
	Selenium	7782492	mg kg-1	M	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	Zinc	7440666	mg kg-1	M	80	78	80	160	97	160
2670	Total Petroleum Hydrocarbons		mg kg-1	M	24 [1,2]	790 [1,2]	210 [1,2]	38 [1,2]	21 [1,2]	360 [1,2]
2700	Naphthalene	91203	mg kg-1	M	2.1	0.67	0.89	0.76	0.85	2.6
	Acenaphthylene	208968	mg kg-1	M	0.32	1.3	1.1	0.27	0.2	0.74
	Acenaphthene	83329	mg kg-1	M	0.51	2.4	0.97	0.4	0.25	4.2

[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.
[2]No sampling date was specified, stability times for this analyte may have been exceeded and these results may be compromised. The accreditation for these results remains unaffected.

All tests undertaken between 11/01/2013 and 17/01/2013

* Accreditation status

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

KF Geotechnical
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FAO Bill Wallace

LABORATORY TEST REPORT

Results of analysis of 8 samples
received 11 January 2013

248 Kilburn High Road

Chemtest
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Report Date
17 January 2013

					220211					
					AI14321	AI14322	AI14323	AI14324	AI14325	AI14326
					BH1	S2	S3	S4	S5	S6
					Not Provided	Not Provided	Not Provided	Not Provided	Not Provided	Not Provided
					0.300m - 1.000m	0.200m - 0.300m	0.200m - 0.300m	0.200m - 0.300m	0.200m - 0.300m	0.200m - 0.300m
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2700	Fluorene	86737	mg kg-1	M	0.23	2.8	1.9	0.46	0.21	5
	Phenanthrene	85018	mg kg-1	M	1.5	31	16	5.4	2.6	37
	Anthracene	120127	mg kg-1	M	0.44	9.2	3.6	1.3	0.64	9.6
	Fluoranthene	206440	mg kg-1	M	3.2	83	32	12	5.1	70
	Pyrene	129000	mg kg-1	M	2.6	69	25	9.2	4.2	53
	Benzo[a]anthracene	56553	mg kg-1	M	1.6	38	16	6.7	2.8	30
	Chrysene	218019	mg kg-1	M	1.5	39	17	6.9	2.9	30
	Benzo[b]fluoranthene	205992	mg kg-1	M	1.5	41	18	6.5	3	29
	Benzo[k]fluoranthene	207089	mg kg-1	M	0.92	27	9.1	4.9	1.9	20
	Benzo[a]pyrene	50328	mg kg-1	M	1.5	41	17	6.3	2.9	29
	Dibenzo[a,h]anthracene	53703	mg kg-1	M	0.77	7.5	4.7	1.7	1.1	4.9
	Indeno[1,2,3-cd]pyrene	193395	mg kg-1	M	1.6	31	16	5.9	1.3	20
	Benzo[g,h,i]perylene	191242	mg kg-1	M	1.5	29	17	4.6	1.8	18
	Total (of 16) PAHs		mg kg-1	M	22	450	200	73	32	360
2920	Phenols (total)		mg kg-1	N	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3

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LABORATORY TEST REPORT

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Login Batch No					220211	
Chemtest LIMS ID					AI14327	AI14328
Sample ID					S7	S8
Sample No						
Sampling Date					Not Provided	Not Provided
Depth					0.200m - 0.300m	0.200m - 0.300m
Matrix					*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*		
2010	pH			M	11.0	8.7
2300	Cyanide (free)	57125	mg kg-1	M	<0.50	<0.50
	Cyanide (total)	57125	mg kg-1	M	<0.50	<0.50
	Thiocyanate	302045	mg kg-1	M	<5.0	<5.0
2325	Sulfide (Easily Liberatable)	18496258	mg kg-1	M	10	10
2625	Organic matter		%	M	4.5	4.8
2120	Boron (hot water soluble)	7440428	mg kg-1	M	1.8	8.0
	Sulfate (2:1 water soluble) as SO4	14808798	g l-1	M	1.4	1.7
2490	Chromium (hexavalent)	18540299	mg kg-1	N	<0.5	<0.5
2430	Sulfate (total) as SO4	14808798	%	M	1.7	2.1
2450	Arsenic	7440382	mg kg-1	M	17	140
	Cadmium	7440439	mg kg-1	M	0.14	1.6
	Chromium	7440473	mg kg-1	M	18	40
	Copper	7440508	mg kg-1	M	33	470
	Mercury	7439976	mg kg-1	M	0.18	0.23
	Nickel	7440020	mg kg-1	M	30	110
	Lead	7439921	mg kg-1	M	210	2300
	Selenium	7782492	mg kg-1	M	<0.20	0.76
	Zinc	7440666	mg kg-1	M	130	640
2670	Total Petroleum Hydrocarbons		mg kg-1	M	120 [1,2]	150 [1,2]
2700	Naphthalene	91203	mg kg-1	M	< 0.1	0.5
	Acenaphthylene	208968	mg kg-1	M	< 0.1	0.41
	Acenaphthene	83329	mg kg-1	M	< 0.1	0.43

[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.
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					220211	
					AI14327	AI14328
					S7	S8
					Not Provided	Not Provided
					0.200m - 0.300m	0.200m - 0.300m
					SOIL	*SOIL*
2700	Fluorene	86737	mg kg-1	M	< 0.1	< 0.1
	Phenanthrene	85018	mg kg-1	M	1	6.9
	Anthracene	120127	mg kg-1	M	0.32	1.8
	Fluoranthene	206440	mg kg-1	M	2.8	19
	Pyrene	129000	mg kg-1	M	2.5	16
	Benzo[a]anthracene	56553	mg kg-1	M	1.5	10
	Chrysene	218019	mg kg-1	M	1.8	10
	Benzo[b]fluoranthene	205992	mg kg-1	M	< 0.1	12
	Benzo[k]fluoranthene	207089	mg kg-1	M	< 0.1	8.2
	Benzo[a]pyrene	50328	mg kg-1	M	< 0.1	12
	Dibenzo[a,h]anthracene	53703	mg kg-1	M	< 0.1	2.2
	Indeno[1,2,3-cd]pyrene	193395	mg kg-1	M	< 0.1	11
	Benzo[g,h,i]perylene	191242	mg kg-1	M	< 0.1	10
	Total (of 16) PAHs		mg kg-1	M	9.9	120
2920	Phenols (total)		mg kg-1	N	<0.3	<0.3

[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.
[2]No sampling date was specified, stability times for this analyte may have been exceeded and these results may be compromised. The accreditation for these results remains unaffected.

* Accreditation status

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

K F GEOTECHNICAL

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G/121224/WJCW/cr

GAS MONITORING AT 248 KILBURN HIGH ROAD, LONDON, NW6 2BS

Atmospheric pressure	:	1018 mbar
Temperature	:	6°C
Weather	:	Sunny/Dry

Results of gas monitoring carried out on the 18 December 2012.

Monitoring Point	O^2	Methane (CH_4) %		Carbon Dioxide CO_2 %	
		Level	Changes	Level	Changes
GM1	20.9	0.0		0.0	
	20.8	0.0		0.0	
	20.8	0.0		0.0	
	20.9	0.0		0.0	
Time:	20.9	0.0		0.0	
08:59.00	20.9	0.0	Steady to 5 mins	0.0	Steady to 5 mins
F/l Tot = 0.0					

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January 2013

G/121224

METHOD STATEMENT FOR CONTAMINATION REMEDIATION
248 KILBURN HIGH ROAD, LONDON, NW6 2BS

- In the landscaped areas only, remove and dispose to suitable landfill sites, 600mm of the surface material. We would anticipate that this will go as stable non-reactive hazardous waste but the precise classification will depend on the individual landfill site operators and they should be provided with the results of the contamination analysis.

- The placing on the formation level of a marker layer, which we would recommend as being a geotextile material.

- The importation to replace the removed material of clean inert subsoil from an approved source up to a minimum of 200mm from finished level.

- Validation of such material or accreditation of this material by recent and relevant analysis of the material.

- The importation of clean inert topsoil from an accredited source with certification that it is uncontaminated for an end use of Residential Without Plant Uptake.

- Validation of the topsoil in-situ and the preparation of a validation report.

Note. *All material removed from the site and brought into the site must accompanied by a Waste Transfer Note or Consignment Note and all details of the work throughout the above stages must be recorded on site for inspection at a later date.*