Chelmer Consultancy Services

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Chemical Interpretive Report

Client:	Ms. Christine Hancock
Site:	46 Inverness Street London NW1 7HB
CCS Ref:	CHEM/4792
Dated:	November 2014

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1.0 EXECUTIVE SUMMARY

Item	Comments	Risk
Site	**46 Inverness Street London NW1 7HB**	
Site History	The site appears to have been occupied by the current single storey building since pre 1870. Uses of the building included most recently a record/music store. Before this it is believed to have been used as a restaurant.	Low
Proposed Development	It is understood the proposed development will include the demolition of the existing structure at N°.46 Inverness Street and to construct a modern, two storey house with a single storey basement in its place.	N/A
Ground Conditions	MADE GROUND was encountered to a maximum depth of 1.80m bgl underlain by London Clay to a maximum drilling depth of 10.00m bgl.	Moderate
Groundwater	No groundwater was encountered during the drilling of the current site works or within the return monitoring visits.	Low
Landborne Gas	Low methane and carbon dioxide concentrations were identified during the return gas monitoring visit. The site could therefore be classified as **GREEN**, or **Characteristic Situation 1** and thus no ground gas protective measures would be required.	Low
Soil Contamination	Elevated arsenic and lead concentrations were identified within the MADE GROUND at BH1, with further elevated lead concentrations identified within BH2, TP1 & TP2. These are considered a potential risk to future construction/groundworkers that may come into contact with the underlying soils, and thus further action is required.	Moderate
Water Contamination	No groundwater sampling was undertaken as part of this investigation. However, due to the unlikely use of potable drinking water at the site or within the close vicinity and the low concentrations of potential contaminants identified, the risk to human health and controlled waters is considered to be '**low**'.	Low
Health and Safety	Health and Safety precautions should include; PPE equipment such as gloves, overalls, masks etc. to prevent dermal contact/ingestion with the soils. Washing facilities should be made available on-site to reduce extended contact with site soils. During the groundwork and construction phases, dust suppression measures may be required to minimise potential inhalation of dust by neighbours or ground workers, which may include wetting of soils.	Moderate
Additional Work	A '**low**' risk is considered to future residents of the site, due to the lack of proposed soft landscaping/gardens and thus no pathway between source and receptor will be present. It is however recommended that the above H&S precautions be adhered to reduce the risk to future construction/ groundworkers during development. It is recommended that all excavated materials be removed from site and taken to an appropriate landfill/treatment facility. It is also recommended a Demolition or Refurbishment Asbestos Survey (previously known as a Type 3 Asbestos Survey) be undertaken prior to development.	N/A

2.0 INTRODUCTION & SCOPE OF WORKS

2.1 The following Preliminary Environmental Assessment has been prepared by Chelmer Site Investigation Laboratories Limited (CSI) to the written instructions of Client for the project, Ms. Christine Hancock.

2.2 The site under consideration was found to comprise a disused roughly rectangular single storey building adjacent to No.44 Inverness Street to the east and No.24 Gloucester Crescent to the north.

2.3 A Phase I Desk Study Investigation was undertaken by CSI ref ENVDTS/4792 dated November 2014 and should be read in conjunction with this report.

2.4 The Phase I DTS identified that the site appears to have been occupied by the current single storey building since pre 1870. Uses of the building included most recently a record/music store. Before this it is believed to have been used as a restaurant.

2.5 It is understood the proposed development will include the demolition of the existing structure at No.46 Inverness Street and to construct a modern, two storey house with a single storey basement in its place. *Proposed development plans* are appended to this report.

2.6 This Preliminary Phase II *Intrusive* site investigation has now been commissioned to provide information on the sub-soil conditions, together with laboratory testing and environmental reporting.

2.7 This report presents the work carried out and discusses the findings.

3.0 FIELDWORKS AND FINDINGS

3.1 All fieldwork was generally executed in accordance with the recommendations given in British Standard BS 5930:1999, "Code of Practice for Site Investigations", contamination sampling was undertaken in accordance with BS 10175: 2011, "Code of Practice for the Investigation of Potentially Contaminated Sites".

3.2 The investigation locations were chosen based on information available from the Desk Top Study and are indicated on the appended *Sketch Fieldwork Location Plan*.

3.3 The fieldwork was undertaken on 15th & 16th September 2014 and comprised the following elements:

C.f.a Borehole

3.4 The scope of works included the drilling of a two c.f.a. boreholes (BH1 & BH2) to a maximum depth of 10.00m bgl within the confines of the site. Discrete samples were selected at regular depths and from each strata change.

3.5 Upon completion of BH1 & BH2 a ground gas/water monitoring well was installed. Installation included a 1.00m metre length of plain 50mm diameter HDPE pipe followed by slotted geotextile wrapped HDPE pipe, capped at the base. A cement/bentonite seal was installed from 1.00m to ground level and each installation was finished with a gas valve on top of the pipe and a lockable stopcock cover concreted in flush with ground level. Full details of the borehole findings are given on the appended borehole record sheets.

Trial Pit

3.6 In addition to the above, three trial pits were hand excavated to a maximum depth of 2.50m bgl, to assess the existing foundations. Full details of the trial pit findings are given on the appended trial pit record sheets.

Landborne Gas Emissions Monitoring

3.7 Following the initial site work, two return gas/groundwater monitoring visits have been undertaken to the installation fitted within borehole BH1 & BH2 on 25th September & 1st October 2014.

3.8 The barometric pressure was recorded together with the level of Carbon Dioxide, Oxygen and Methane within the boreholes. In addition, gas flow measurements were taken and the depth to groundwater recorded.

3.9 Full details of the readings are included on the appended Gas/Groundwater Monitoring Record Sheet.

4.0 GROUND CONDITIONS

4.1 According to information published by the British Geological Survey the underlying geology at this site is shown as the London Clay Formation.

London Clay Formation

It is thought that the London Clay formation was deposited during a period of sea inundation in the area up to 200m in depth. The London Clay can be up to 150m thick beneath south Essex thinning across London to about 90m near Reading. The formation consists of mainly dark blue to brown grey clay containing variable amounts of fine-grained sand and silt. London Clay generally weathers to an orange-brown colour with pockets of silty fine sand. The formation is particularly susceptible to swelling and shrinking when subjected to moisture content changes. In addition, gypsum (selenite) crystals and pyrite nodules are commonly found throughout the formation.

London Clay consists mainly of dark bluish grey to brownish grey clay containing variable amounts of fine-grained sand and silt. When exposed to the weathering process its upper regions oxidise to brown in colour. It usually contains selenite crystals, often grouped in bands or layers, which are thought to have originated from the decomposition of shell fragments. London Clay contains clay minerals in the form of illite, kaolinite and smectite. The presence of smectite renders the London Clay particularly susceptible to heave caused by alternate wetting and drying near the surface. In addition, weathering and possible slight transportation of semi-frozen material "en-masse" in glacial or peri-glacial regions can occur. This action often completely destroys the structure of the material and can involve a serious loss of strength. As the materials are based on local constituents, the lithology of the deposit is often similar to that of the parent strata.

4.2 Full details of the ground conditions encountered in BH1 & BH2 are presented on the borehole record sheets appended to this report and can be summarised as follows:

Depth From (m)	Depth To (m)	Description
0.00/0.025	0.075/0.25	CONCRETE
0.00	0.025	Timber Floorboards
0.075/0.25	0.80/1.80	MADE GROUND
0.80/1.80	10.00+	London Clay

4.3 It should be noted that the MADE GROUND depths recorded above are those encountered within the boreholes undertaken during the current work. Owing to the variable nature and unknown deposition criteria of MADE GROUND it is possible that deeper or more extensive areas of MADE GROUND may exist at this site which have not been revealed by the current work.

4.4 No groundwater was encountered during these works.

4.5 Roots of live and dead appearance of 2mmØ to 1.6m bgl were observed in BH1 and of 1mmØ to 1.8m were observed in BH2.

5.0 LABORATORY TESTING

5.1 The following contamination tests have been carried out on samples recovered from the borehole locations at this site and full details are appended to this report.

The chemical testing was carried out in accordance with standard industry methods in a UKAS approved laboratory which is also currently accredited in accordance with MCERTS for the majority of its testing. Further information regarding this accreditation is available on request together with a full list of test methods if required.

5.2 Chemical Analysis

Four representative samples were selected from the MADE GROUND from BH1 & BH2 and TP1 & TP2 and tested for a range of commonly occurring contaminants and indicators of contamination including those given by the Contaminated Land Exposure Assessment (CLEA).

The contamination suite undertaken at this site included heavy metals, speciated **P**olycyclic**A**romatic **H**ydrocarbon (PAH) and speciated **T**otal **P**etroleum **H**ydrocarbon (TPH).

In addition to the above, two samples was also collected from BH1 & BH2 and selected and tested for Waste Acceptance Criteria (WAC) in accordance with BS EN 12457 Part 3.

5.3 Samples

All soil samples will be kept for a period of 28 days after the date of the invoice for this project unless otherwise notified to Chelmer Site Investigation Laboratories Ltd in writing. Should samples be required to be stored for longer than 28 days then a storage charge will be levied.

6.0 DISCUSSION

PROPOSED DEVELOPMENT & SCOPE OF WORKS

6.1 It is understood the proposed development will include the demolition of the existing structure at Nº.46 Inverness Street, and construct a modern, two storey house with a single storey basement in its place. *Proposed development plans* are appended to this report.

6.2 This Preliminary Phase II *Intrusive* site investigation has now been commissioned to provide information on the sub-soil conditions, together with laboratory testing and environmental reporting.

PRELIMINARY CONTAMINATION ASSESSMENT

6.3 The National Planning Policy Framework contains the legislative framework for the regulation of Development on a site which "is affected by contamination or land stability issues". This legislation states that decisions should ensure that "the site is suitable for its new use taking account of ground conditions and land instability, including from natural hazards or former activities such as mining, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation" and that "adequate site investigation information, prepared by a competent person, is presented." A Competent Person is defined as "a person with a recognised relevant qualification, sufficient experience in dealing with the type(s) of pollution or land instability, and membership of a relevant professional organisation". Where a site is affected by contamination or land stability issues, responsibility for securing a safe development rests with the "developer and/or landowner." It also states that "all investigations of land potentially affected by contamination should be carried out in accordance with established procedures (such as BS10175 (2001)."

6.4 For this ***Preliminary Contamination Assessment*** the site has been modelled using the Source-Pathway-Receptor approach to produce a Conceptual Site Model.

Source	(substances or potential contaminants which may cause harm)
Pathway	(a linkage route between the source and receptor)
Receptor	(something which may be harmed by the source e.g. humans, plant, groundwater etc.)

6.5 Source

Sources of potential contamination were identified during the Phase I Desk Top Study investigation. These included the MADE GROUND at the site and potential gas production.

6.6 Pathways

Any contamination could reach the receptors by a number of routes, including direct contact with the soils via ingestion, inhalation or dermal contact during the construction phase. As no soft landscaping/garden areas are proposed, these pathways are not considered to be present for future residents.

Gas pathways may also be present via preferential pathways, such as service and drainage runs.

6.7 Receptors

The following potential receptors have been identified.

- *Construction workers on the site likely to come into contact with the soils.*
- *Structures/Services*
- *Future residents/users of the development including young children.*

6.8 It should be noted that the CLEA software has limited functionality and contains algorithms, which the EA has publicly expressed its intention to update. As a consequence of this, some of the screening values generated by the CLEA software may not adequately reflect specific site conditions and in some instances are unduly conservative. In addition, it should also be noted that the figures given in the appended table are based on a 6% soil organic matter content.

6.9 The DEFRA/EA model has been developed on the basis of many critical assumptions about possible exposure to soil contamination and the development of conceptual exposure models to describe different land uses as follows:

Residential with plant uptake	Mainly refers to residential gardens in which vegetables are grown.
Residential without plant uptake	Refers to areas which have gardens (e.g. blocks of flats) but without vegetable uptake.
Open Spaces	Areas of open space only – not allocated for any specific usage.
Commercial/Industrial	Commercial/industrial usage where there are open areas which are not hard surfaced.

6.10 The Contaminated Land Exposure Assessment (CLEA) model was originally published in March 2002 as joint DEFRA/EA publications; Contaminated Land Research (CLR) Report CLR 11, with Report CLR7 as a supporting document, providing toxicity data and human tolerable daily intake (TDI) data to be used with this model. This model enabled the derivation of more site-specific values for contaminants present on a site, rather than the use of 'generic' values, which were previously used.

6.11 DEFRA/EA previously published a number of Soil Guideline Values (SGVs) for certain determinands, (common toxic metals), which were generic guideline criteria for assessing the risks to human health from chronic exposure to soil contamination for standard land-use functions. However, these were withdrawn in late 2008 and DEFRA/EA have now issued a new set of guidance documents. With regard to the Chelmer Site Investigations Laboratories Limited standard suite of tests, currently SGV figures have only been issued for Arsenic, Cadmium, Mercury, Nickel, Phenols and Selenium.

6.12 In the absence of currently published SGV values for the remaining contaminants, Messrs. W. S. Atkins have derived ATRISK^{soil} Soil Screening Values (SSVs) based on the new 2009 guidance (SC050021/SR3 (the CLEA Report) and SC050021/SR2 (the TOX report)) for commercial/industrial, residential without homegrown produce, residential with homegrown produce and allotment land uses. These have been based on the default assumptions provided in the CLEA report which it is understand will be used in the development of future Soil Guideline Values by DEFRA and the Environment Agency. Atkins SSVs have been derived in line with the new guidance using CLEA model v1.04. As the inhalation of vapour pathway contributes less than ten percent of total exposure, this is unlikely to significantly affect the combined assessment criterion and the SSV values used are the combined assessment criterion given by CLEA if free product is not observed.

6.13 Neither CLEA or ATRISK currently publish values for Hexavalent Chromium. Therefore, both Total Chromium and Hexavalent Chromium values have been compared against the Land Quality Management/Chartered Institute of Environmental Health (LQM/CIEH) Generic Assessment Criteria published in 2009 and based on CLEA v1.04 with Total Chromium values based on Chromium III.

6.14 The SGV and SSV levels represent "intervention" levels above which the levels of contamination may pose an unacceptable risk to the health of site-users such that further investigation and/or remediation is required.

6.15 Total Petroleum Hydrocarbons are considered in accordance with the fractions proposed by The Environment Agency, drawing on the TPHCWG methodology. These are contained in Table 4.2 – Petroleum hydrocarbon fractions for use in UK human health risk assessment, based on Equivalent Carbon (EC) number, contained in Science Report P5-080/TR3, *The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils.*

6.16 The chemical results have been compared against the ***Residential without plant uptake*** criteria, due to the proposed end usage.

ASSESSMENT OF RESULTS

Soils

6.17 The table below summarises the elevated concentrations indicated from the chemical analysis results, when compared against the ATRISK SSV/SGV for *Residential with plant uptake* criteria.

Determinant	Elevated Concentration (mg/kg)	Location	ATRISK SSV/SGV (mg/kg)	95th percentile (mg/kg)
Arsenic	37.7	BH1	32	33.7
Lead	1980 483 630 811	BH1 BH2 TP1 TP2	444	1779

6.18 Where exceedances were encountered, a mean value test was undertaken, to generate a normalised upper bound (95th percentile), and thus determine if further action was required.

6.19 Elevated arsenic and lead concentrations were identified within the MADE GROUND at BH1, with further elevated lead concentrations identified within BH2, TP1 & TP2. These are considered a potential risk to future construction/groundworkers that may come into contact with the underlying soils, and thus further action is required.

6.20 No other constituents within the soil exceeded the criteria set out by the ATRISK contaminated Land Screening Values (SSVs), the CLEA Soil Guideline Values (SGVs) and the LQM/CIEH Generic Assessment Criteria (GAC) for *Residential without plant uptake* criteria.

Controlled Waters

6.21 No groundwater sampling was undertaken as part of this investigation. However, due to the unlikely use of potable ground water at the site or within the close vicinity and the low solubility of the identified contaminants, the risk to human health and controlled waters is considered to be '**low**'.

Waste Acceptance Criteria

6.22 Two EN 14473/02 Waste Acceptance Criteria (WAC) tests were undertaken to classify for waste disposal purposes. The samples were taken from representative MADE GROUND samples from BH1 at 0.50m bgl and BH2 at 1.00m bgl. The certificate pertaining to this has been appended to this report.

6.23 The results of the WAC test indicated that the sample from BH1 would probably be classified as 'Stable non-reactive' waste and the sample from BH2 would be classified as "Inert" material. Full details of the results are given on the appended results sheets.

6.24 However, it should be noted that Chelmer Site Investigation Laboratories Ltd are not a licensed landfill operator and we therefore strongly recommend that the WAC data should be presented to potential Waste Management Companies in order for them to confirm the waste classification of surplus soils to be removed from this site and to determine its acceptability at appropriate landfill sites for disposal/treatment.

LANDBORNE GAS EMISSIONS

6.25 During the return gas/groundwater monitoring visits, the maximum concentration of methane was recorded at 0.1%v/v and the maximum carbon dioxide concentration was recorded at 1.8%v/v. A maximum flow rate of 0.1l/hr was recorded.

6.26 All monitoring results are presented within the appended Gas Monitoring Results Sheets.

Due to the concentrations and associated low flow rates identified during the initial two monitoring visits, it was decided to assess whether further visits would be required. This was undertaken using guidance from BS 8576:2013 Annex F to assess the sufficiency of the data.

From the results obtained to date, the likely risk associated with ground gas is Characteristic Situation 1, taking worst case as:

1.8%v/v x 0.1 l/hr = 0.0018 l/hr (maximum limit is 0.07 l/hr)

- Keeping the flow rate at 0.1 l/hr, the gas concentration would have to increase to 70%v/v, 39 times as much as previously recorded, to move into CS 2.

- Keeping the same concentration, worst case recorded 1.8%v/v, the flow would have to increase to 3.9 l/hr, 39 times greater than the worst case identified.

Although monitoring was undertaken during periods of high pressure, and thus the results may not represent 'worst case', the above required large increases in flow rates and gas concentrations that would be required to increase the risk from ground gases are not considered to be feasible.

Furthermore, with the proposed basement development, the near surface soils will be excavated and removed from site. This will remove the source of any potential ground gas from the MADE GROUND, and thus further reduce the ground gas risk.

It is therefore considered that further gas monitoring is not required and the site would thus be classified as **GREEN**, or **Characteristic Situation 1**. This should however be agreed with the Local Authority prior to development.

UPDATED CONCEPTUAL MODEL

6.27 The following diagram summaries the potential pollution linkages identified for this site in the form of an updated diagrammatic Conceptual Model.

CIRIA Contaminated Land Risk Assessment Table

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

*Extracted from CIRIA Publication C552 Contaminated Land Risk Assessment

Source	Potential Contaminants	Receptors	Pathways	Associated Hazard (Severity)	Likelihood of occurrence	Potential Risk	Notes
On-site -MADE GROUND	Heavy Metals TPHs PAHs Ground Gases	Site Residents/ Users including Young Children	Direct contact, ingestion	Medium	Unlikely	Low	Reduced risk to due to no proposed soft landscaping
			Inhalation of vapours (acute)	Severe	Unlikely	Low	Low concentrations identified
			Inhalation of vapours (chronic)	Medium	Unlikely	Low	Low concentrations identified
			Ingestion of contaminated water through water main pipework	Medium	Low Likelihood	Moderate/Low	Possible risk present.
		Construction Workers	Direct contact, ingestion	Medium	Likely	Moderate	Possible risk present.
		Surface Water	Leaching, lateral migration of shallow groundwater	Medium	Unlikely	Low	Reduced risk due to expected impermeable geology
		Groundwater	Leaching, migration through granular material	Medium	Unlikely	Low	Reduced risk due to expected impermeable geology
		Services	Direct contact	Medium	Low Likelihood	Moderate/Low	Possible risk present.

7.0 RECOMMENDATIONS

7.1 Elevated arsenic and lead concentrations were identified within the MADE GROUND at BH1, with further elevated lead concentrations identified within BH2, TP1 & TP2. These are considered a potential risk to future construction/groundworkers that may come into contact with the underlying soils.

7.2 A '**low**' risk is considered to future residents of the site, due to the lack of proposed soft landscaping/gardens, thus no pathway between source and receptor will be present.

7.3 However it is recommended that Health and Safety precautions should incorporated during development at the site, to reduce the risk to future construction/ groundworkers. This should include; PPE equipment such as gloves, overalls, dusk masks etc. to prevent dermal contact/ingestion with the soils. Washing facilities should be made available on-site to reduce extended contact with site soils. During the groundwork and construction phases, dust suppression measures may be required to minimise potential inhalation of dust by neighbours or ground workers.

7.4 It is recommended that all excavated materials be removed from site and taken to an appropriate landfill/treatment facility.

Additional Comments

7.5 As always, the above recommendations are based on a selected number of representative samples and further testing may be required if any other contamination is suspected or encountered during future ground works.

7.6 With regard to the installation of any future water supply pipe work, reference should be made to the Water Regulations Advisory Service information and guidance note, The Selection of Materials for Water Supply Pipes to be Laid in Contaminated Land. The removal of the MADE GROUND during the proposed basement development may reduce the risk, however it is recommended that the results of the contamination testing undertaken on the site be provided to the water supplier in order to ensure that any pipe provided complies with their requirements.

7.7 It is also recommended a Demolition or Refurbishment Asbestos Survey (previously known as a Type 3 Asbestos Survey) be undertaken prior to development.

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Reviewed By: Matthew Proctor BEng (Hons), FGS
Consultancy Director

END OF REPORT

a) This report has been prepared for the purpose of providing advice to the client pursuant to its appointment of Chelmer Site Investigation Laboratories Limited (CSI) to act as a consultant.
b) Save for the client no duty is undertaken or warranty or representation made to any party in respect of the opinions, advice, recommendations or conclusions herein set out.
c) All work carried out in preparing this report has used, and is based upon, our professional knowledge and understanding of the current relevant English and European Community standards, approved codes of practice, technology and legislation.
d) Changes in the above may cause the opinion, advice, recommendations or conclusions set out in this report to become inappropriate or incorrect. However, in giving its opinions, advice, recommendations and conclusions, CSI has considered pending changes to environmental legislation and regulations of which it is currently aware. Following delivery of this report, we will have no obligation to advise the client of any such changes, or of their repercussions.
e) CSI acknowledges that it is being retained, in part, because of its knowledge and experience with respect to environmental matters. CSI will consider and analyse all information provided to it in the context of our knowledge and experience and all other relevant information known to us. To the extent that the information provided to us is not inconsistent or incompatible therewith, CSI shall be entitled to rely upon and assume, without independent verification, the accuracy and completeness of such information.
f) The content of this report represents the professional opinion of experienced environmental consultants. CSI does not provide specialist legal advice and the advice of lawyers may be required.
g) In the Summary and Recommendations sections of this report, CSI has set out our key findings and provided a summary and overview of our advice, opinions and recommendations. However, other parts of this report will often indicate the limitations of the information obtained by CSI and therefore any advice, opinions or recommendations set out in the Executive Summary, Summary and Recommendations sections ought not to be relied upon unless they are considered in the context of the whole report.
h) The assessments made in this report are based on the ground conditions as revealed by walkover survey and/or intrusive investigations, together with the results of any field or laboratory testing or chemical analysis undertaken and other relevant data, which may have been obtained including previous site investigations. In any event, ground contamination often exists as small discrete areas of contamination (hot spots) and there can be no certainty that any or all such areas have been located and/or sampled.
i) There may be special conditions appertaining to the site, which have not been taken into account in the report. The assessment may be subject to amendment in light of additional information becoming available.
j) Where any data supplied by the client or from other sources, including that from previous site investigations, have been used it has been assumed that the information is correct. No responsibility can be accepted by CSI for inaccuracies within the data supplied by other parties.
k) Whilst the report may express an opinion on possible ground conditions between or beyond trial pit or borehole locations, or on the possible presence of features based on either visual, verbal or published evidence this is for guidance only and no liability can be accepted for the accuracy thereof.
l) Comments on groundwater conditions are based on observations made at the time of the investigation unless otherwise stated. Groundwater conditions may vary due to seasonal or other effects.
m) This report is prepared and written in the context of the agreed scope of work and should not be used in a different context. Furthermore, new information, improved practices and changes in legislation may necessitate a reinterpretation of the report in whole or part after its original submission.
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o) These terms apply in addition to the CSI Standard Terms of Engagement (or in addition to another written contract which may be in place instead thereof) unless specifically agreed in writing. (In the event of a conflict between these terms and the said Standard Terms of Engagement the said Standard Terms of Engagement shall prevail). In the absence of such a written contract the Standard Terms of Engagement will apply.
p) This report is issued on the condition that CSI will under no circumstances be liable for any loss arising directly or indirectly from subsequent information arising but not presented or discussed within the current Report.
q) In addition CSI will not be liable for any loss whatsoever arising directly or indirectly from any opinion within this report.

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Client: Christine Hancock	**Scale:** N.T.S.	**Sheet No:** 1 of 1	**Weather:** Overcast	**Date:** 16.09.14
Site: 46 Inverness Street, London, NW1 7HB	**Job No:** 4792	**Borehole No:** 1	**Boring method:** CFA 100mmØ Secondman	

Depth Mtrs.	Description of Strata	Thick-ness	Legend	Sample	Test Type	Test Result	Root Information	Depth to Water	Depth Mtrs
G.L.	CONCRETE	0.075							
0.075	MADE GROUND: medium compact, dark brown, gravelly silt with numerous concrete and brick fragments.	0.425		D			Roots of live and dead appearance to 2mmØ to 1.6m.		0.3
				D					0.5
0.5	MADE GROUND: medium compact, mid brown, gravelly very silty clay with numerous brick fragments.	0.3							
0.8	Firm, mid brown, grey veined, silty CLAY with partings of orange and brown silt and fine sand.	1.7		D	V	62 68			1.0
	Becoming stiff from 1.8m.			D			↓		1.5
				D	V	78 84	No roots observed below 1.6m.		2.0
2.5	Very stiff, mid brown, silty CLAY with partings of orange and brown silt and fine sand.	5.0		D					2.5
				D	V	140+ 140+			3.0
				D					3.5
				D	V	140+ 140+			4.0
				D					4.5
				D	V	140+ 140+			5.0
				D					5.5
				D	V	140+ 140+			6.0
				D	V	140+ 140+			7.0
7.5	Very stiff, dark brown, grey veined, silty CLAY with partings of brown silt and fine sand.	2.5		D	V	140+ 140+			8.0
				D	V	140+ 140+			9.0
10.0	Borehole ends at 10.0m			D	V	140+ 140+			10.0

Drawn by: MM **Approved by:** JH

Remarks: *Borehole dry and open on completion.*

Key: T.D.T.D. Too Dense to Drive
D Small Disturbed Sample J Jar Sample
B Bulk Disturbed Sample V Pilcon Vane (kPa)
U Undisturbed Sample (U100) M Mackintosh Probe
W Water Sample N Standard Penetration Test Blow Count

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Client: Christine Hancock	**Scale:** N.T.S.	**Sheet No:** 1 of 1	**Weather:** Overcast	**Date:** 16.09.14
Site: 46 Inverness Street, London, NW1 7HB	**Job No:** 4792	**Borehole No:** 2	**Boring method:** CFA 100mmØ Secondman	

Depth Mtrs.	Description of Strata	Thick-ness	Legend	Sample	Test Type	Test Result	Root Information	Depth to Water	Depth Mtrs
G.L.	TIMBER FLOOR BOARDS	0.025							
0.025	CONCRETE	0.225		D					0.3
0.25	MADE GROUND: medium compact, mid brown, very silty CLAY with numerous gravel, concrete and brick fragments.	0.65		D			Roots of live and dead appearance to 1mmØ to 1.8m.		0.5
0.9	MADE GROUND: medium compact, mid brown, very silty clay with occasional gravel and brick fragments.	0.9		D	M	14 14 15			1.0
				D		17	No roots observed below 1.8m.		1.5
1.8	Firm, mid brown, grey veined, silty CLAY with partings of brown silt and fine sand.			D	V	68 70			2.0
				D					2.5
	Becoming stiff from 2.7m.	1.9		D	V	78 84			3.0
				D					3.5
3.7	Very stiff, mid brown, grey veined, silty CLAY with partings of brown silt and fine sand.	4.0		D	V	140+ 140+			4.0
				D					4.5
				D	V	140+ 140+			5.0
				D					5.5
				D	V	140+ 140+			6.0
				D	V	140+ 140+			7.0
7.7	Very stiff, dark brown, grey veined, silty CLAY with partings of brown silt and fine sand.	2.3		D	V	140+ 140+			8.0
				D	V	140+ 140+			9.0
10.0	Borehole ends at 10.0m			D	V	140+ 140+			10.0

Drawn by: MM **Approved by:** JH

Remarks: *Borehole dry and open on completion.*
Standpipe installed to 6.0m on completion.

Key: T.D.T.D. Too Dense to Drive
D Small Disturbed Sample J Jar Sample
B Bulk Disturbed Sample V Pilcon Vane (kPa)
U Undisturbed Sample (U100) M Mackintosh Probe
W Water Sample N Standard Penetration Test Blow Count

Chelmer Site Investigations
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Old Church Road, East Hanningfield, Essex CM3 8AB
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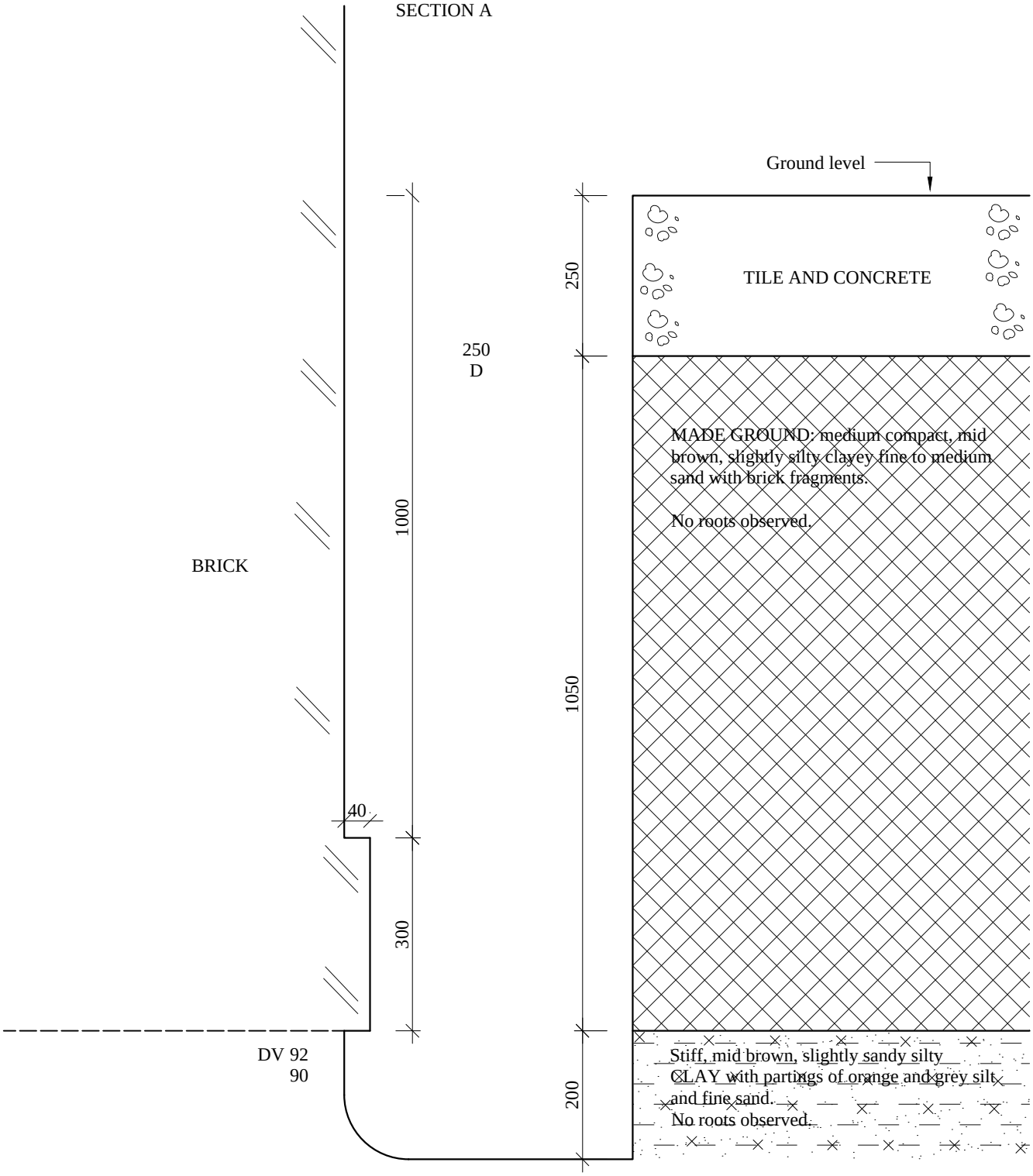
Client: Christine Hancock	**Scale:** N.T.S.	**Sheet No:** 1 of 2	**Date:** 15.09.14
Location: 46 Inverness Street, London, NW1 7HB	**Job No:** 4792	**Trial Pit No:** 1	**Weather:** Internal
Excavation Method: Hand tools		**Drawn by:** TP	**Checked by:** JH

SECTION A



TP1 SECTION A ENDS AT 1500mm

Remarks:

Key:

D Small disturbed sample	**J** Jar sample
B Bulk disturbed sample	**V** Pilcon Vane (kPa)
U Undisturbed sample (U100)	**M** Mackintosh Probe
N Standard Penetration Test Blow Count	**W** Water Sample

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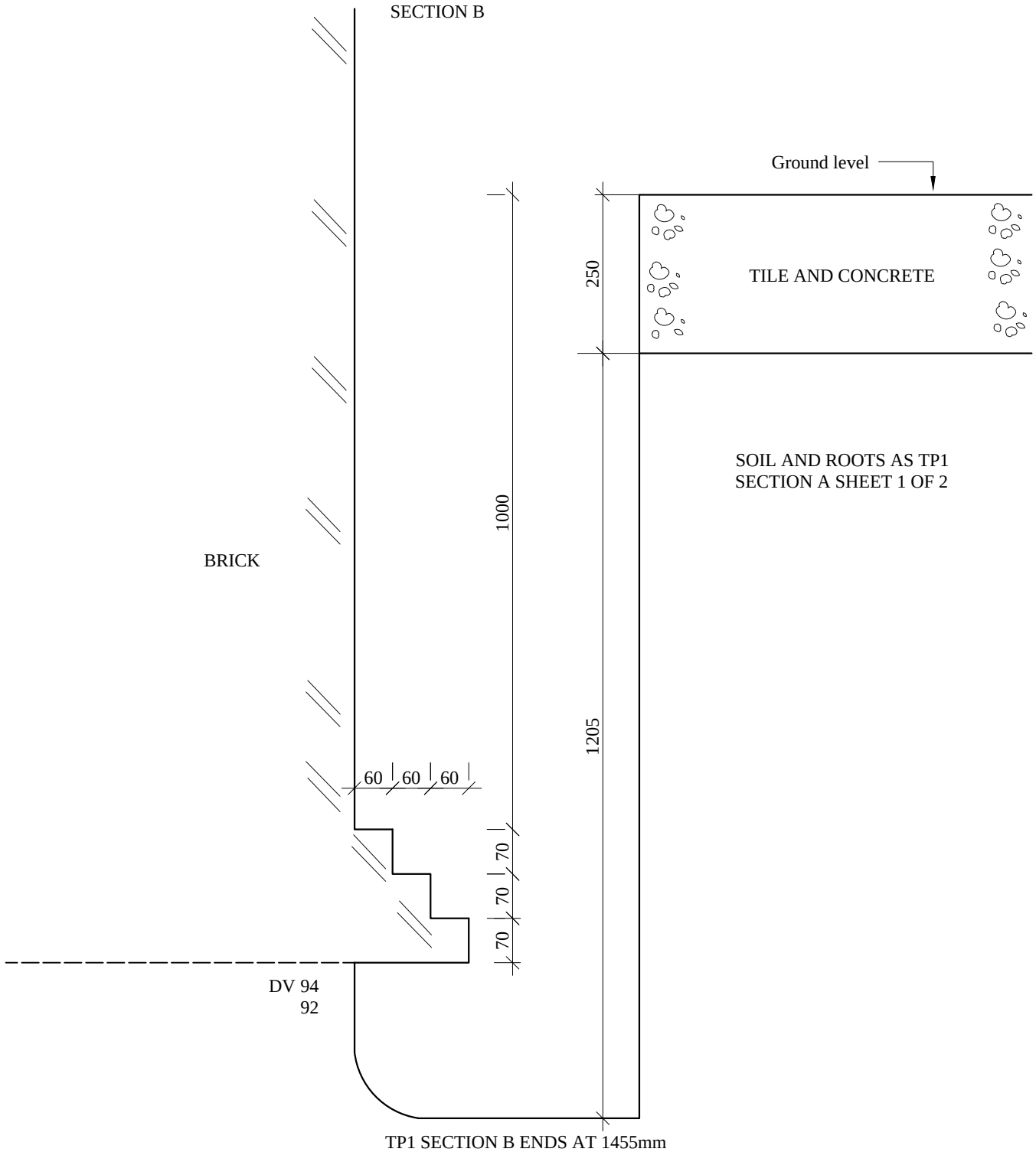
Chelmer Site Investigations

Client: Christine Hancock	**Scale:** N.T.S.	**Sheet No:** 2 of 2	**Date:** 15.09.14
Location: 46 Inverness Street, London, NW1 7HB	**Job No:** 4792	**Trial Pit No:** 1	**Weather:** Internal
Excavation Method: Hand tools		**Drawn by:** TP	**Checked by:** JH



Remarks:

Key:

D Small disturbed sample	**J** Jar sample
B Bulk disturbed sample	**V** Pilcon Vane (kPa)
U Undisturbed sample (U100)	**M** Mackintosh Probe
N Standard Penetration Test Blow Count	**W** Water Sample

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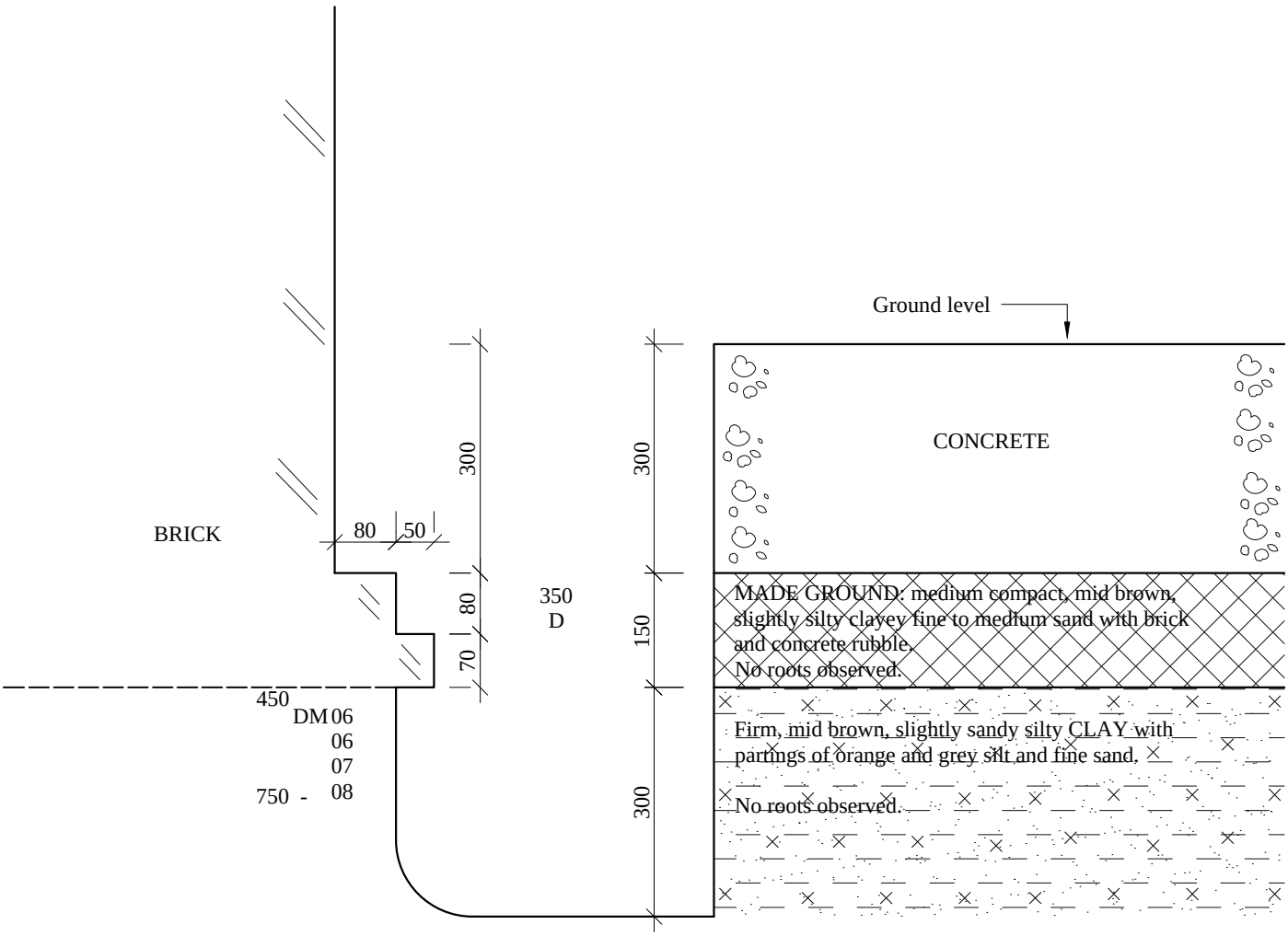
Client: Christine Hancock	**Scale:** N.T.S.	**Sheet No:** 1 of 2	**Date:** 15.09.14
Location: 46 Inverness Street, London, NW1 7HB	**Job No:** 4792	**Trial Pit No:** 2	**Weather:** Internal
Excavation Method: Hand tools		**Drawn by:** TP	**Checked by:** JH

SECTION A



TP2 SECTION A ENDS AT 750mm

Remarks:

Key:

D Small disturbed sample	**J** Jar sample
B Bulk disturbed sample	**V** Pilcon Vane (kPa)
U Undisturbed sample (U100)	**M** Mackintosh Probe
N Standard Penetration Test Blow Count	**W** Water Sample

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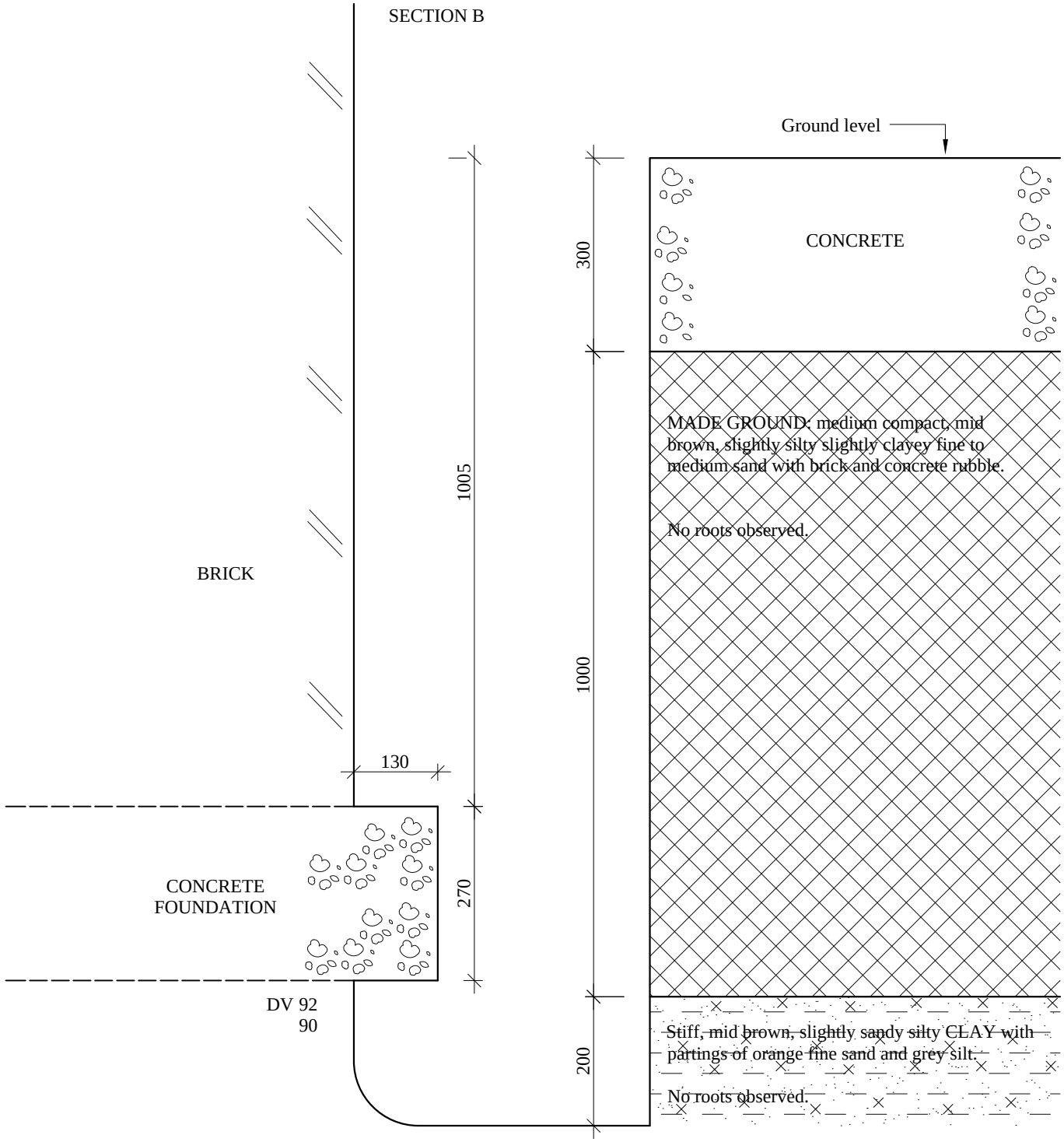
Client: Christine Hancock	**Scale:** N.T.S.	**Sheet No:** 2 of 2	**Date:** 15.09.14
Location: 46 Inverness Street, London, NW1 7HB	**Job No:** 4792	**Trial Pit No:** 2	**Weather:** Internal
Excavation Method: Hand tools		**Drawn by:** TP	**Checked by:** JH

SECTION B



TP2 SECTION B ENDS AT 1500mm

Remarks:

Key:

D Small disturbed sample	**J** Jar sample
B Bulk disturbed sample	**V** Pilcon Vane (kPa)
U Undisturbed sample (U100)	**M** Mackintosh Probe
N Standard Penetration Test Blow Count	**W** Water Sample

Chelmer Site Investigations
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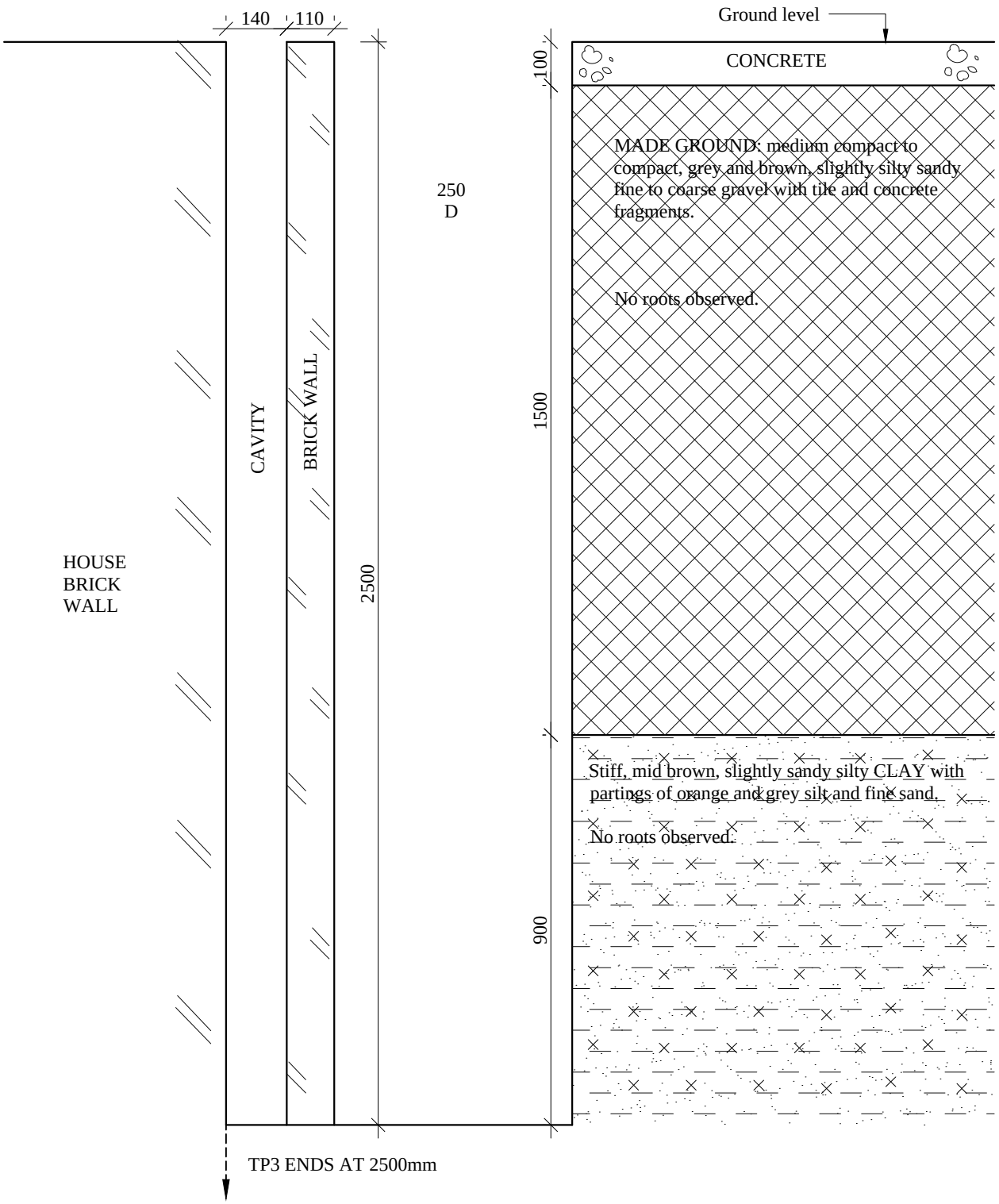
Chelmer Site Investigations

Client: Christine Hancock	**Scale:** N.T.S.	**Sheet No:** 1 of 1	**Date:** 15.09.14
Location: 46 Inverness Street, London, NW1 7HB	**Job No:** 4792	**Trial Pit No:** 3	**Weather:** Internal
Excavation Method: Hand tools		**Drawn by:** TP	**Checked by:** JH



Remarks: *Unable to establish underside foundation.*

Key:

D Small disturbed sample	**J** Jar sample
B Bulk disturbed sample	**V** Pilcon Vane (kPa)
U Undisturbed sample (U100)	**M** Mackintosh Probe
N Standard Penetration Test Blow Count	**W** Water Sample

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2683

THE ENVIRONMENTAL LABORATORY LTD

Analytical Report Number:	14-00770
Issue:	1
Date of Issue:	14/10/2014
Contact:	Martin Edwards
Customer Details:	Chelmer Site Investigations Ltd Unit 15 East Hanningfield Ind Est Chelmsford Essex
Quotation No:	Q14-00004
Order No:	PO / 2978 / CSI4792
Customer Reference:	4792
Date Received:	03/10/2014
Date Approved:	14/10/2014
Details:	46 Inverness Street, London, NW1
Approved by:	

John Wilson, Operations Manager

Any comments, opinions or interpretations expressed herein are outside the scope of UKAS accreditation (Accreditation Number 2683

Sample Summary

Report No.: 14-00770

Elab No.	Client's Ref.	Date Sampled	Date Scheduled	Description	Deviations
5233	BH1 0.30	17/09/2014	06/10/2014	Silty loam	cfg
5234	BH1 0.50	17/09/2014	06/10/2014	Silty loam	fg
5235	BH2 0.50	17/09/2014	06/10/2014	Silty clayey loam	fg
5236	BH2 1.00	17/09/2014	06/10/2014	Silty loam	fg
5237	TP1 0.25	17/09/2014	06/10/2014	Silty loam	fg
5238	TP2 0.35	17/09/2014	06/10/2014	Silty loam	fg

Results Summary

Report No.: 14-00770

ELAB Reference				5233	5234	5235	5236	5237	5238
Customer Reference									
Sample ID									
Sample Type				SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sample Location				BH1	BH1	BH2	BH2	TP1	TP2
Sample Depth (m)				0.30	0.50	0.50	1.00	0.25	0.35
Sampling Date				17/09/2014	17/09/2014	17/09/2014	17/09/2014	17/09/2014	17/09/2014
Determinand	**Codes**	**Units**	**LOD**						
Metals									
Arsenic	M	mg/kg	1	37.7	n/t	14.0	n/t	13.3	11.6
Cadmium	M	mg/kg	0.5	1.6	n/t	< 0.5	n/t	< 0.5	< 0.5
Chromium	M	mg/kg	5	24.6	n/t	29.2	n/t	22.6	19.4
Copper	M	mg/kg	5	126	n/t	45.2	n/t	37.7	44.1
Lead	M	mg/kg	5	1980	n/t	483	n/t	630	811
Mercury	M	mg/kg	0.5	9.8	n/t	1.3	n/t	1.3	2.8
Nickel	M	mg/kg	5	22.3	n/t	28.2	n/t	20.8	16.6
Selenium	M	mg/kg	1	6.3	n/t	< 1.0	n/t	< 1.0	< 1.0
Zinc	M	mg/kg	45	818	n/t	216	n/t	206	117
Inorganics									
Elemental Sulphur	N	mg/kg	20	< 20	n/t	< 20	n/t	< 20	< 20
Free Cyanide	N	mg/kg	1	f < 1.0	n/t	f < 1.0	n/t	f < 1.0	f < 1.0
Hexavalent Chromium	N	mg/kg	0.8	< 0.8	n/t	< 0.8	n/t	< 0.8	< 0.8
Total Cyanide	M	mg/kg	1	f < 1.0	n/t	f < 1.0	n/t	f < 1.0	f < 1.0
Water Soluble Boron	N	mg/kg	0.5	1.5	n/t	1.6	n/t	1.8	2.6
Miscellaneous									
Acid Neutralisation Capacity	N	mol/kg	0.1	n/t	< 0.1	n/t	< 0.1	n/t	n/t
Loss Of Ignition (450°C)	N	%	0.01	n/t	4.3	n/t	2.5	n/t	n/t
Moisture Content	N	%	0.1	14.3	n/t	19.6	n/t	10.6	14.5
pH	M	units	0.1	8.1	8.0	8.9	8.8	8.8	8.3
Stones Content	N	%	0.1	32.7	n/t	9.8	n/t	22.6	10.8
Total Organic Carbon	N	%	0.01	n/t	2.6	n/t	0.8	n/t	n/t

Results Summary

Report No.: 14-00770

			ELAB Reference	5233	5234	5235	5236	5237	5238
			Customer Reference						
			Sample ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Location	BH1	BH1	BH2	BH2	TP1	TP2
			Sample Depth (m)	0.30	0.50	0.50	1.00	0.25	0.35
			Sampling Date	17/09/2014	17/09/2014	17/09/2014	17/09/2014	17/09/2014	17/09/2014
Determinand	**Codes**	**Units**	**LOD**						
Phenols									
Total Monohydric Phenols	N	mg/kg	5	cf < 5	n/t	f < 5	n/t	f < 5	f < 5
Polyaromatic hydrocarbons									
Naphthalene	M	mg/kg	0.5	cf < 0.5	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Acenaphthylene	M	mg/kg	0.5	cf < 0.5	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Acenaphthene	M	mg/kg	0.5	cf < 0.5	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Fluorene	M	mg/kg	0.5	cf < 0.5	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Phenanthrene	M	mg/kg	0.5	cf 0.6	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Anthracene	M	mg/kg	0.5	cf < 0.5	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Fluoranthene	M	mg/kg	0.5	cf 1.2	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Pyrene	M	mg/kg	0.5	cf 1.1	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Benzo (a) anthracene	M	mg/kg	0.5	cf 0.8	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Chrysene	M	mg/kg	0.5	cf 1.0	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Benzo (b) fluoranthene	M	mg/kg	0.5	cf 0.9	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Benzo (k) fluoranthene	M	mg/kg	0.5	cf 1.1	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Benzo (a) pyrene	M	mg/kg	0.5	cf 0.8	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Indeno (1,2,3-cd) pyrene	M	mg/kg	0.5	cf 0.9	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Dibenzo(a,h)anthracene	M	mg/kg	0.5	cf < 0.5	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Benzo(ghi)perylene	M	mg/kg	0.5	cf 0.8	n/t	f < 0.5	n/t	f < 0.5	f < 0.5
Total PAH(16) Speciated	M	mg/kg	2	cf 10	n/t	f < 2	n/t	f < 2	f < 2
Total PAH (Including Coronene)	N	mg/kg	2.1	n/t	f 5	n/t	f < 2	n/t	n/t
BTEX									
Benzene	M	ug/kg	10	cfg < 10.0	n/t	fg < 10.0	n/t	fg < 10.0	fg < 10.0
Toluene	M	ug/kg	10	cfg < 10.0	n/t	fg < 10.0	n/t	fg < 10.0	fg < 10.0
Ethylbenzene	M	ug/kg	10	cfg < 10.0	n/t	fg < 10.0	n/t	fg < 10.0	fg < 10.0
Xylenes	M	ug/kg	10	cfg < 10.0	n/t	fg < 10.0	n/t	fg < 10.0	fg < 10.0
Total BTEX	M	mg/kg	0.01	n/t	fg < 0.01	n/t	fg < 0.01	n/t	n/t
TPH CWG									
>C5-C6 Aliphatic	N	mg/kg	0.01	cfg < 0.01	n/t	fg < 0.01	n/t	fg < 0.01	fg < 0.01
>C6-C8 Aliphatic	N	mg/kg	0.01	cfg < 0.01	n/t	fg < 0.01	n/t	fg < 0.01	fg < 0.01
>C8-C10 Aliphatic	N	mg/kg	1	cfg < 1.0	n/t	fg < 1.0	n/t	fg < 1.0	fg < 1.0
>C10-C12 Aliphatic	N	mg/kg	1	cfg < 1.0	n/t	fg < 1.0	n/t	fg < 1.0	fg < 1.0
>C12-C16 Aliphatic	N	mg/kg	1	cfg < 1.0	n/t	fg < 1.0	n/t	fg < 1.0	fg < 1.0
>C16-C21 Aliphatic	N	mg/kg	1	cfg < 1.0	n/t	fg < 1.0	n/t	fg < 1.0	fg < 1.0
>C21-C35 Aliphatic	N	mg/kg	1	cfg < 1.0	n/t	fg < 1.0	n/t	fg < 1.0	fg < 1.0
>C35-C40 Aliphatic	N	mg/kg	1	cfg < 1.0	n/t	fg < 1.0	n/t	fg < 1.0	fg < 1.0
>C5-C7 Aromatic	N	mg/kg	0.01	cfg < 0.01	n/t	fg < 0.01	n/t	fg < 0.01	fg < 0.01
>C7-C8 Aromatic	N	mg/kg	0.01	cfg < 0.01	n/t	fg < 0.01	n/t	fg < 0.01	fg < 0.01
>C8-C10 Aromatic	N	mg/kg	1	c < 1.0	n/t	< 1.0	n/t	< 1.0	< 1.0
>C10-C12 Aromatic	N	mg/kg	1	cfg < 1.0	n/t	fg < 1.0	n/t	fg < 1.0	fg < 1.0
>C12-C16 Aromatic	N	mg/kg	1	cfg < 1.0	n/t	fg < 1.0	n/t	fg < 1.0	fg < 1.0
>C16-C21 Aromatic	N	mg/kg	1	cfg < 1.0	n/t	fg < 1.0	n/t	fg < 1.0	fg < 1.0
>C21-C35 Aromatic	N	mg/kg	1	cfg < 1.0	n/t	fg < 1.0	n/t	fg < 1.0	fg < 1.0
>C35-C40 Aromatic	N	mg/kg	1	cfg < 1.0	n/t	fg < 1.0	n/t	fg < 1.0	fg < 1.0
Total (>C5-C40) Ali/Aro	N	mg/kg	1	cfg < 1.0	n/t	fg < 1.0	n/t	fg < 1.0	fg < 1.0
Total Petroleum Hydrocarbons									
Mineral Oil	U	mg/kg	5	n/t	fg 426	n/t	fg < 5	n/t	n/t
PCB (ICES 7 congeners)									
PCB (Total of 7 Congeners)	M	mg/kg	0.03	n/t	< 0.03	n/t	< 0.03	n/t	n/t

Results Summary

Report No.: 14-00770

WAC Analysis								
Elab Ref:	5236					**Landfill Waste Acceptance Criteria Limits**		
Sample Date:	17/09/2014					**Inert Waste Landfill**	**Stable Non-reactive Hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	BH2							
Depth:	1							
Site:	46 Inverness Street, London, NW1							
Determinand		**Code**	**Units**					
Total Organic Carbon		N	%		0.8	3	5	6
Loss on Ignition		M	%		2.5	--	--	10
Total BTEX		M	mg/kg		< 0.01	6	--	--
Total PCBs (7 congeners)		M	mg/kg		< 0.03	1	--	--
TPH Total WAC		M	mg/kg		< 5	500	--	--
Total (of 17) PAHs		N	mg/kg		< 2	100	--	--
pH		M			8.8	--	>6	--
Acid Neutralisation Capacity		N	mol/kg		< 0.1	--	To evaluate	To evaluate
Eluate Analysis			**2:1**	**8:1**	**10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
			mg/l	**mg/l**	**mg/kg**			
Arsenic		N	< 0.005	< 0.005	< 0.05	0.5	2	25
Barium		N	0.019	0.006	0.07	20	100	300
Cadmium		N	< 0.001	< 0.001	< 0.01	0.04	1	5
Chromium		N	0.029	< 0.005	0.06	0.5	10	70
Copper		N	0.007	< 0.005	< 0.05	2	50	100
Mercury		N	< 0.005	< 0.005	< 0.01	0.01	0.2	2
Molybdenum		N	0.074	0.009	0.14	0.5	10	30
Nickel		N	0.001	< 0.001	< 0.05	0.4	10	40
Lead		N	< 0.001	< 0.001	< 0.05	0.5	10	50
Antimony		N	< 0.005	< 0.005	< 0.05	0.06	0.7	5
Selenium		N	0.008	< 0.005	< 0.05	0.1	0.5	7
Zinc		N	0.014	< 0.005	< 0.05	4	50	200
Chloride		N	34.000	< 5	68.00	800	15000	25000
Fluoride		N	< 1	< 1	< 10	10	150	500
Sulphate		N	336.000	50.000	729.00	1000	20000	50000
Total Dissolved Solids		N	960.000	130.000	1950.00	4000	60000	100000
Phenol Index		N	< 0.01	< 0.01	< 0.10	1	-	-
Dissolved Organic Carbon		N	28.600	12.200	134.00	500	800	1000
Leach Test Information								
Eluent Volume (ml)		N	140	1410				
pH		N	7.1	6.9				
Conductivity (uS/cm)		N	1310	219				
Temperature (°C)		N	19	18				
Solid Information								
Dry mass of test portion (g)			178					
Moisture (%)			25.2					

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ELAB cannot be held responsible for any discrepencies with current legislation

Results Summary

Report No.: 14-00770

WAC Analysis								
Elab Ref:	5234					**Landfill Waste Acceptance Criteria Limits**		
Sample Date:	17/09/2014					**Inert Waste Landfill**	**Stable Non-reactive Hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Sample ID:	BH1							
Depth:	0.5							
Site:	46 Inverness Street, London, NW1							
Determinand		**Code**	**Units**					
Total Organic Carbon		N	%		2.6	3	5	6
Loss on Ignition		M	%		4.3	--	--	10
Total BTEX		M	mg/kg		< 0.01	6	--	--
Total PCBs (7 congeners)		M	mg/kg		< 0.03	1	--	--
TPH Total WAC		M	mg/kg		426	500	--	--
Total (of 17) PAHs		N	mg/kg		5.0	100	--	--
pH		M			8.0	--	>6	--
Acid Neutralisation Capacity		N	mol/kg		< 0.1	--	To evaluate	To evaluate
Eluate Analysis			**2:1**	**8:1**	**10:1**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
			mg/l	**mg/l**	**mg/kg**			
Arsenic		N	0.013	0.011	0.11	0.5	2	25
Barium		N	0.051	0.011	0.15	20	100	300
Cadmium		N	< 0.001	< 0.001	< 0.01	0.04	1	5
Chromium		N	< 0.005	< 0.005	< 0.05	0.5	10	70
Copper		N	0.013	< 0.005	< 0.05	2	50	100
Mercury		N	< 0.005	< 0.005	< 0.01	0.01	0.2	2
Molybdenum		N	0.024	< 0.005	0.06	0.5	10	30
Nickel		N	0.003	< 0.001	< 0.05	0.4	10	40
Lead		N	0.002	0.002	< 0.05	0.5	10	50
Antimony		N	0.009	< 0.005	< 0.05	0.06	0.7	5
Selenium		N	< 0.005	< 0.005	< 0.05	0.1	0.5	7
Zinc		N	0.026	0.007	0.09	4	50	200
Chloride		N	103.000	10.000	203.00	800	15000	25000
Fluoride		N	< 1	< 1	< 10	10	150	500
Sulphate		N	1220.000	40.000	1680.00	**1000**	20000	50000
Total Dissolved Solids		N	2130.000	150.000	3660.00	4000	60000	100000
Phenol Index		N	< 0.01	< 0.01	< 0.10	1	-	-
Dissolved Organic Carbon		N	28.900	12.700	145.00	500	800	1000
Leach Test Information								
Eluent Volume (ml)		N	192	1400				
pH		N	7.5	7				
Conductivity (uS/cm)		N	259	393				
Temperature (°C)		N	19	18				
Solid Information								
Dry mass of test portion (g)			176					
Moisture (%)			16.8					

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and ELAB cannot be held responsible for any discrepencies with current legislation

Method Summary

Report No.: 14-00770

Parameter	Analysis Undertaken On	Date Tested	Method Number	Technique
Soil				
Free cyanide	As submitted sample	08/10/2014	107	Colorimetry
Hexavalent chromium	As submitted sample	07/10/2014	110	Colorimetry
Aqua regia extractable metals	Air dried sample	13/10/2014	118	ICPMS
Phenols in solids	As submitted sample	07/10/2014	121	HPLC
Elemental Sulphur	Air dried sample	13/10/2014	122	HPLC
Polyaromatic hydrocarbons (GC-FID)	As submitted sample	07/10/2014	133	GC-FID
Water soluble boron	Air dried sample	13/10/2014	202	Colorimetry
Total cyanide	As submitted sample	08/10/2014	204	Colorimetry
Aliphatic hydrocarbons in soil	As submitted sample	07/10/2014	214	GC-FID
Aliphatic/Aromatic hydrocarbons in soil	As submitted sample	08/10/2014	214	GC-FID
Aromatic hydrocarbons in soil	As submitted sample	07/10/2014	214	GC-FID
Low range Aliphatic hydrocarbons soil	As submitted sample	08/10/2014	214	GC-MS
Low range Aromatic hydrocarbons soil	As submitted sample	08/10/2014	214	GC-MS
Leachate				
Arsenic*		08/10/2014	101	ICPMS
Cadmium*		08/10/2014	101	ICPMS
Chromium*		08/10/2014	101	ICPMS
Lead*		08/10/2014	101	ICPMS
Nickel*		08/10/2014	101	ICPMS
Copper*		08/10/2014	101	ICPMS
Zinc*		08/10/2014	101	ICPMS
Mercury*		08/10/2014	101	ICPMS
Selenium*		08/10/2014	101	ICPMS
Antimony		08/10/2014	101	ICPMS
Barium*		08/10/2014	101	ICPMS
Molybdenum*		08/10/2014	101	ICPMS
pH Value*		08/10/2014	113	Electrometric
Electrical Conductivity*		08/10/2014	136	Probe
Dissolved Organic Carbon		08/10/2014	102	TOC analyser
Chloride*		08/10/2014	131	Ion Chromatography
Fluoride*		08/10/2014	131	Ion Chromatography
Sulphate*		08/10/2014	131	Ion Chromatography
Total Dissolved Solids		08/10/2014	144	Gravimetric
Phenol index		08/10/2014	121	HPLC
WAC Solids analysis				
pH Value**	Air dried sample	08/10/2014	113	Electrometric
Total Organic Carbon	Air dried sample	08/10/2014	210	IR
Loss on Ignition**	Air dried sample	08/10/2014	129	Gravimetric
Acid Neutralization Capacity to pH 7	Air dried sample	08/10/2014	NEN 737	Electrometric
Total BTEX**	As submitted sample	08/10/2014	181	GCMS
Mineral Oil**	As submitted sample	08/10/2014	117	GCFID
Total PCBs (7 congeners)	Air dried sample	08/10/2014	120	GCMS
Total PAH (17)**	As submitted sample	08/10/2014	133	GCFID

Report Information

Report No.: 14-00770

Key

U	hold UKAS accreditation
M	hold MCERTS and UKAS accreditation
N	do not currently hold UKAS accreditation
^	MCERTS accreditation not applicable for sample matrix
S	Subcontracted to approved laboratory UKAS Accredited for the test
SM	Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test
I/S	Insufficient Sample
U/S	Unsuitable sample
n/t	Not tested
<	means "less than"
>	means "greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request

Deviation Codes

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

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

Sample Retention and Disposal

All soil samples will be retained for a period of one month
All water samples will be retained for 7 days following the date of the test report
Charges may apply to extended sample storage

Chelmer Consultancy Services
Unit 15, East Hanningfield Industrial Estate, Old Church Road
East Hanningfield, Essex CM3 8AB
Telephone: 01245 400 930 Fax: 01245

Contamination Test Results on Soil Samples

Location: 46 Inverness Street, London, NW1	Date : November 2014	Job No. : 4792	Sheet 1 of 1

Trial Pit No.	Units	BH1	BH2	TP1	TP2	ATRISK Contaminated Land Screening Values (SSV) derived using CLEA v1.04 for 6% SOM			
Sample No.		5233	5235	5237	5238				
Depth (m)		0.30	0.50	0.25	0.35				
Material Type		MADE GROUND	MADE GROUND	MADE GROUND	MADE GROUND	Residential with plant uptake	Residential without plant uptake	Allotments	Commercial/ Industrial
Aromatic Hydrocarbons (mg/kg)	>C5-C7	< 0.01	< 0.01	< 0.01	< 0.01	0.06	0.07	0.07	7.37
	>C7-C8	< 0.01	< 0.01	< 0.01	< 0.01	14.9	15.2	106	1780
	>C8-C10	< 1.0	< 1.0	< 1.0	< 1.0	23.7	24.1	53.2	2700
	>C10-C12	< 1.0	< 1.0	< 1.0	< 1.0	132	147	71.3	36800
	>C12-C16	< 1.0	< 1.0	< 1.0	< 1.0	452	700	132	38000
	>C16-C21	< 1.0	< 1.0	< 1.0	< 1.0	804	1330	288	28400
	>C21-C35	< 1.0	< 1.0	< 1.0	< 1.0	1220	1330	1550	28400
Aliphatic Hydrocarbons (mg/kg)	>C5-C6	< 0.01	< 0.01	< 0.01	< 0.01	26.1	26.1	4250	>1000000
	>C6-C8	< 0.01	< 0.01	< 0.01	< 0.01	87.8	87.9	13900	>100000
	>C8-C10	< 1.0	< 1.0	< 1.0	< 1.0	14.5	14.5	1780	86700
	>C10-C12	< 1.0	< 1.0	< 1.0	< 1.0	87.7	87.8	7460	94600
	>C12-C16	< 1.0	< 1.0	< 1.0	< 1.0	4010	4050	13300	95300
	>C16-C21	< 1.0	< 1.0	< 1.0	< 1.0	88200	88900	281000	>1000000
	>C21-C35	< 1.0	< 1.0	< 1.0	< 1.0	88200	88900	281000	>1000000
Acenaphthene	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	2130	4770	612	106000
Acenaphthylene	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	-	-	-	-
Anthracene	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	18300	24000	10400	545000
Benz(a)anthracene	mg/kg	0.8	< 0.5	< 0.5	< 0.5	18	18.2	76.8	218
Benzo(a)pyrene	mg/kg	0.8	< 0.5	< 0.5	< 0.5	2.43	2.46	10.3	22.3
Benzo(b)fluoranthene	mg/kg	0.9	< 0.5	< 0.5	< 0.5	24.1	24.4	93	223
Benzo(ghi)perylene	mg/kg	0.8	< 0.5	< 0.5	< 0.5	248	249	1630	2250
Benzo(k)fluoranthene	mg/kg	1.1	< 0.5	< 0.5	< 0.5	244	246	1100	2240
Chrysene	mg/kg	1	< 0.5	< 0.5	< 0.5	2280	2330	6350	22000
Dibenz(ah)anthracene	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	2.4	2.42	12.3	22.4
Fluoranthene	mg/kg	1.2	< 0.5	< 0.5	< 0.5	2160	3210	924	72700
Fluorene	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	1930	3100	725	72100
Indeno(123-cd)pyrene	mg/kg	0.9	< 0.5	< 0.5	< 0.5	23.9	24.3	84.9	222
Naphthalene	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	8.71	9.22	23.4	22700
Phenanthrene	mg/kg	0.6	< 0.5	< 0.5	< 0.5	-	-	-	-
Pyrene	mg/kg	1.1	< 0.5	< 0.5	< 0.5	1550	2400	620	54500
TOTAL PAH	mg/kg	-	-	-	-				
Cyanide (Free)	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	34	34	34	34
pH	unit	8.1	8.9	8.8	8.3	-	-	-	-
Copper (Total)	mg/kg	126	45.2	37.7	44.1	4020	8370	1110	109000
Lead (Total)	mg/kg	**1980**	**483**	**630**	**811**	322	444	160	6830
Zinc (Total)	mg/kg	818	216	206	117	17200	46800	3990	917000
						LQM/CIEH Generic Assessment Criteria			
Chromium (Total)	mg/kg	24.6	29.2	22.6	19.4	3000	3000	34600	30400
						CLEA Soil Guideline Values (SGV)			
Arsenic (Total)	mg/kg	**37.7**	14.0	13.3	11.6	32	32	43	640
Cadmium (Total)	mg/kg	1.6	< 0.5	< 0.5	< 0.5	10	10	1.8	230
Mercury (Total)	mg/kg	9.8	1.3	1.3	2.8	170	170	80	3600
Nickel (Total)	mg/kg	22.3	28.2	20.8	16.6	130	130	230	1800
Phenols (Total)	mg/kg	< 5	< 5	< 5	< 5	420	420	280	3200
Selenium (Total)	mg/kg	6.3	< 1.0	< 1.0	< 1.0	350	350	120	13000
Total Sulphate as SO4	mg/kg	-	-	-	-	-	-	-	-
W/S Sulphate as SO4 (2:1)	g/l	-	-	-	-				
Elemental Sulphur	mg/kg	< 20	< 20	< 20	< 20	-	-	-	-
Sulphide	mg/kg	-	-	-	-	-	-	-	-

Key

PAH - Polyaromatic Hydrocarbons
TPH - Total Petroleum Hydrocarbons
- Not determined

Result exceeds ATRISK screening value
Result exceeds EQS/CIEH generic assessment criteria
Result exceeds CLEA Soil Guideline Value (SGV)

Chelmer Consultancy Services
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Email: info@siteinvestigations.co.uk Website: www.siteinvestigations.co.uk

Job No.	**4792**
Location	**46 Inverness Street**
Date	**November 2014**
Number of Made Ground Samples	**4**
t value	**2.353**
Determinand	**Arsenic**
ATRISK (SSV) **Residential With Plant Uptake**	**32**

Contaminant Concentration (mg/kg)	x^2
38	1421
14	196
13	177
12	135
76.60	

Mean	**19.15**
Sum of x^2	**1928.74**
Standard Deviation^2 =	**153.950**
Standard Deviation =	**12.408**

Normalised Upper Bound	**33.7**

Is Action still required in the averaging area based on the mean value test after DEFRA R & D Publication CLR 7 methodology

Yes

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Job No.	**4792**
Location	**46 Inverness Street**
Date	**November 2014**
Number of Made Ground Samples	**4**
t value	**2.353**
Determinand	**Lead**
ATRISK (SSV) Residential With Plant Uptake	**444**

Contaminant Concentration (mg/kg)	x^2
1980	3920400
483	233289
630	396900
811	657721
3904.00	

Mean	**976**
Sum of x^2	**5208310.00**
Standard Deviation^2 =	**466002.000**
Standard Deviation =	**682.643**

Normalised Upper Bound	**1779**

Is Action still required in the averaging area based on the mean value test after DEFRA R & D Publication CLR 7 methodology

Yes

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East Hanningfield, Essex CM3 8AB
Telephone: 01245 400 930 Fax: 01245 400 933
Email: info@siteinvestigations.co.uk Website: www.siteinvestigations.co.uk

Landborne Gas Assessment

Site Ref: **4792**
Site Name: **46 Inverness Street, London NW1 7HB**

Well	Date	Methane Peak	Methane Steady	Methane GSV	Carbon Dioxide Peak	Carbon Dioxide Steady	Carbon Dioxide GSV	Oxygen	Atmos.	Flow	Response Zone	Depth to Water	CO	H2S
		%v/v	%v/v	l/hr	%v/v	%v/v	l/hr	%v/v	mbar	l/hr	m bgl	m bgl	ppm	ppm
BH1	25/09/2014	0.1	<0.1	0.0001	1.3	1.0	0.0013	19.8	1017	0.1	1.00-6.00	Dry	0	0
	01/10/2014	0.1	<0.1	-0.0001	1.8	1.8	-0.0018	19.4	1022	-0.1		Dry	13	0
BH2	25/09/2014	0.1	<0.1	0.0001	0.1	<0.1	0.0001	20.1	1017	0.1	1.00-6.00	Dry	0	0
	01/10/2014	0.1	<0.1	-0.0001	0.4	0.2	-0.0004	20.5	1021	-0.1		Dry	0	0

Notes

NR = Not recorded
Values in Bold exceed the CO_2 Building Regulations threshold (>1.5%)
Values in Red exceed the Buildings Regulations Action Level (CO_2 >5.0% and CH_4 >1.5%)

Chelmer Site Investigations
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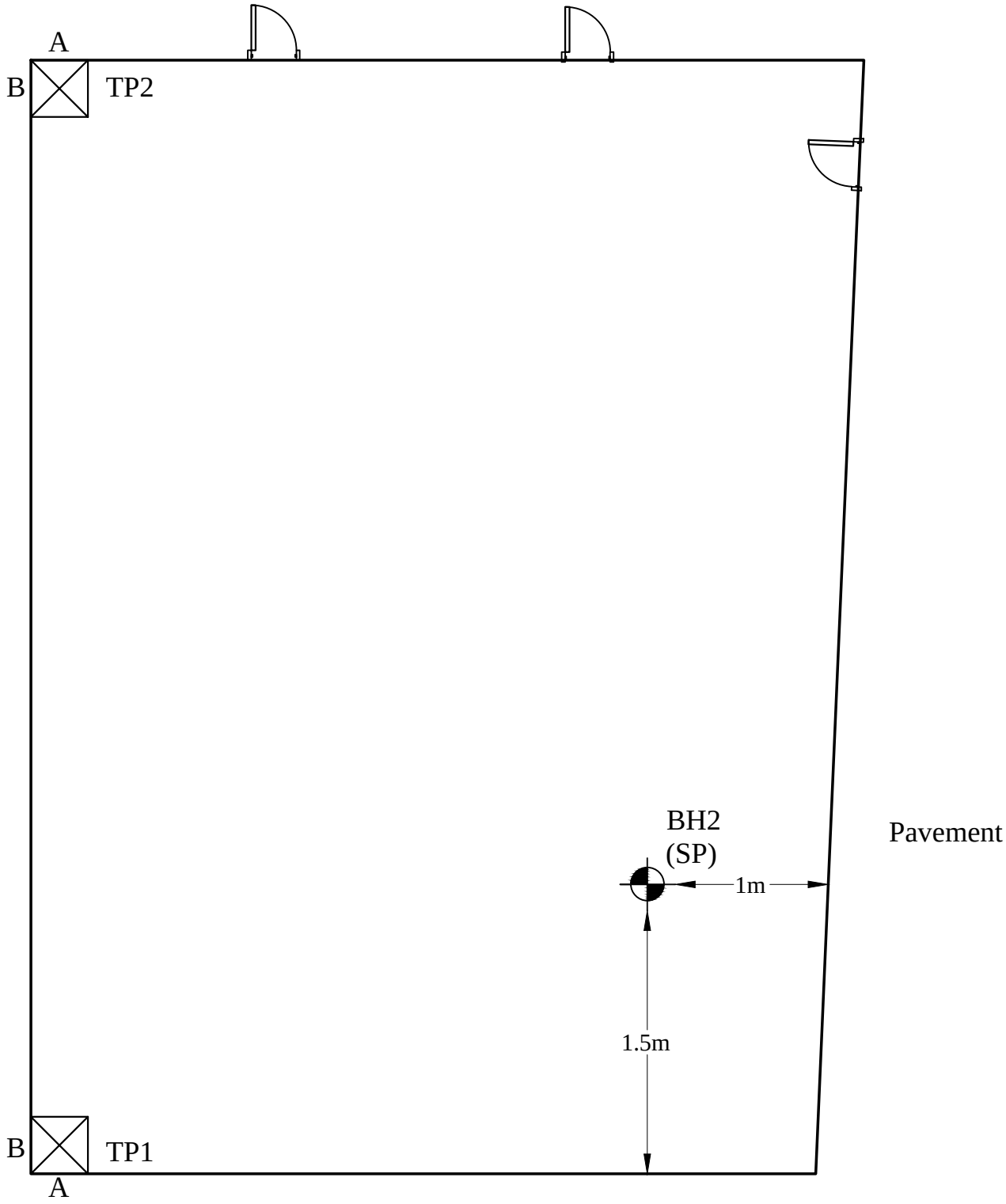
Old Church Road, East Hanningfield, Essex CM3 8AB
Telephone: 01245 400930 Fax: 01245 400933
Email: info@siteinvestigations.co.uk Website: www.siteinvestigations.co.uk

Chelmer Site Investigations

Client: Christine Hancock	**Scale:** N.T.S.	**Sheet:** 1 of 2	**Date:** 15.09.14	
Location: 46 Inverness Street, London, NW1 7HB	**Job No:** 4792	**Weather:** Internal	**Drawn by: TP**	**Checked by: JH**



Notes: *On site tree identification for guidance only. Not authenticated.*

Key:

Tree/Shrub | Borehole | Trial Pit | G Gully | Tree Stump | Rain Water/ Soil Pipe | MH Manhole

Chelmer Site Investigations
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Old Church Road, East Hanningfield, Essex CM3 8AB
Telephone: 01245 400930 Fax: 01245 400933
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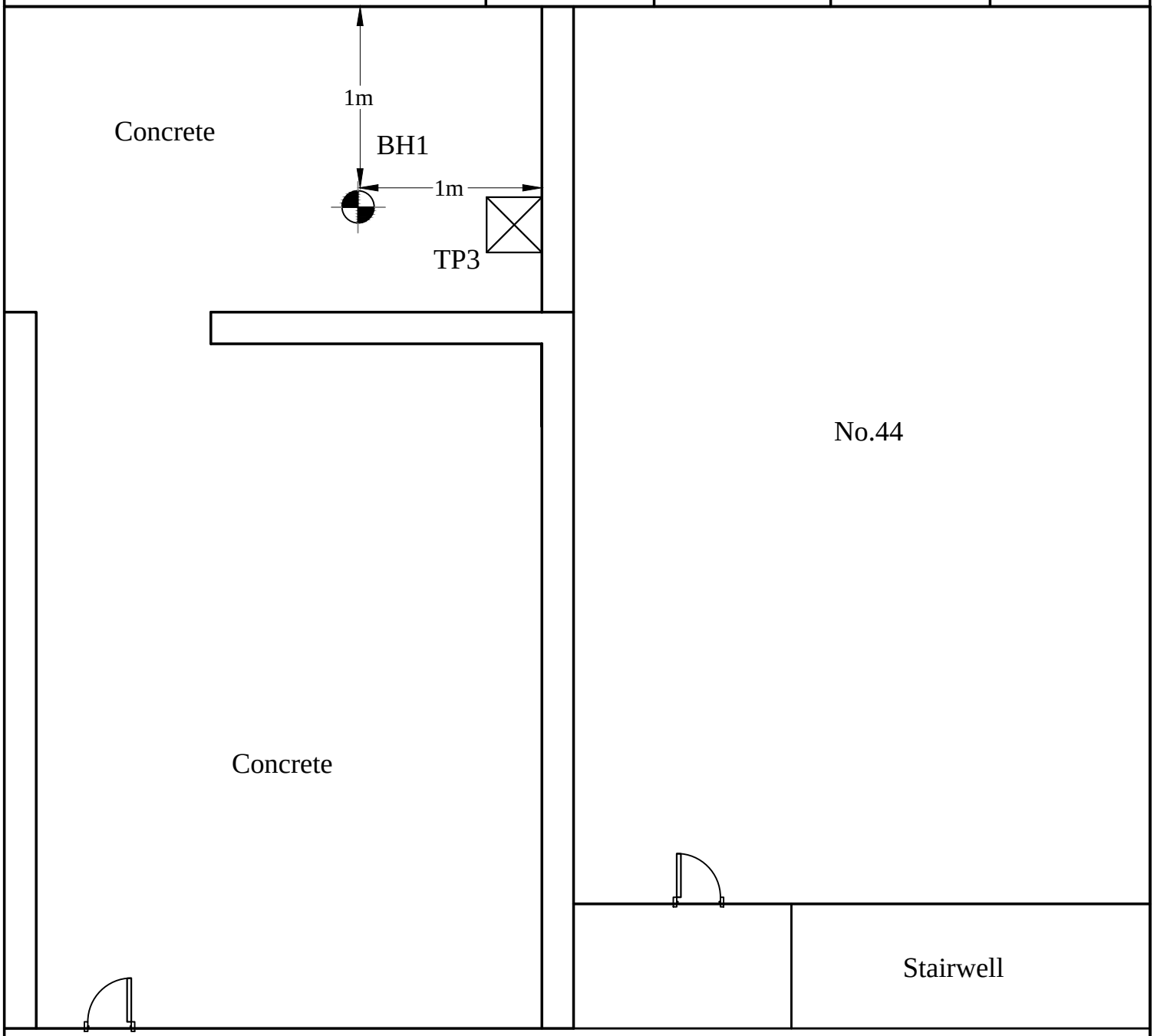
Chelmer Site Investigations

Client: Christine Hancock	**Scale:** N.T.S.	**Sheet:** 2 of 2	**Date:** 15.09.14	
Location: 46 Inverness Street, London, NW1 7HB	**Job No:** 4792	**Weather:** Internal	**Drawn by: TP**	**Checked by: JH**



Notes: *On site tree identification for guidance only. Not authenticated.*

Key:

Tree/Shrub | Borehole | Trial Pit | G Gully | Tree Stump | Rain Water/ Soil Pipe | MH Manhole

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REVISIONS:

REV -	REV -	REV -	REV -	REV -	REV -	REV -

STUDIO BEDNARSKI Ltd

ARCHITECTURE urbanism interiors products bridges

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Structural Engineer: -
Environmental Engineer: -

PROJECT: 46 Inverness Street, London NW1

CLIENT:

DRAWING: ELEVATION

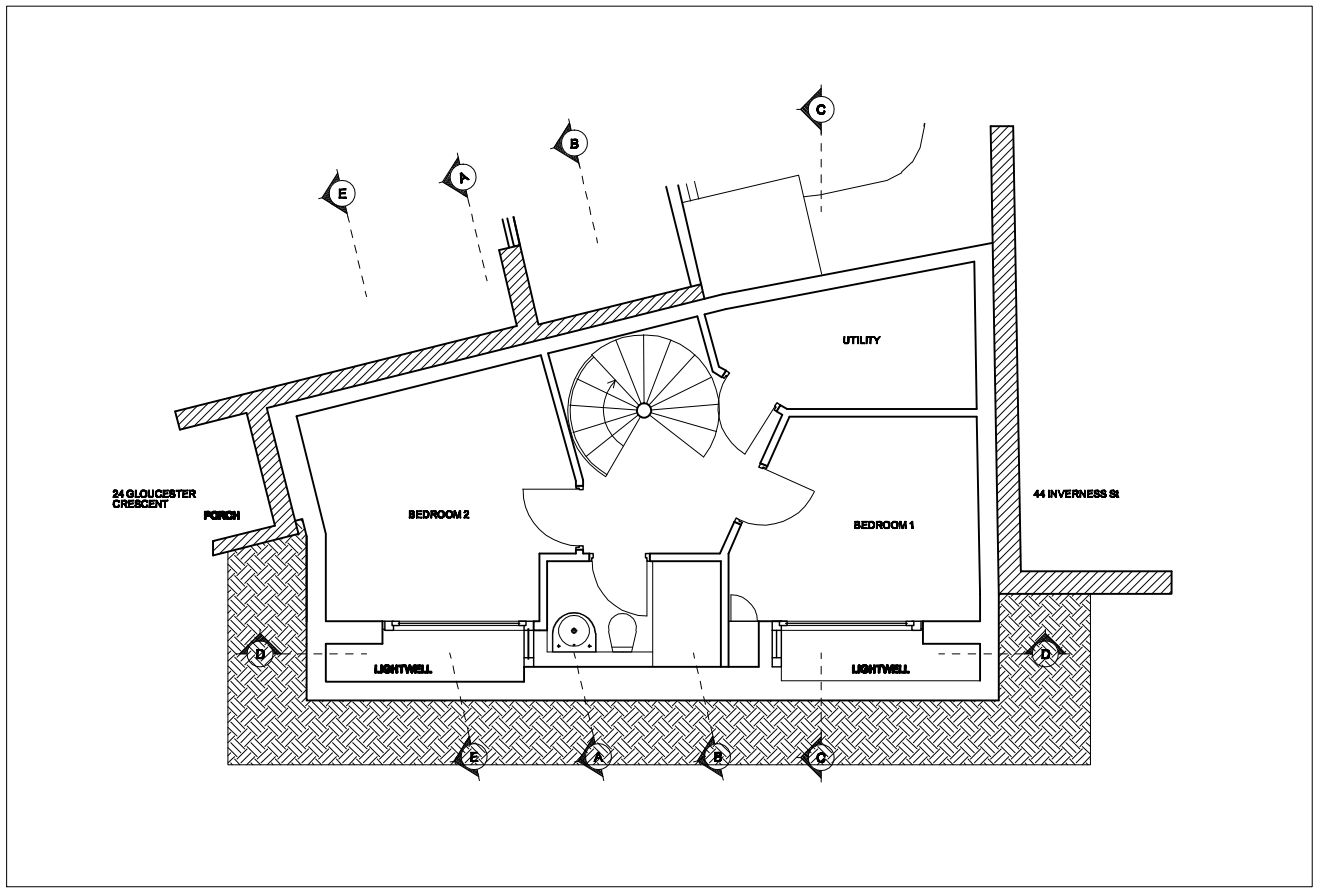
DATE: 11_11_13

REVISION: -

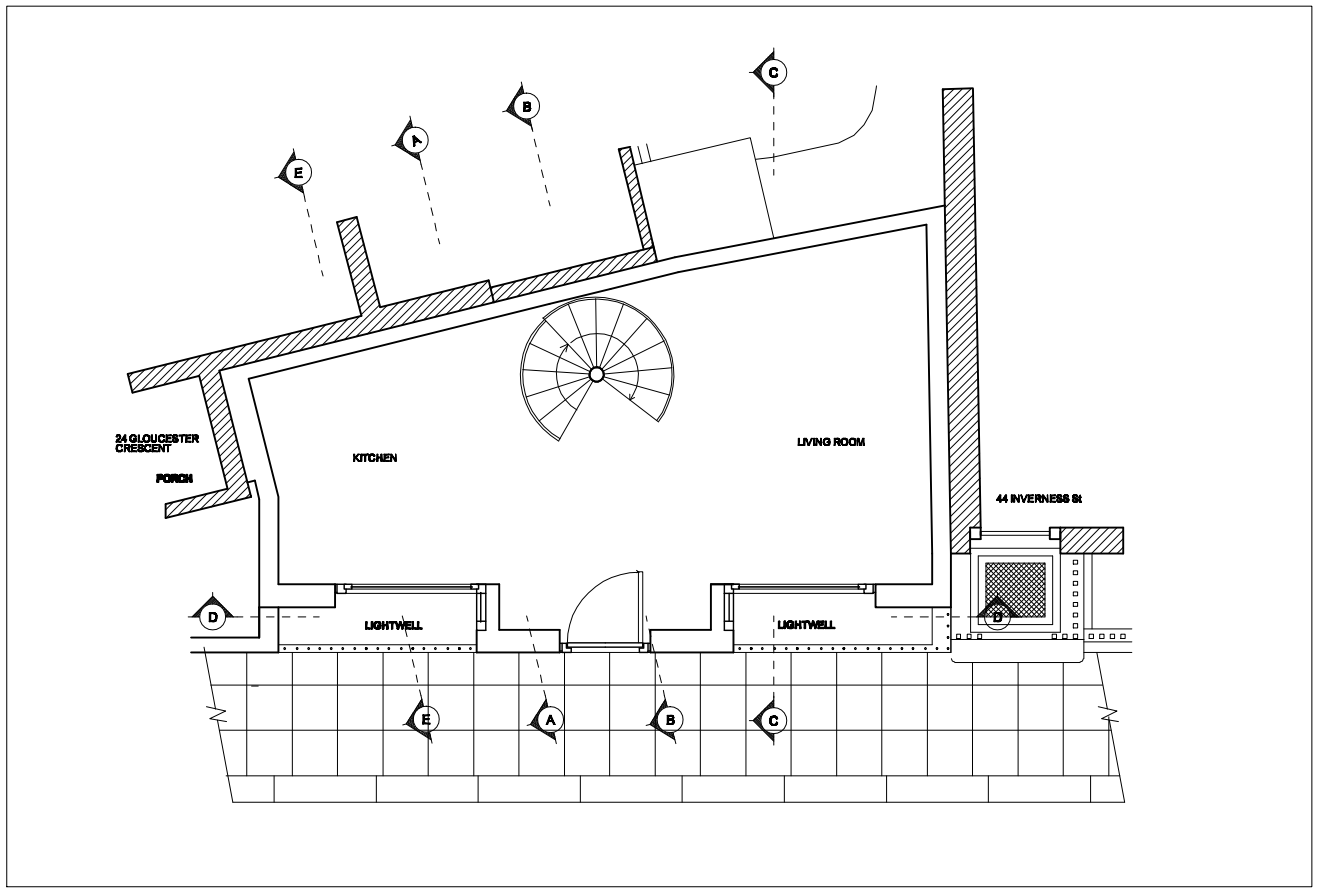
SCALE: 1:100 @ A4

STATUS: FOR PLANNING

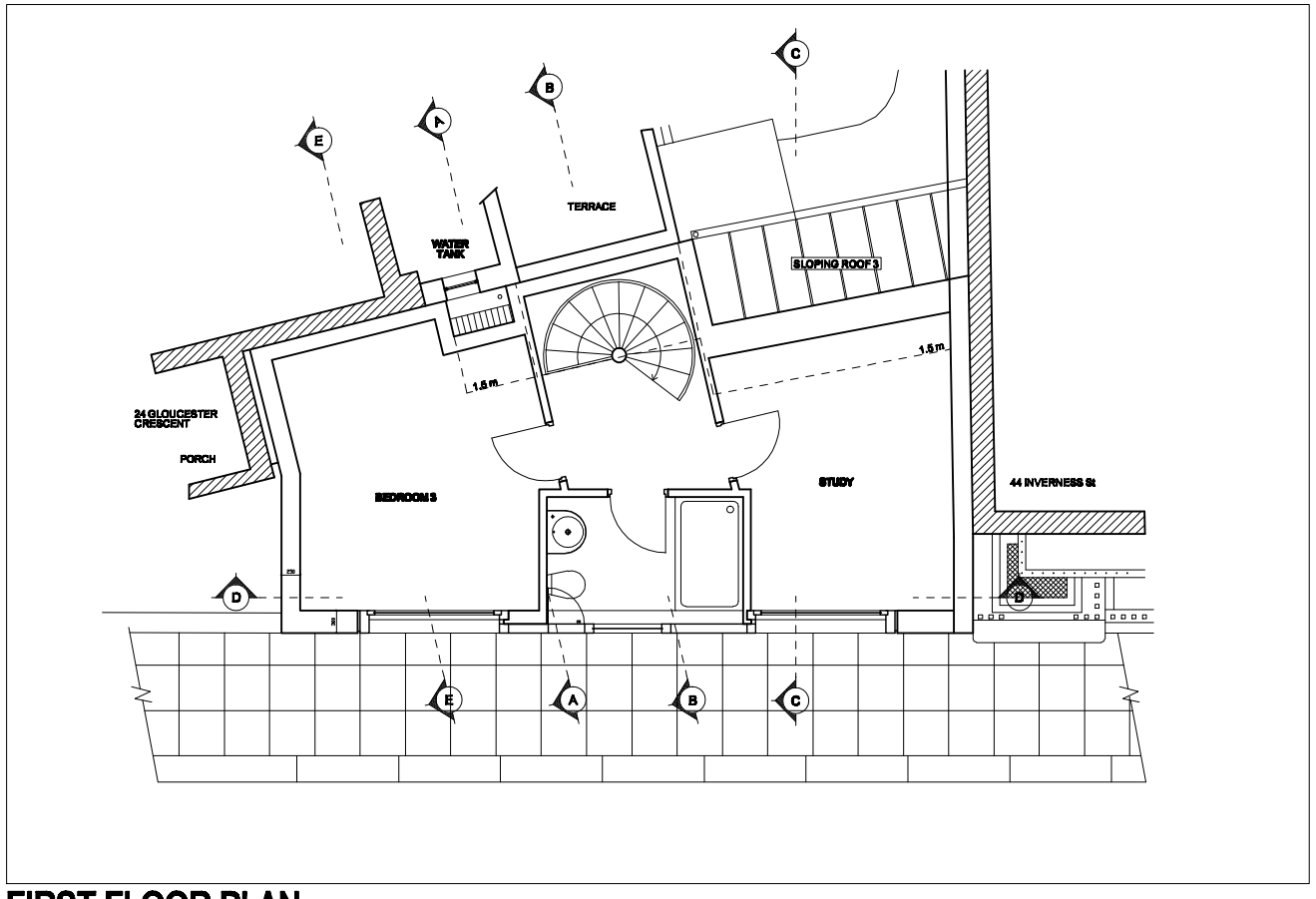
DRAWING NO: 214/P/03



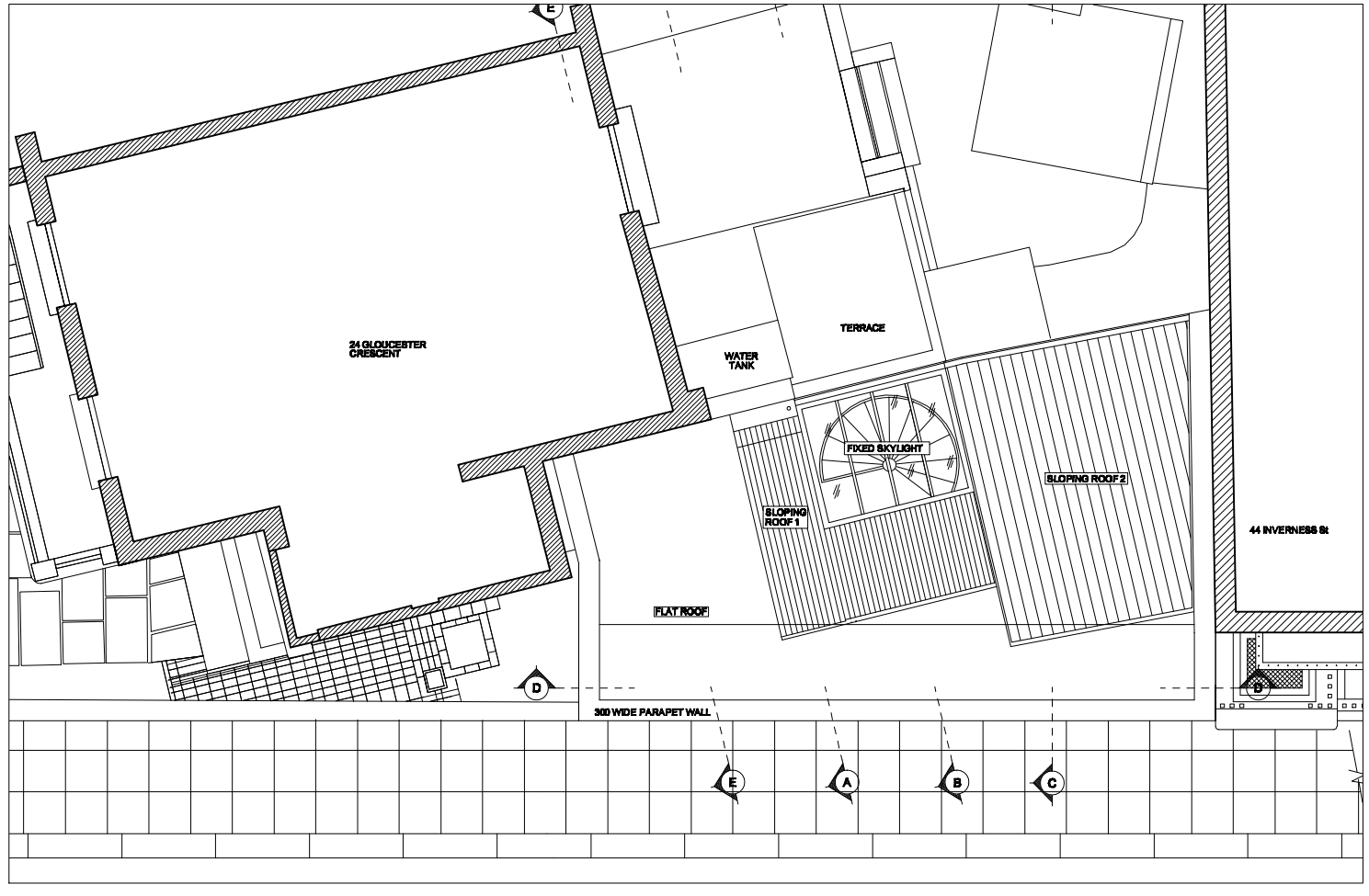
BASEMENT PLAN



GROUND FLOOR PLAN



FIRST FLOOR PLAN



ROOF PLAN

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-	-	-	-	-	-	-	-	-	-	-	-

STUDIO BEDNARSKI

Structural Engineers
Environmental Engineers

46 Inverness Street, London NW17HB

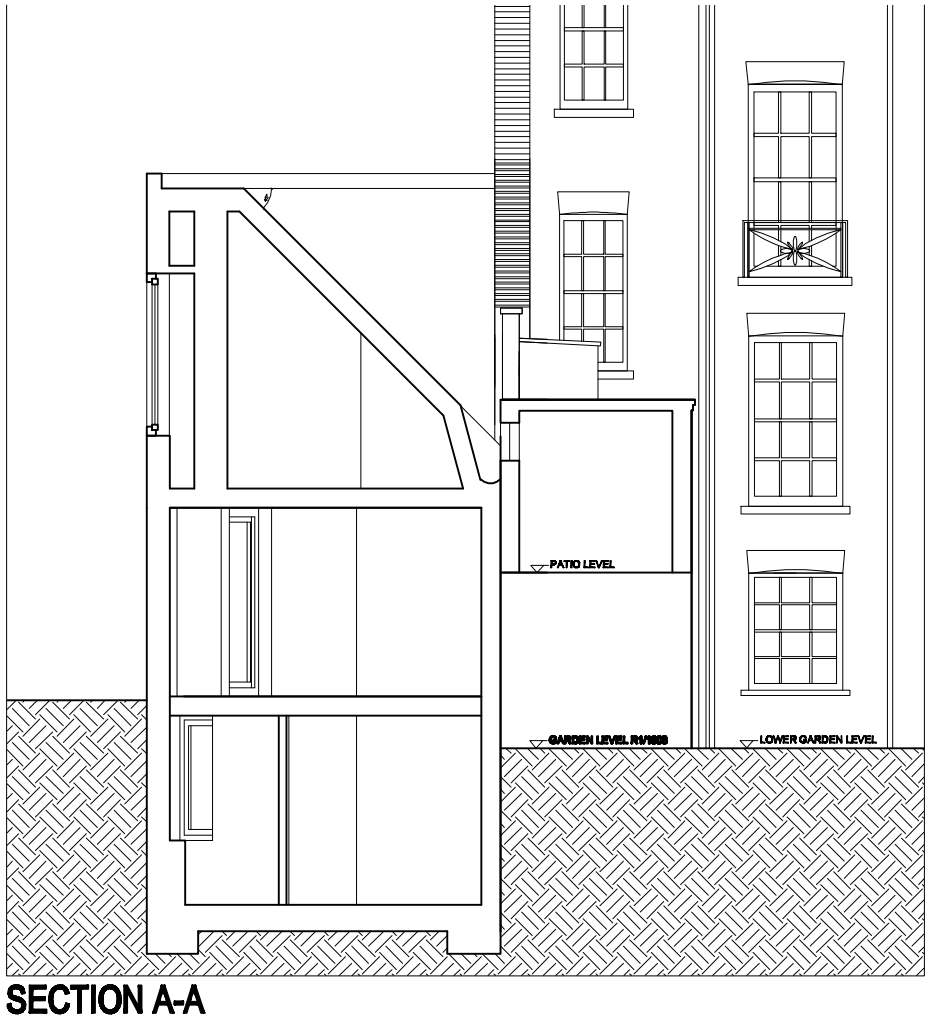
Hancock & Robinson

PLANS

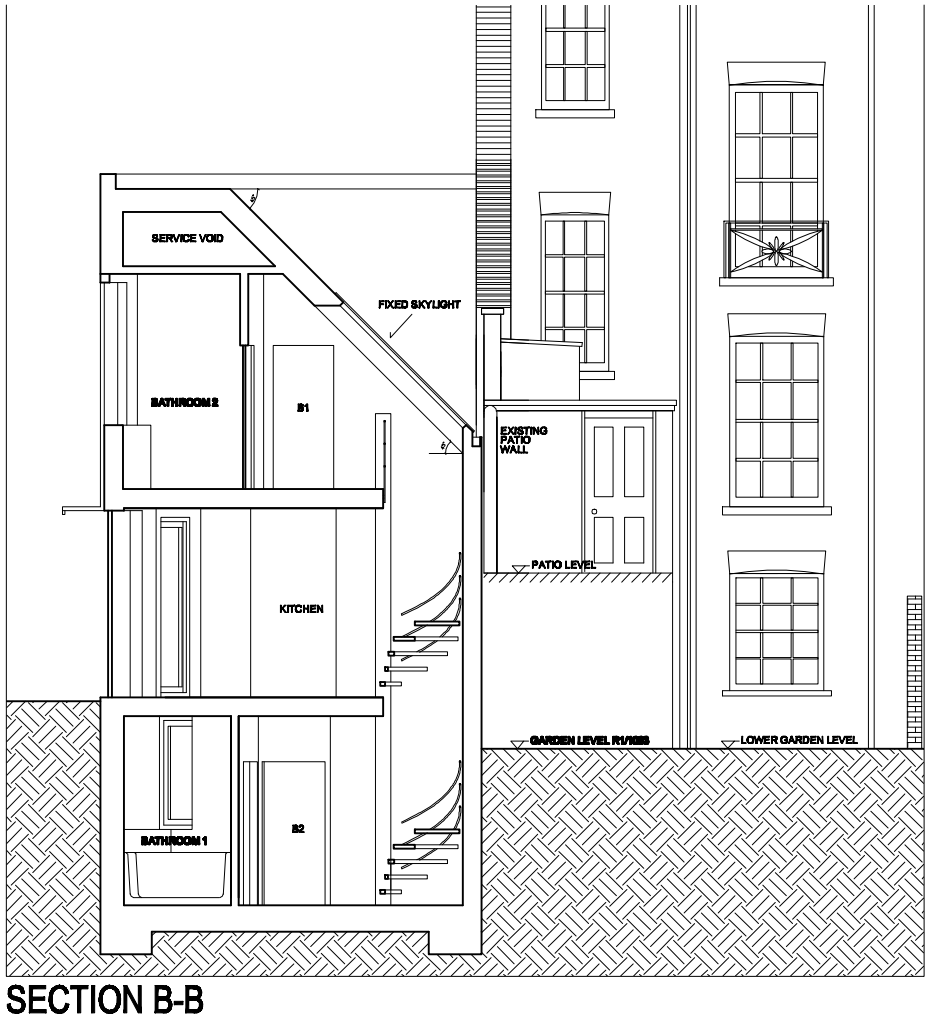
1:1000

FOR PLANNING

SB
22-
02



SECTION A-A



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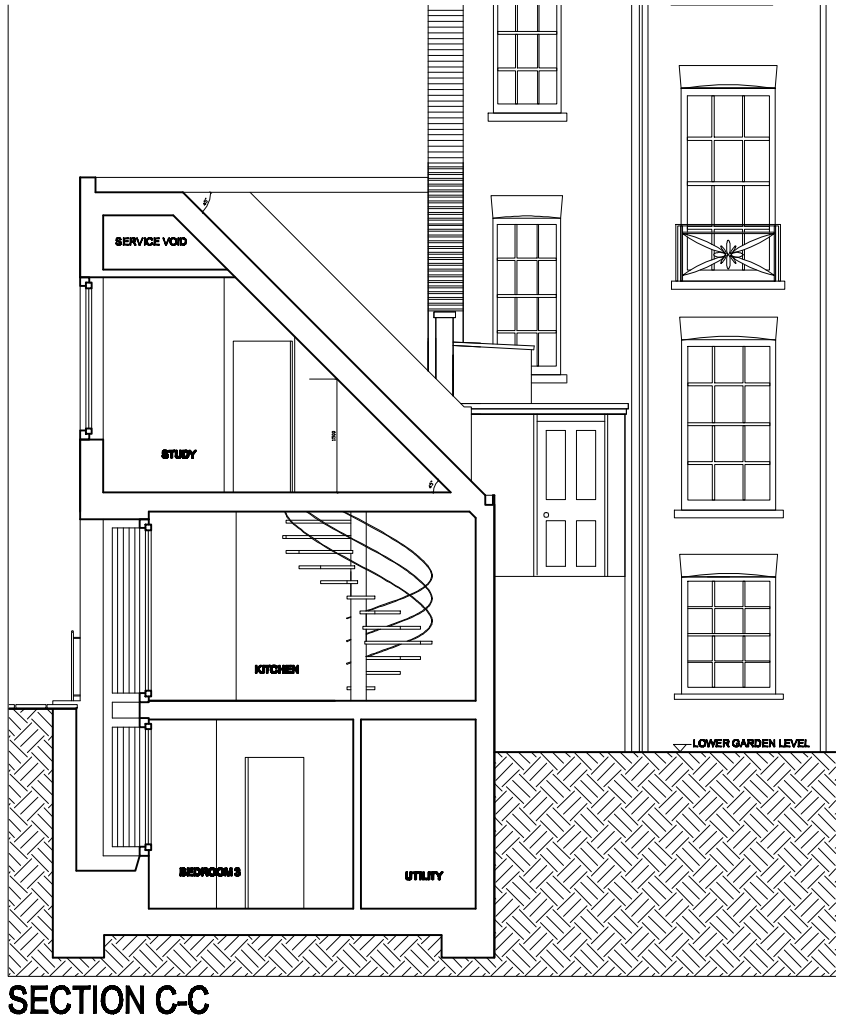

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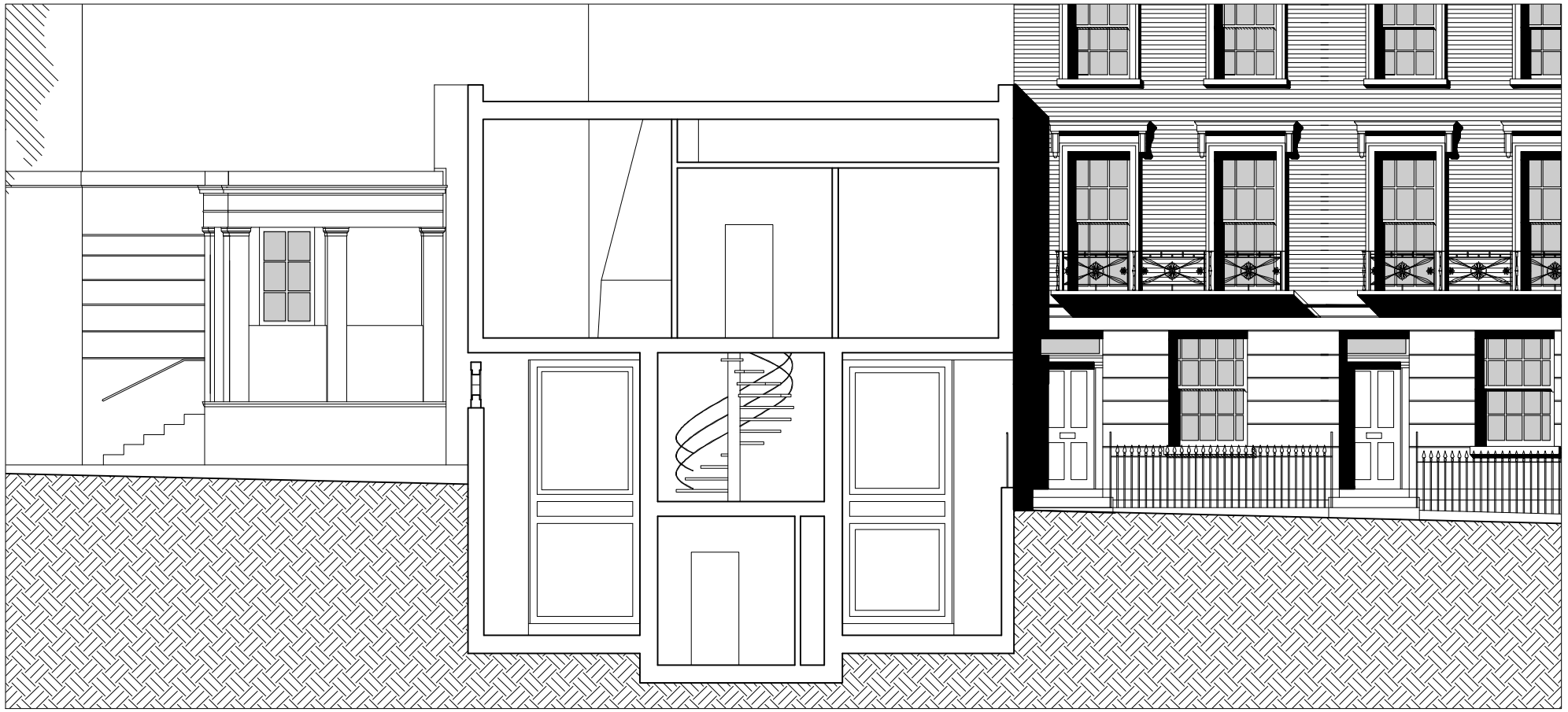

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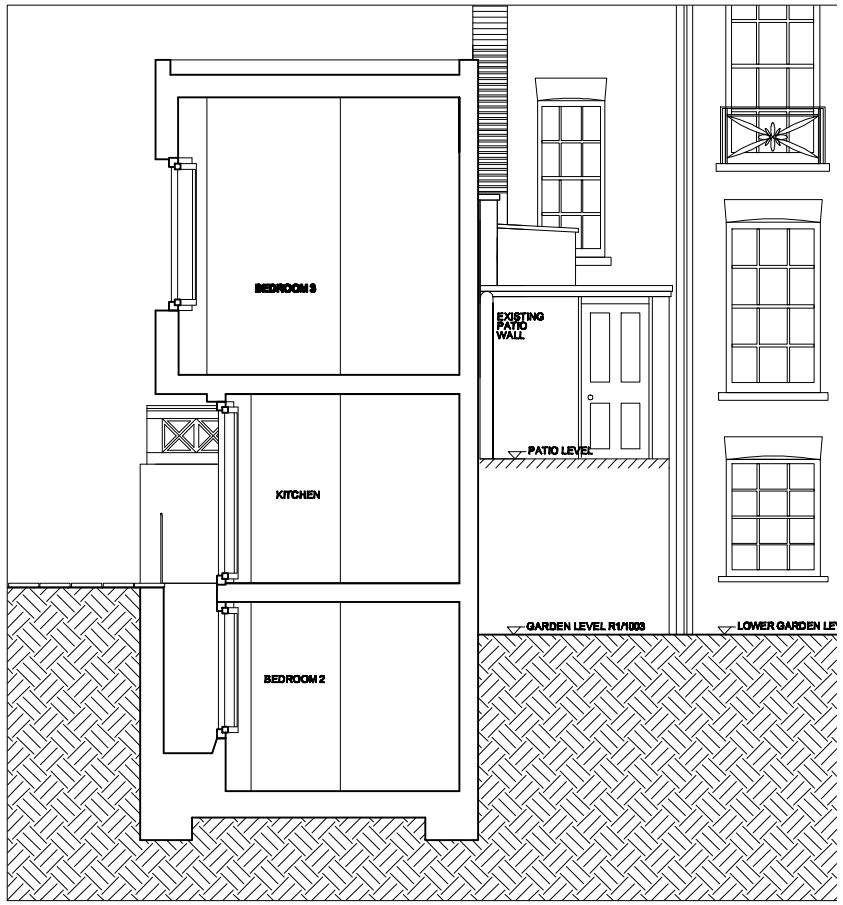

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REVISIONS:

REV:	REV:	REV:	REV:	REV:	REV:	REV:	REV:	REV:	REV:	REV:	REV:
-	-	-	-	-	-	-	-	-	-	-	-

STUDIO BEDNARSKI

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Structural Engineer:
Environmental Engineer:

46 Inverness Street, London NW1 7HB

Hancock & Robinson

SECTIONS

1:100@A3

PLANNING

214/P/02

03.05.19