

soiltechnics

environmental and geotechnical consultants

Proposed basement extension
323 Gray's Inn Road
London

Basement Impact Assessment Report
(updated 29th January 2018)

Cedar Barn, White Lodge, Walgrave, Northamptonshire NN6 9PY

t: 01604 781877 **e:** mail@soiltechnics.net
f: 01604 781007 **w:** www.soiltechnics.net

**Proposed basement extension
323 Gray's Inn Road
London
WC1X 8PX**

**BASEMENT IMPACT ASSESSMENT REPORT
(updated 29th January 2018)**

Soiltechnics Ltd. Cedar Barn, White Lodge, Walgrave, Northampton. NN6 9PY.

Tel: (01604) 781877

Fax: (01604) 781007

E-mail: mail@soiltechnics.net

Report originators

Prepared
by



karen.boothby@soiltechnics.net

Karen Boothby B.Sc.(Hons) (Open), MIEEnvSc.

Senior geo-environmental Engineer, Soiltechnics Limited

Supervised
by



lydia.crawford@soiltechnics.net

Lydia Crawford B.Sc. (Hons), FGS, MIEEnvSc.

Associate Director, Soiltechnics Limited

Reviewed
by



nigel.thornton@soiltechnics.net

Nigel Thornton
B.Sc (Hons)., C.Eng., M.I.C.E., M.I.H.T., F.G.S

Director, Soiltechnics Limited



Aerial photograph of property



Approximate property boundaries edged in **red**

Report status and format

Report section	Principal coverage	Report status	
		Revision	Comments
1	Introduction and brief	Revision 1	Client scheme drawing updated. Results of Drainage investigations reported.
2	Description of the property and project proposals		
3	Desk study information and site observations		
4	Ground investigations		
5	Ground movement analysis		
6	Hardened areas		
7	Tree removal		
8	Existing damage to adjacent buildings		
9	Subterranean (Groundwater flow) screening		
10	Stability impact identification		
11	Surface flow and flooding impact identification		
12	Summary and Conclusion.		

List of appendices

Appendix	Content
A	Copy of drawings illustrating development proposals provided by Hone Edwards Associates
B	Copy of CV of Nigel Thornton and examples of Soiltechnics commissions on basement investigations and analysis.
C	Copy of comments on this report by Chartered Geologist.
D	Trial pit record
E	Plan showing estimated surface settlement contours as a result of basement excavations (drawing BIA 01)
F	Copy of calculations to estimate damage to adjacent properties as a result of basement excavation.
G	Copy of letter from Thames Water on sewer flooding
H	Copy of correspondence with London Underground.

1 Introduction and brief

1.1 Objectives

This report presents a Basement Impact Assessment (BIA) for a proposed development at 323 Gray's Inn Road, London WC1X 8PX.

The principal objective of the assessment is to present evidence to support a planning application for the project as required by Camden local plan adopted version (June 2017) policy A5.

1.2 Client instructions and confidentiality

This report has been produced following instructions received from Barrack Holdings.

This report has been prepared for the sole benefit of our above-named instructing client, but this report, and its contents, remains the property of Soiltechnics Limited until payment in full of our invoices in connection with production of this report.

This report has been updated following receipt of amended scheme drawings (appendix A) and results of drainage investigations. Updates to text is highlighted by a vertical line in the left-hand margin.

1.3 Supervisors qualifications

This report has been prepared by Geo-Environmental Engineers (B.Sc.), one of which is also a Fellow of the Geological Society (FGS). The report preparation was supervised by a Chartered Civil Engineer, (C.Eng., M.I.C.E) who is also a Fellow of the Geological Society (FGS). The supervising engineer is a practising Civil Engineer with specialist experience (37 years) in geotechnical engineering (including basement construction) and flood risk. A copy of the CV for the supervising Engineer and examples of experience in basement construction is presented in Appendix B. This report has been reviewed by John Evans of Chord Environmental who is a Chartered Geologist and expert in hydrogeology. A copy of his comments is presented in Appendix C (To follow pending receipt of comments).

1.4 Guidance used

As described in paragraph 1.1.2 above we have followed the requirements of Camden Local Plan -Adopted version (June 2017) – policy A5 (basements) and the following documents referenced in A5:

) Camden Planning Guidance (CPG4) '*Basements and lightwells*',

) Camden geological, hydrogeological and hydrological study report '*Guidance for subterranean development* ', produced by Arup on behalf of the London Borough of Camden.

We have also referred to the '*Strategic Flood Risk Assessment Report for North London*' dated August 2008 prepared by Mouchel, as well as other readily available information on websites. This report has considered all four stages of the BIA process as described in CPG4.

- a) Maintain the structural stability of the building and neighbouring properties.
- b) Avoid adversely affecting drainage and run-off or causing other damage to the water environment;
- c) Avoid cumulative impacts upon structural stability or the water environment in the local area;

In order to satisfy part a) a construction method statement has been prepared by our client's appointed Consulting Structural Engineer which is separately presented, please refer to the Structural Engineer's Design Statement for planning.

1.5 Format of this report in relation to CPG4

Sections 3 to 8 of this report describes project proposals and presents desk study and investigation data, information required to answer flow chart questions posed in figures 1, 2 and 3 of CPG4. Answers for these flow chart questions are provided in Sections 9 to 11.

2 Description of the property and project proposals

2.1 Description of the property

The site is located within the London Borough of Camden in a mixed residential and commercial area. The nearest watercourses are Regent's Canal, some 535m to the north and the River Thames some 2.2km to the south. Local topography generally falls to the south.

The site currently comprises a mid-terraced building on the southern extremity of Gray's Inn Road. The property is four-storey which includes a single-storey basement. There is a single storey extension to the rear, and two Vaults beneath footpath to Gray's Inn Road. The ground and basement floors are currently used as a restaurant. A plan of the current basement (including Vaults) is presented on drawing 01 in appendix E..

2.2 Project proposals

Proposals are to extend the existing basement laterally, beneath the rear of the property. Proposals will also include the construction of a lightwell/escape route to the front of the property.

Copies of our client's Architects drawings showing project proposals are presented in Appendix A.

3 Desk study information and site observations

3.1 Site history

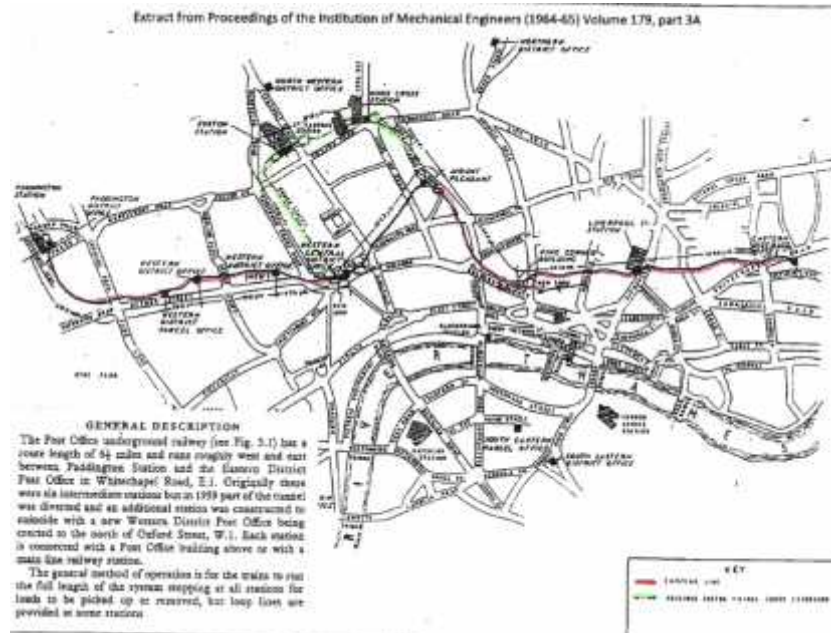
We have reviewed Ordnance Survey and London town maps dating back to the 1850s. These indicate the site was recorded as a terraced house with rear garden/yard until the 1950s, by which time the property appears to have been extended to infill the garden / yard. No further changes on site are noted. Little change is noted in the surrounding buildings, which also comprise terraced buildings.

The 1895 map does show the location of the metropolitan railway underground lines close to the property, with an extract copy presented below. The underground railway lines are shaded yellow. There is also a subway link outside the property (shaded green).



We have also contacted London Underground. They were initially unable to provide plans of their underground assets in the area, but required us to send a plan of our proposals. We sent a plan showing a potential borehole position within a lightwell to the adjacent property (immediately adjacent to the proposed basement extension). London Underground's response is presented in appendix H, which confirms the borehole (thus the basement excavation) will not affect their assets. Relevant correspondence is also presented in appendix H.

We have also viewed the line of the former post office tunnel map, a copy of which is presented below;



The map shows the tunnel route follows Pentonville Road (to the north of the property) then a route down Kings Cross Road, thus not affecting the property.

At this stage is important to note there are no water courses recorded the historical maps close to the property, and no evidence of any opencast quarrying activities in the vicinity.

We have reviewed bomb damage maps (1939-1945) produced by The London County Council. An extract of the bomb map for the area is presented below. The map shows the property (shaded orange) did suffer damage but non-structural, and adjacent buildings in the terrace to the south minor damage.



3.2 Geology and geohydrology of the area

3.2.1 Geology

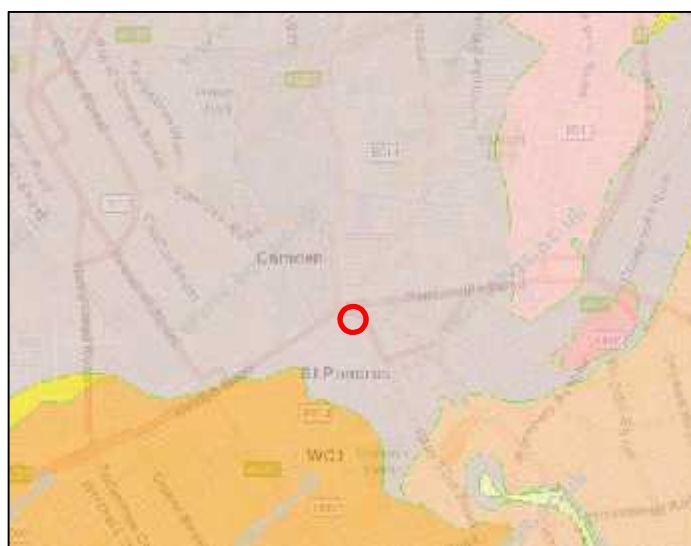
Inspection of the geological map of the area published by the British Geological Survey (BGS) indicates the following sequence of strata. The thickness of the strata has been obtained from a combination borehole record data formed within 500m of the property available on the BGS website, and geological sections shown on the BGS map.

Summary of Geology and likely aquifer containing strata					
Strata	Bedrock or drift	Approximate thickness	Typical soil type	Likely permeability	Likely aquifer designation
London Clay Formation	Bedrock	20m	Clays	Low	Unproductive
Lambeth Group	Bedrock	20m	Clays occasionally sandy	Low	Unproductive
Thanet sands	Bedrock	2-3m	Fine sands	Low/moderate	Secondary Aquifer
Chalk	Bedrock	>80m	Chalk	High	Principal

Table 3.2.1

Soil types and assessments of permeability are based on geological memoirs, in combination with our experience of investigations in these soil types.

An extract copy of the geological map is presented below, with grey shading representing the outcrop of the London Clay Formation (LC). The other shading represents the overlying (superficial) River Terrace deposits. The site is shown by the red circle



Based on the above any excavations within the site will be located within London Clays, however it is acknowledged that a covering of Made Ground is inevitable associated with development of the area.

In addition, we have inspected and recorded a trial pit excavated by our client's contractor exposing foundations to the main façade facing Gray's Inn Road in a vault. Details of this excavation are presented in appendix E. The trial pit exposed a concrete strip foundation constructed on soils considered to be naturally deposited London Clays. No groundwater was encountered in the trial pit.

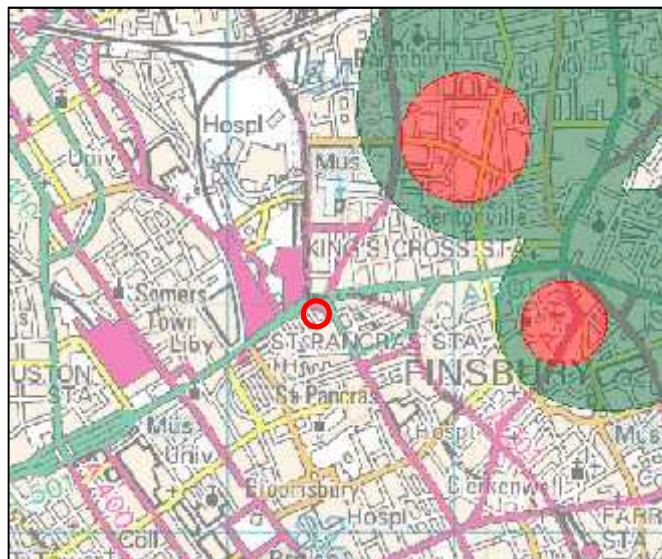
3.2.2 Geohydrology

The London Clay is classified as unproductive and regarded as not containing groundwater in exploitable quantities.

Chalk is classified a Principal Aquifer. Principal aquifers are defined as deposits exhibiting high permeability capable of high levels of groundwater storage. Such deposits are able to support water supply and river base flows on a strategic scale.

3.2.3 Source protection zone

The site is not recorded as being located within or close to a zone protecting a potable water supply abstracting from a principle aquifer (i.e. a source protection zone). An extract of the plan recording source protection zones is presented below, with green shading representing outer protection zones and red inner protection zones. Water will be extracted from the Chalk aquifer. The site is located within the red circle centrally and remote from source protection zones.



3.3 Quarrying/mining

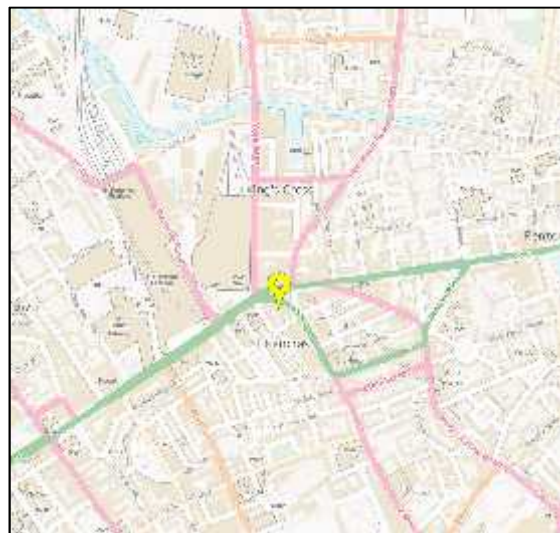
With reference to the coal mining and brine subsidence claims gazetteer for England and Wales, available on the Coal Authority web site, the area has not been subject to

exploitation of coal or brine. Inspection of old Ordnance Survey maps dating back to the first editions (late 1800s) does not record any quarrying activities within 250m of the property.

3.4 Flood risk

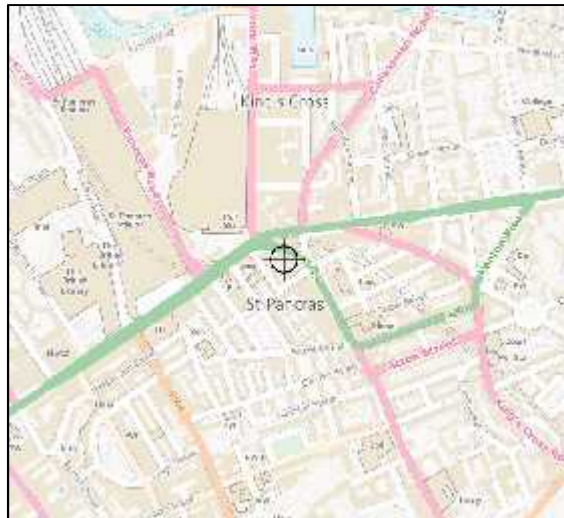
3.4.1 Fluvial/tidal flooding

The Environment Agency website indicates the site is not located within a fluvial or tidal flood plain. An extract copy of the flood risk map is presented below which shows no blue shading representative of flooding. The site is located at the yellow marker.



3.4.2 Flooding from Reservoirs, Canals and other Artificial Sources

The Environment Agency website indicates the site is not located within an area considered at risk of flooding from breach of reservoir containment systems. An extract copy of the flood risk map is presented below which shows no blue shading representative of flooding as a result of failure of containment systems close to the site. The site is located within the crosshairs.



3.4.3 Flooding from Groundwater and surface waters

The site is underlain with a substantial thickness (20m) of relatively impermeable London Clay Formation. On this basis groundwater is not likely to be available at the site and thus is unlikely to present a risk of causing groundwater flooding.

We have viewed the Environment Agency web site which provides maps showing areas a risk of flooding from surface waters. An extract of the map is presented below. The property is located within the crosshairs and blue shading represents areas at risk of surface water flooding. There is some low to high risk areas of flooding recorded along Gray's Inn Road to the north and low risk areas in the Mews to the immediate south-west of the site.



An extract of figure 11 from the Camden Geological, Hydrogeological and Hydrological Study (referenced in Section 1.4) is presented below. The blue lines show the locations of branches of the former River Fleet (to the north of the property). The

approximate location of the property is shown by the red circle. The property seems to be located in close proximity to the main channel of the former River Fleet.

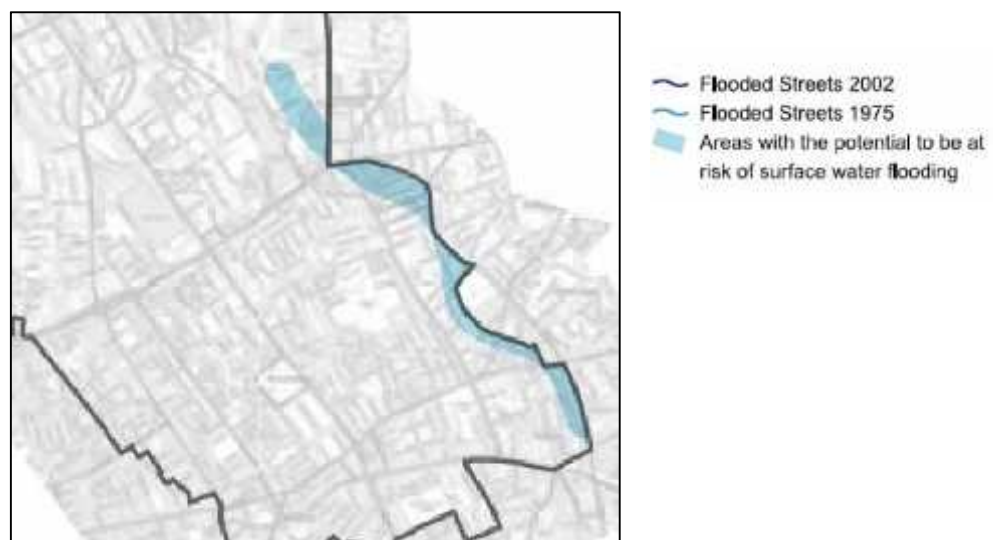


There are major culverts in the vicinity, both to the north and south of the site, which probably now take water from the former River Fleet. An extract copy of Thames Water asset plan is presented below which shows the location of these sewers (red line representing combined foul and surface water sewers). The property is in a blue box.



There is a 229mm sized sewer in the southern part of the building footprint. This will be discussed later below.

An extract of figure 15 from the Camden Geological, Hydrogeological and Hydrological Study (referenced in Section 1.4) is presented below (property marked in a red box). The map records the north end of Gray's Inn Road was not subject to flooding in either the 1975, nor in 2002 but is in an area with the potential to be at risk of surface flooding.



In view of the concentration of sewers in the area shown on Thames Water records, and the above surface water flood risk maps we have obtained a report from Thames Water on the risk of sewer flooding which is presented in appendix G. The report advises that 'there have been no incidences of flooding in the requested area as a result of surcharging of public sewers'.

There will be below ground water supply pipes operated by Thames Water in public highways around the property. These are generally relatively small diameter pipes. It is considered that the property is unlikely to be at enhanced risk of flooding due to ruptures in the potable water supply system in the area.

3.4.4

Conclusions

Based on the above, in our opinion, the property is considered unlikely to be at enhanced risk of being flooded by exceedances in capacity of foul and stormwater drainage or water supply pipes. Evidence presented above demonstrates the property is not at an enhanced risk of being affected by tidal or fluvial flooding or indeed from artificial sources.

4 Ground conditions

4.1 Scope

The current property is occupied at ground and level by an active restaurant, and the existing basement by kitchens serving the restaurant. As a result, exploration excavations within the proposed basement footprint cannot be carried out. One hand excavated trial pit has been undertaken in order to determine foundation arrangements to the front main façade facing Gray's Inn Road and within the Vault where access was available. The trial pit record is presented in Appendix D. The trial pit confirms soils below foundation levels are London Clays thus confirming published records.

Our client tried to obtain permission to excavate a borehole in a lightwell in third party property, adjacent to the proposed basement extension, but access was denied.

4.3 Outline methodology for basement excavation / construction.

It is likely that the rear single storey building and adjacent buildings to the rear are constructed on spread foundations (concrete strip or corbelled brickwork). Given the close proximity of the basement excavation to neighbouring properties, and ground conditions encountered at the site, underpinning of existing foundations, will be required extending the foundations to below proposed basement level. A construction method statement has been prepared by our client's appointed structural Engineer outlining the sequence of construction. On completion of the underpinning works, a system of props will be installed at high level (towards the top of the underpins) allowing excavation to basement level and installation of the basement floor. The props will be replaced with a concrete ground floor. Such a process will minimise risks of any adverse movement of the perimeter underpins and thus damage to adjacent properties.

There is a sewer within the footprint of the proposed basement extension which is recorded on Thames Water Asset plans. Investigations have been implemented by our client's consulting Civil and Drainage Engineer to determine impact on the basement. Following investigations, the Sewer is located below the existing basement floor level and thus below the proposed basement floor level. Our client's consulting Civil and Drainage Engineer is seeking a build over agreement with Thames water.

5 Ground movement analysis

5.1 Construction proposals

The basement is to be single storey. The basement will extend to depths of between around 2.7m (including floor construction) below ground levels, but to match the existing basement headroom.

5.2 Settlement around and inward yielding of basement excavations

The following analysis is based on case study observations of ground movements around excavations in clays as reported in CIRIA report C760 – ‘*Guidance on embedded retaining wall design*’ (2017). The London clays at the site in which the perimeter underpinning bays will be installed are considered competent ground and comprise stiff clays by exceeding an undrained shear strength of 75kN/m^2 , thus assessment of movements at the head of underpinning bays will be determined using table 6.3 in CIRIA report C760.

It is recognised that some inward yielding of supported sides of strutted excavations and accompanying settlement of the retained ground surface adjacent to the excavation will occur even if structurally very stiff props / strutting is employed. The amount of yielding for any given depth of excavation is a function of the characteristics of the supported soils and not the stiffness of the supports. Based on observations of other excavations in over consolidated clay soils (which is the case at this site) and typical maximum yield / excavation depth (%) is 0.15 for excavations classified as high support stiffness (high propped wall, top down construction) as described in table 6.3 (CIRIA report C760). Assuming a maximum excavation depth of 2.7m then the likely inward yield will be in the order of $2.7 \times 0.15/100 \times 1000 = 4\text{mm}$. This will diminish in a reasonably linear fashion over a horizontal distance from the pile head equal to 4 times the depth of excavation ie $4 \times 2.7\text{m} = 10.8\text{m}$.

Coincidental with the inward yield of perimeter walls (underpinning bays), some settlement of the retained soils around the excavation will occur. Again, based on published observations in similar soils, the ratio of surface settlement to excavation depth in over consolidated clays is typically 0.1%. For a maximum 2.7m deep excavation, then surface settlement in the order of $2.7 \times 0.1/100 \times 1000 = 2.7\text{mm}$ will occur. Importantly, whilst some surface settlement will occur around the excavation, this settlement profile will extend for a horizontal distance of about 3.5 times the depth of excavation i.e. about 9.45m in a reasonably linear fashion.

The value of making a finite element analysis to determine the amount of inward yielding of excavation supports in all routine cases of basement excavations is questionable requiring estimates of soil moduli and other factors such as Poisson's ratio. It is on this basis we have used observational techniques to determine wall movements.

We have produced a plan showing estimated surface settlement contours as a result of the basement excavation which is presented on drawing 01 in appendix E.

The wall to the rear of 325 and 327 Grays' Inn Road, possibly shared with 1a Birkenhead Road will be most affected (in terms of the effects of surface settlement) by the basement excavation. We have produced a set of calculations to estimate the tensile strain (and derive a prediction of potential damage) on a masonry panel forming these walls resulting from movements derived above. These calculations are presented in appendix F.

Considering the combination of surface settlement and inward yielding of perimeter underpins we estimate a maximum strain of about 0.045%. At this strain, the damage will fall into Burland category 0) as described in the following table (reproduced from CIRIA report C760).

Based on the above damage to neighbouring properties is predicted as negligible.

Table 6.4 - Classification of visible damage to walls (after Burland et al, 1977, Boscardin and Cording, 1989; and Burland, 2001)

Category of damage	Description of typical damage (ease of repair is underlined)	Approximate crack width (mm)	Limiting tensile strain ϵ_{lim} (per cent)
0 Negligible	Hairline cracks of less than about 0.1mm are classed as negligible.	< 0.1	0.0 - 0.05
1 Very slight	<u>Fine cracks that can easily be treated during normal decoration.</u> Perhaps isolated slight fracture in building. Crack in external brickwork visible on inspection.	< 1	0.05 - 0.075
2 Slight	<u>Cracks easily filled. Redecoration probably required.</u> Several slight fractures showing inside of building. Crack are visible externally and <u>some repointing may be required externally</u> to ensure weathertightness. Doors and windows may stick slightly.	< 5	0.075 - 0.15
3 Moderate	<u>The cracks require some opening up and can be patched by a mason. Recurrent cracks can be masked by suitable linings. Repointing of external brickwork and possibly a small amount of brickwork to be replaced.</u> Doors and windows sticking. Service pipes may fracture. Weathertightness often impaired.	5-15 or a number of cracks > 3	0.15 - 0.3
4 Severe	<u>Extensive repair work involving breaking-out and replacing section of walls, especially over doors and windows.</u> Window and frames distorted, floor sloping noticeable. Walls leaning or bulging noticeably, some loss of bearing in beams. Service pipes disrupted.	15-25 but also depends on number of cracks	> 0.3
5 Very severe	<u>This requires a major repair involving partial or complete rebuilding.</u> Beams lose bearings, wall lean badly and require shoring. Windows broken with distortion. Danger of instability.	usually > 25 but depends on number of cracks	

Notes

1. In assessing the degree of damage, account must be taken of its location in the building or structure.
2. Crack width is only one aspect of damage and should not be used on its own as a direct measure of it.

Reproduction of Table 6.4 from CIRIA C760– Guidance on embedded retaining wall design.

6 Hardened areas

There will be no change in the proposed of hardened and drained areas resulting from the proposed development.

7 Tree removal

There are no trees or vegetation within the site and therefore no trees will be removed as part of the proposed development.

8 Existing damage to adjacent buildings

We are not aware of any subsidence damage to neighbouring buildings.

9 Subterranean (Ground water) flow screening

9.1 General overview

The property is positioned on relatively level ground on the eastern outskirts of the London Borough of Camden. The property is outside areas considered to be at risk of being affected by tidal and fluvial flooding associated with the Thames or its tributaries, or artificial water sources (canals/reservoirs). In addition, the property is not considered to be at enhanced risk of flooding from sewers or water supply pipes.

Geological records indicate the site is underlain by deposits of London Clay Formation extending to depths of approximately 20m. The property (being underlain with a substantial thickness of London Clay Formation) is not considered to be at risk of flooding from groundwater and the proposals will not affect any groundwater flows.

9.2 Responses to flow chart questions

The following provides site specific responses to questions posed in figure 1 of CPG4

Question and response		Text reference
Question 1a	Is the site located directly above an aquifer?	
Response	No. The property is directly underlain by over 20m thickness of London Clay Formation which is classified as unproductive strata (formerly non-aquifer) by the Environment Agency.	3.2.3
Question 1b	Will the proposed basement extend beneath the water table surface?	
Response	No. The London Clay Formation comprises reasonably homogenous relatively impermeable clays which are not able to transmit groundwater under normal hydraulic gradients.	3.2.1
Question 2	Is the site within 100m of a watercourse, well or potential spring line?	
Response.	Yes. The site is recorded in close proximity to the former River Fleet, which has now been culverted. No other watercourses are recorded within 200m of the site. The geology of the area is not conducive to spring lines or wells for extraction of water.	3.4.3
Question 3	Is the site within the catchment of the pond chains on Hampstead Heath?	
Response	No. Based on figure 14 within the Camden geological, hydrogeological and hydrological study report, the property is not within the catchment of the pond chains on Hampstead Heath. The property is located about 4km distance from the pond chains on Hampstead Heath.	3.4.3
Question 4	Will the proposed basement development result in a change in the proportion of hard surfaced/paved areas?	
Response	No. The proposed basement is located entirely within the footprint of the existing building.	

Question and response

**Text
reference**

Question 5 As part of the site drainage, will more surface water (e.g. rainfall and run off) than present be discharged to the ground (e.g. via soakaways/SUDS)?

Response No. The site is underlain by London Clays which are not amenable to disposal of stormwater using infiltration systems.

Question 6 Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to or lower than the mean water level in any local pond (not just the pond chains on Hampstead Heath) or spring line?

Response No. The London Clay Formation comprises reasonably homogenous relatively impermeable clays which are not able to transmit groundwater under normal hydraulic gradient. Basement excavations will be formed in the London Clays. Based on this there are no matters of concern.

10 Stability impact identification

10.1 General overview.

Topography of the site and the surrounding area is relatively flat with limited changes in levels.

It is likely that the rear single storey building and adjacent buildings to the rear are constructed on spread foundations (concrete strip or corbelled brickwork). Given the close proximity of the basement excavation to neighbouring properties, and ground conditions encountered at the site, underpinning of existing foundations, will be required extending the foundations to below proposed basement level. A construction method statement has been prepared by our client's appointed structural Engineer outlining the sequence of construction. On completion of the underpinning works, a system of props will be installed at high level (towards the top of the underpins) allowing excavation to basement level and installation of the basement floor. The props will be replaced with a concrete ground floor. Such a process will minimise risks of any adverse movement of the perimeter underpins and thus damage to adjacent properties.

10.2 Responses to flow chart questions

The following provides site specific responses to questions posed in figure 2 of CPG4

Question and response		Text reference
Question 1	Does the existing site include slopes, natural or manmade greater than 7° (approximately 1 in 8).	
Response.	No. The topography of the area is relatively flat. Based on this there are no matters of concern.	
Question 2	Will the proposed profiling of landscaping at the site change slopes at the property boundary to more than 7°?	
Response	No. The proposed basement will not change the current topographical conditions. Based on this there are no matters of concern.	

Question and response		Text reference
Question 3	Does the development neighbour land including railway cuttings and the like with slopes greater than 7° (approximately 1 in 8)?	
Response.	No. The topography of the area is relatively flat. There are no railway cuttings in the vicinity of the site. Based on this there are no matters of concern.	
Question 4	Is the site within a wider hillside setting in which the slope is greater than 7°?	
Response	No. The topography of the area is relatively flat and uniform. Based on this there are no matters of concern.	
Question 5	Is the London Clay the shallowest strata at the site?	
Response	Yes. The site is underlain with London Clays, extending to depths of around 20m in the area. Given the shallow (natural) slope angles in the area, the property is not considered to be at risk of slope instability. Based on this there are no matters of concern.	3.2.1
Question 6	Will any trees be felled as part of the development and/or are there any works proposed within any tree protection zones where trees are to be retained?	
Response	No. The proposed basement extension lies fully within the footprint of the current building and there are no trees or other major vegetation in the vicinity of the site. On this basis, there are no matters of concern.	
Question 7	Is there a history of any seasonal shrink swell subsidence in the local area and/or evidence of such effects on site?	
Response	No. We are not aware of and have not observed any evidence of damage attributable to subsidence on adjacent properties. Based on this there are no matters of concern.	

Question and response		Text reference
Question 8	Is the site within 100m of a watercourse, well or potential spring line?	
Response	Yes. The site is recorded in close proximity to the former River Fleet, which has now been culverted. No other watercourses are recorded within 200m of the site. The geology of the area is not conducive to spring lines or wells for extraction of water.	3.4.3
Question 9	Is the site within an area of previously worked ground?	
Response	No. There is no evidence to indicate the site has been subject to quarrying activities in the area. Based on this there are no matters of concern.	
Question 10	Is the site located above an aquifer? If so will the proposed basement extend beneath the water table such that dewatering may be required during construction?	
Response	No. The property is directly underlain by over 20m thickness of London Clays which are classified unproductive strata (formerly non-aquifer) by the Environment Agency. The London Clay Formation comprises reasonably homogenous relatively impermeable clays which are not able to transmit groundwater under normal hydraulic gradient. New basement excavations will be formed in the London Clays. Based on this there are no matters of concern.	3.2.2
Question 11	Is the site within 50m of Hampstead Heath ponds?	
Response	No. The property is located about 4km to the south-east of the pond chain on Hampstead Heath. Based on this there are no matters of concern.	3.4.2

Question and response		Text reference
Question 12	Is the site within 5m of a public highway or pedestrian right of way?	
Response.	Yes. The current building and existing single storey deep basement abuts the public footway to Gray's Inn Road, and indeed there are existing vaults below the public footpath. The extension to existing basement will be located some 8.5m distant from Gray's Inn Road. Based on this there are no matters of concern.	2.2
Question 13	Will the proposed basement significantly increase the differential depth of foundations relative to adjacent properties?	
Response	Yes. Although there will be differences in ground / basement level floors between the new build and adjacent properties, the proposed basement construction solution will not adversely affect neighbouring properties. Estimates of movements that may occur during the construction phase and control measures to limit such movement are described in section 5 which indicate acceptable levels of differential movement. Based on this there are no matters for concern.	5.2
Question 14	Is the site over (or within the exclusion zone of) any tunnels e.g. Railway lines.	
Response	No. The north facing elevation of the property is about 30m distant from a shallow London underground railway line, and about 15m from a subway serving the railway line. A plan of tunnels in proximity to the property is presented in section 3.1.	3.1

11 Surface flow and flooding impact identification

11.1 General overview

There will be no increase in hardened and drained areas resulting from the development.

The property is underlain with a substantial thickness of relatively impermeable London Clays, which is not amenable to disposal of stormwater using soakaways.

11.2 Responses to flow chart questions

The following provides site specific responses to questions posed in figure 3 of CPG4

Question and response		Text reference
Question 1	Is the site within the catchment of the pond chains on Hampstead Heath?	
Response	No. The property is not located within the catchment of the pond chains.	3.4.2
Question 2	As part of the site drainage, will surface water flows (e.g. rainfall and run off) be materially changed from the existing route?	
Response	No. Proposals will not have a material impact on surface water flows.	
Question 3	Will the proposed basement development result in a change in the proportion of hard surfaced/paved areas?	
Response	No .	
Question 4	Will the proposed basement result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream water courses?	
Response	No. Proposals will have no impact on surface water received by adjacent properties or downstream watercourses.	

Question and response

**Text
reference**

Question 5	Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream water courses?
Response	No. Proposals will have no impact on surface water flows to adjacent properties or downstream water courses.

12 Summary and Conclusions

- 12.1 It is likely that the rear single storey building and adjacent buildings to the rear are constructed on spread foundations (concrete strip or corbelled brickwork). Given the close proximity of the basement excavation to neighbouring properties, and ground conditions encountered at the site, underpinning of existing foundations, will be required extending the foundations to below proposed basement level. A construction method statement has been prepared by our client's appointed structural Engineer outlining the sequence of construction.
- 12.2 Old mapping of the area records the property on maps of the mid-1800s. A single storey extension to the rear of the property is recorded on maps published in the 1900s. Maps of old rivers of London record the former watercourse of the River Fleet just to the north of the property, although there are main sewers shown on Thames Water asset plans which will now replace this watercourse. The sewers are in Pentonville Road and indeed Gray's Inn Road to the north of the property.
- 12.3 Published geological maps of the area record topography local to the property is formed in deposits of London Clays which probably extend to depths in the order of 20m in the area. The London clays are classified as unproductive strata (formerly non-aquifer) by the Environment Agency. A trial pit excavated at the site confirm the site is directly underlain with London Clays. The London Clay Formation comprises reasonably homogenous relatively impermeable clays which are not able to transmit groundwater under normal hydraulic gradient. Basement excavations will be formed in the London Clays and based on the above, not affected by groundwater. Similarly, installation of the proposed basement will not affect any subterranean ground water flows.
- 12.4 Ground levels do fall gently in a southerly direction and slope instability is not considered to present a risk. Installation of the basement will not induce any slope instability.
- 12.5 There is no evidence of any subsidence to any adjacent properties or indeed the existing buildings on the site.
- 12.6 As the site is currently fully developed by existing buildings thus no trees or vegetation exists at the site.
- 12.7 Installation of the basement will generate some ground movement close to the perimeter of the basement excavation. The amount of movement has been predicted based on records of observed movement in other basements during construction. The amount of movement is small and damage sustained by adjacent properties (if any) determined as negligible, and as such does not present a matter of concern.
- 12.8 The property is considered to be at no enhanced risk of being subject to flooding. There will be no increase in hardened and drained areas resulting from the proposed development

- 12.9 The north facing elevation of the property is about 30m distant from a shallow London underground railway line, and about 15m from a subway serving the railway line. A plan of tunnels in proximity to the property is presented in section 3.1. We have contacted London Underground and have been advised the excavations to 5m depth in the area of the basement will not affect LUL's assets.
- 12.10. There is a sewer within the footprint of the proposed basement extension which is recorded on Thames Water Asset plans. Investigations have been implemented by our client's consulting Civil and Drainage Engineer to determine impact on the basement. Following investigations, the Sewer is located below the existing basement floor level and thus below the proposed basement floor level. Our client's consulting Civil and Drainage Engineer is seeking a build over agreement with Thames water.

EQUIPMENT SCHEDULE

1. VEG CHILLER.	41. UPRIGHT FRIDGE.
2. KREAM BALL MACHINE.	42. STORAGE SHELVING.
3. TILL.	43. INSECT KILLER.
3a. SELF SERVICE KIOSK.	44. WALL MOUNTED PATCH CABINET.
3b. HANDHELD TERMINAL.	44a. FLOOR STANDING PATCH CABINET.
4. POST MIX 6 HEAD DISPENSE.	45. ICE CREAM MACHINE.
4a. POST MIX 8 HEAD DISPENSE.	46. FRIDGE UNIT UNDER.
5. COFFEE MACHINE.	47.
5a. COFFEE MACHINE SLIMLINE.	48. SAFE.
6. HCSS.	49. LANDING TABLE.
6a. HCSS BASE.	50. 2 DRAWER FILING CABINET.
7. BUN CHUTE.	51. MOBILE BUN DEFROST UNIT.
7a. 2 TIER TRANSFER BIN	52. PHONE.
7b. 3 TIER TRANSFER BIN	53. WORKTOP ON CHROME LEGS.
7c. BUCKET CHUTE	54. WALL MOUNTED VIDEO CUPBOARD.
8. CHIP DUMP / PASS THRU.	55. KITCHEN BIN.
9. DIVERSEY UNIT.	56. FIRE ALARM INDICATOR PANEL.
10. MICROWAVE.	57. DISHWASHER.
10a. MICROWAVE TABLE.	58. S/S WALL.
11. CHIP FREEZER.	59. DUKE HSHU HOT HOLD TO B.S. - 3x2 HIGH.
11a. LARGE CHIP FREEZER.	59a. DUKE HSHU HOT HOLD TO HCW- 2x2 HIGH.
12. 4 HEAD HENNY PENNY.	60. STAR GRILL.
12a. 6 HEAD COLECTROMATIC.	61. WATER MAIN.
13. 8 HEAD HENNY PENNY.	62. WATER CYLINDER / BOILER LOCATION.
14. 14" FRYER (EVOLUTION ELITE).	63. INTRUDER ALARM PANEL.
14a. 14" DOUBLE FRYER (EVOLUTION ELITE).	64. BRITVIC DRINKS COOLER.
14b. 14" TRIPLE FRYER (EVOLUTION ELITE).	65. KEY BOX.
14c. 14" FRYER (PITCO).	66. THAW CABINET.
14d. 14" DOUBLE FRYER (PITCO).	67. MOP STORAGE.
14e. 14" DOUBLE FRYER (PITCO).	68.
14f. 18" FRYER.	69.
15. COUNTER.	70. COLD FOOD TABLE.
16. HC900.	71. TWISTER DRAWER.
16a. HC900 - FLAPS IN PLACE OF DOOR.	72. STAR GRILL TABLE.
17. BUN TOASTER.	73.
18. WHB.	74. HCW5.
19. BURGER STATION.	75. GOODS HOIST.
20. SINGLE BREADING TABLE.	76. FREESTANDING COLD DRAWER 1100x700mm.
20a. LINEAR DOUBLE BREADING TABLE.	76a. HCSS COLD DRAWER 1100x700mm.
20b. BACK TO BACK DOUBLE BREADING TABLE.	77. RATIONALE OVEN.
20c. SLIMLINE BREADING TABLE.	78a. RAZZLE MACHINE.
20d. NEXT GEN BREADING TABLE.	78b. PUMP AND TOPPING MACHINE.
21. UPRIGHT FREEZER.	78c.
22. S/S TABLING/BENCH.	78d. TABLE TOP CARPIAGANI.
22a. MOBILE CHICKEN PACKING TABLE.	78e. BLENDERS & TOPPING TABLE.
23. HC903.	79a. EPCS PANEL.
24. HCW3.	79b. EPCS MONITOR.
24a. HCW3 BASE.	80. POSITION OF 2nd HOT WATER SUPPLY.
25. LABEL PRINTER	81. OIL MANAGEMENT SYSTEM TANK.
26. HOT DRAWERS.	82. CO2 STORAGE.
27. HEADSET BASE LOCATION.	83. PEPSI FRIDGE.
28. BOTTLE STORAGE.	84. INTERNAL GREASE TRAP.
29. FREEZER ROOM..	84a. COMBINED GREASE TRAP MOP SINK.
30. COLD ROOM.	85. BRUSH RACK.
31. ICE MACHINE.	86. ELECTRICAL SERVICE COLUMN.
32. 3 BOWL SINK - 2550x750.	87. PDMO HOSE.
32a. SINGLE BOWL SINK.	88. BIFFA BIN.
32b. 3 BOWL SINK - 1650x950.	89. LEARNING ZONE.
33. S/S SHELVING.	90. FUSION TIMER.
34. CHEMICAL CUPBOARD.	91. AMBIENT DISPLAY.
35. COLD DRAWERS.	92. FTU5.
36. POST MIX SYRUPS.	93. FTU5 FILTER.
37. EXTRACT HOODS.	94. PACKAGING TOWER.
38. MOP SINK.	95. DUAL SOFT SCOOP DISPENSER.
39. ELECTRIC SWITCHGEAR.	96. MANITOWOC ES2 OVEN.
40. BAIN MARIE.	

MIDDLE HOUSE MONITOR KEY

L	burger station pack screen	B	order ready	C	cctv monitor
G	pack screen	F	beverage	D	d/t monitor
H	chicken pack screen	J	burger chute (provisional)	E	zippy screen (provisional)
K	drive thru expedite	A	under counter expedite screen - perspex panel to counter top with screen under		

BOH EQUIPMENT COLOURS SCHEDULE

unchanged equipment numbers (black)	00.	additional equipment numbers (red)	00.
repositioned equipment numbers (green)	00.	provisional equipment numbers (blue)	00.

DRAWING SIGN OFF

Name / Title	Signature	Date

Description:

Confirmation required of bin and oil storage, plant area, and extract duct route. Full structural report required.

ALL DIMENSIONS TO BE CHECKED ON SITE.

DO NOT SCALE FROM THIS DRAWING EXCEPT FOR THE PURPOSES OF LOCAL AUTHORITY PLANNING

Rev	Date	Description
A	19.09.17	Basement extended, general rev IE
B	20.09.17	Kitchen rev, FOH rev IE
C	21.09.17	Schedules updated title rev IE
D	17.10.17	Minor BOH rev IE
E	30.10.17	Roof plan added - RJS
F	12.01.18	move stairs internally - SBR
G	22.01.17	show steel columns, after equipment around steel - SBR

rev date description

HONE EDWARDS ASSOCIATES
 Design Studio
 Millars Three
 Southmill Road
 Bishop's Stortford
 Herts. CM23 3DH
 email: firstname.lastname@honeedwards.co.uk
 Tel: 01279 758545
 Fax: 01279 757730



NEW HIGH STREET

store address
KINGS CROSS
 323 GRAY'S INN ROAD
 LONDON
 WC1X 8PX

drawing title
PROPOSED GROUND FLOOR AND BASEMENT PLANS

drawn by	checked	date
IE	JE	AUG 2017
store no.	scale	
	1:50 @A1	

drawing no.	revision
HEA drawing no.	revision
2697/G101 OPT 4	G

INTERNAL & EXTERNAL FURNITURE SCHEDULE BASEMENT

location	internal	external	location	internal	external
existing seats			proposed seats	4	
existing tables			proposed tables	1	
existing sets			proposed sets	1	

GROUND FLOOR AREA SCHEDULE

front of house area	17 m²	182.9 ft²
back of house area (inc counter)	45.8 m²	492.8 ft²
staff amenity area	n/a m²	n/a ft²

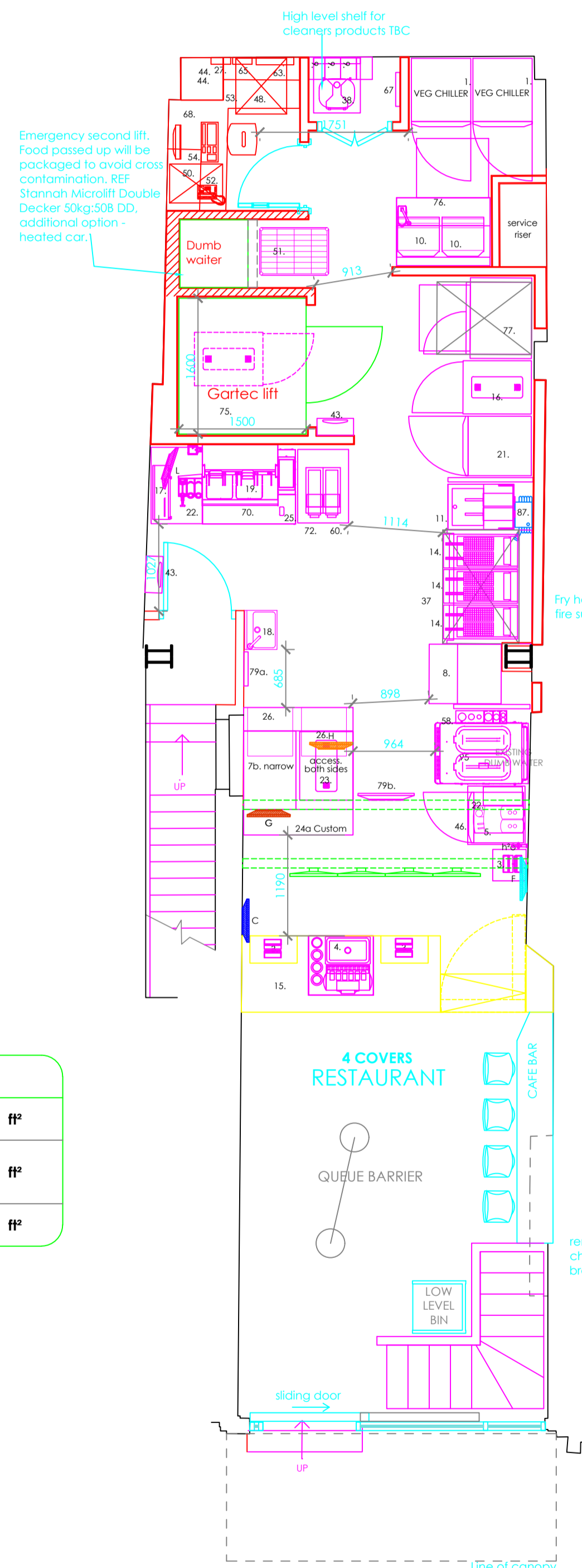
BASEMENT AREA SCHEDULE

front of house area	n/a m²	5.2 ft²
back of house area (inc counter)	70.14 m²	754.7 ft²
staff amenity area	7.5 m²	80.7 ft²

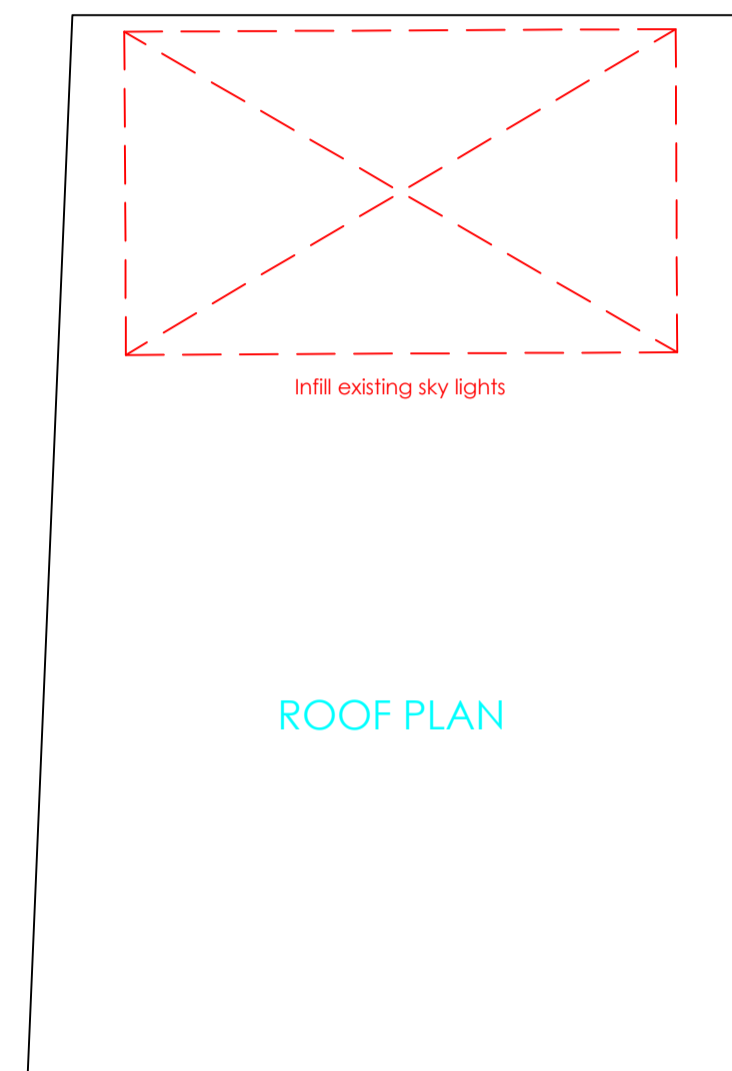
RACKING SCHEDULE

location	existing linear	proposed linear
chicken chiller	n/a	3.6
veg chiller	n/a	1
freezers	n/a	3.6
dry storage	n/a	8.08

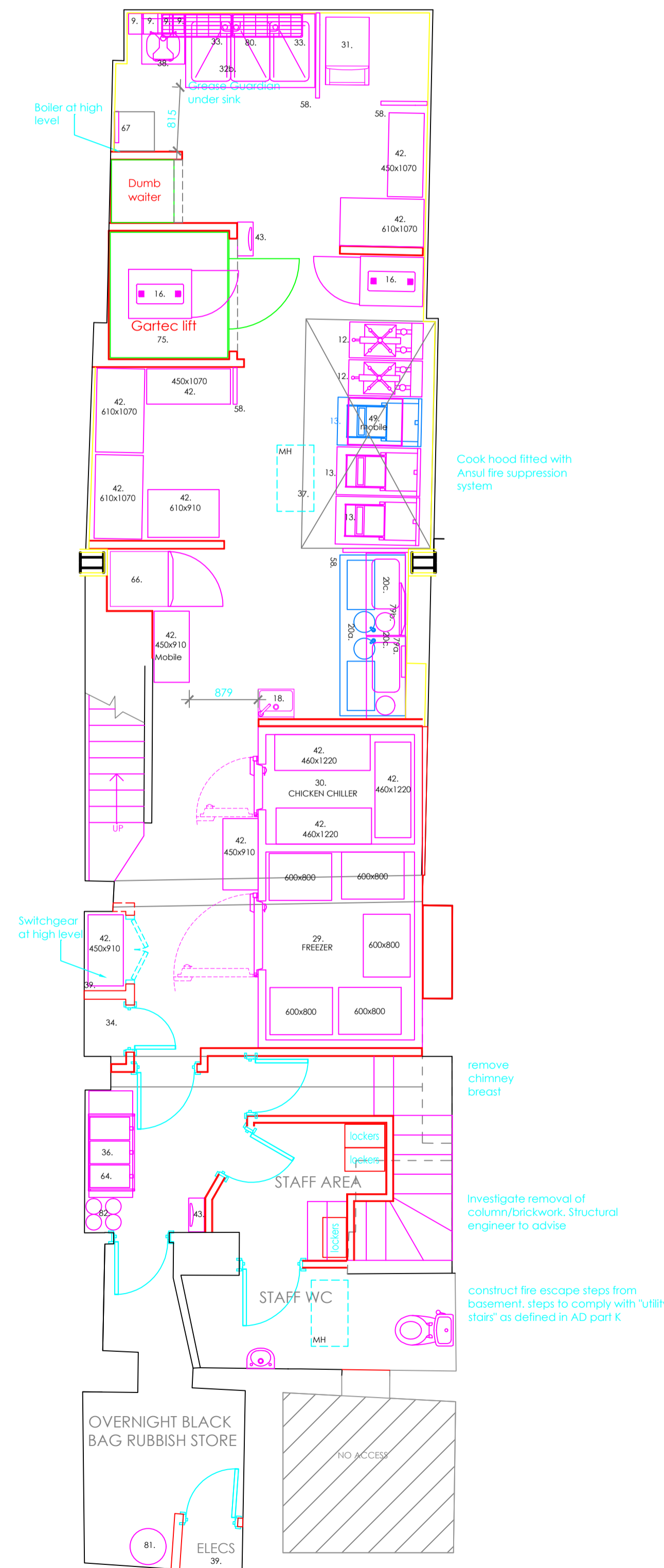
SCALE 1:50 only



proposed ground floor plan scale - 1:50 @ A1



proposed roof floor plan scale - 1:50 @ A1



proposed basement scale - 1:50 @ A1

Curriculum Vitae

Nigel Thornton

B.Sc, C.Eng, MICE, MCIHT, FGS.

soiltechnics

environmental and geotechnical consultants

Qualifications

- Awarded degree in Civil Engineering., City University, London in 1980
- Elected Member of the Institution of Civil Engineers in 1983 (Chartered Civil Engineer)
- Member of the Chartered Institution of Highways and Transportation since 1984
- Fellow of the Geological Society since 1986

Employment History

- Northampton Borough Council 1975 - 1980
- Northamptonshire County Council 1980 - 1989
- The John Parkhouse Partnership 1989 - 1989
- Associate Partner 1989 - 1993
- Partner 1993 - 2005
- JPP Consulting (Director) 2005 to date
- Soiltechnics (Director) 1993 to date

Note

- In 2005, the John Parkhouse Partnership was incorporated into JPP Consulting Ltd (current complement 45 staff)
- Founding Director of Soiltechnics Ltd, a company specialising in geotechnical and geo-environmental matters. (Current complement 45 staff)

Relevant Experience

Bridgeworks General design, contract administration and site supervision of various highway bridges and retaining structures.

Geotechnical and Geo-environmental As Geotechnical Project Manager for Engineering Services Laboratory at NCC (ESL). (1985 - 1989)

Control of ground investigations for major highway schemes for local authority including implementation of fieldwork, direction of laboratory testing and production of factual and interpretative reports, following and satisfying geotechnical certification procedures for Department of Transport (schemes up to £15m)

Generally, at ESL, Soiltechnics and JPP.

Design and specification of earthworks, including determination of slope stability. Investigation and remediation of unstable slopes.

Control, implementation of fieldwork and production of geotechnical reports for industrial and commercial developments, housing schemes and water authority infrastructure (scheme values up to £80m).

Investigations for outline designs of landfill sites. Investigations for redevelopment of chemically contaminated sites, assessment of the same, design and verification of remediation works. Production of tender and contract documents for ground investigations.

soiltechnics

Curriculum Vitae

Nigel Thornton

B.Sc, C.Eng, MICE, MCIHT, FGS.

soiltechnics

environmental and geotechnical consultants

	<p>Investigations into mine workings and assessment of their stability. Specifications for ground improvement works (vibrotreatment) and piling. Investigations and reporting on a wide range of basement constructions for commercial and residential buildings 1 to 4 stories deep. Producing basement impact reports. Lecturing to other professionals on the investigation assessment and remediation of contaminated land, and EPA part IIA Lectures to local ICE branch on geotechnical aspects.</p>
Materials Management	<p>Production of construction material specifications, primarily in concrete, aggregates and bituminous mixtures, but including masonry, timber, steel and protective systems. Control and implementation of investigations into failures of construction materials including scheduling and analysing test data, and production of technical reports providing specifications for appropriate remedial measures.</p>
Building Structures	<p>Structural inspections and surveys on a wide range of commercial, domestic, industrial and military buildings including direction of appropriate investigations and production of details repairs/construction specifications. Design and checking of building structures in timber, steel, concrete and masonry including supervision of works on site. Design works carried out both manually and using computerised systems following current British Standards and other recognised design standards.</p>
Road Pavement Structures	<p>Direction and implementation of condition surveys and investigations of road pavement using falling weight deflectometer, deflectograph bump integrator and coring. Direction of testing regimes for bituminous and cement bound and unbound pavement materials. Production of reports on condition and assessment of load carrying capacity of existing roadways and specification and structural design for new roadways for both highway and industrial use.</p> <p>Design of various road pavement structures (flexible and rigid) using Highways Agency and British Ports Federation guidelines.</p>
Drainage and Flood Risk Assessments	<p>Design of main (adoptable) and private foul and stormwater infrastructure for housing, commercial and industrial schemes, including detention basins, infiltration systems, pumping stations etc. Production of flood risk assessment reports.</p>
Quality Assurance	<p>Assisting in production of main laboratory procedures to obtain NAMAS accreditation for large spectrum of soils and materials testing. Geotechnical contributions to Quality Assurance Manual for Soiltechnics/JPP and implementation of procedures.</p>
CPD and Health and Safety	<p>Attendance of in house CPD Seminars and production of Health and Safety Plans/files for building works. Author of in house risk assessment and Practice policies.</p>
Litigation	<p>Acting as expert witness on numerous construction related matters.</p>
Publications	<p>Co-author of a book entitles 'Cracking and Building Movement' published by the Royal Institution of Chartered Surveyors, in late 2004.</p>

soiltechnics

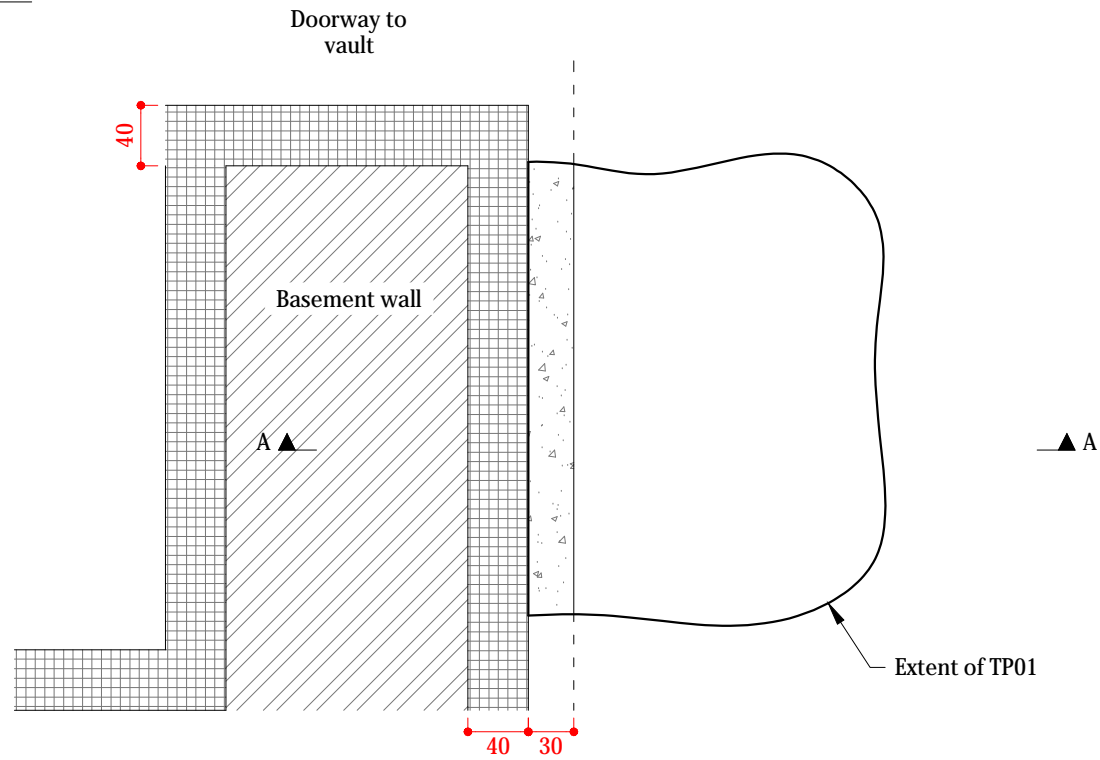
Statement of experience on basements

Soiltechnics have carried out a large number of investigations for basement constructions throughout the UK and in more recent years outside the UK

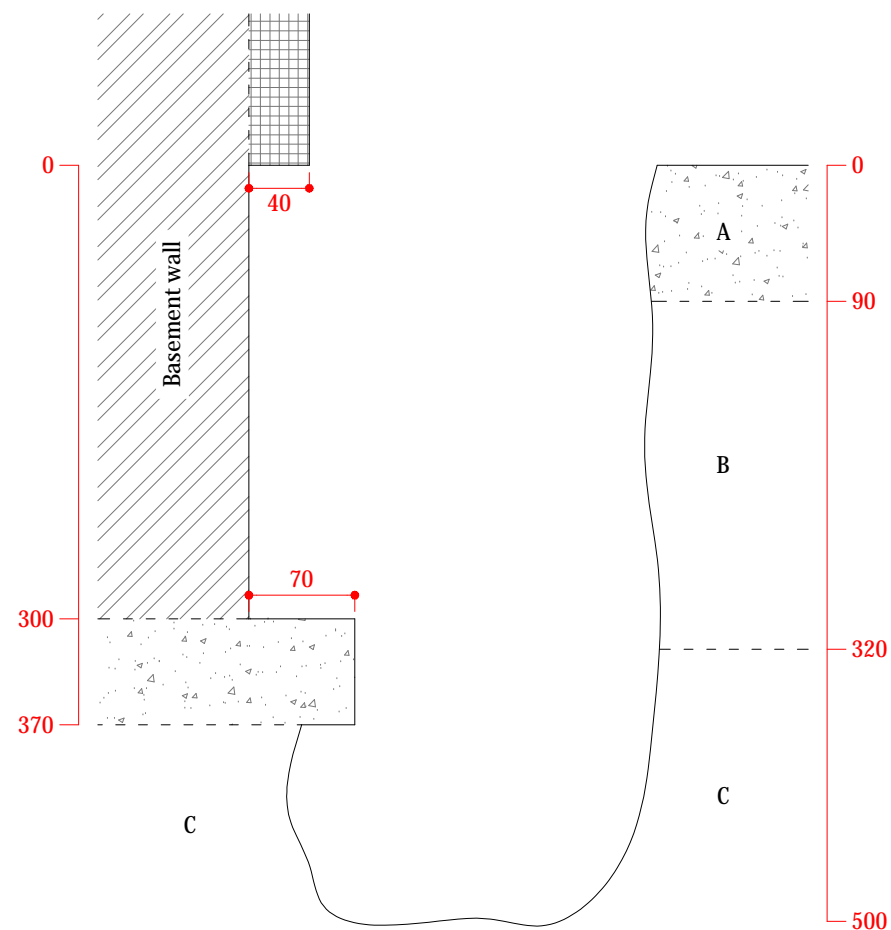
The following table provides a limited number examples (for illustration purposes) of investigations carried out for basements which include interpretative reports providing parameters for detailed design such as settlement / heave, ground movements around basements, hydrological effects and in some cases preliminary design of piles.

Location	ground conditions	Basement	Approx size (m)	Date
Northamptonshire	Glacial Till	Single storey archive store for Rolls Royce. Part open excavation for construction of reinforced concrete box subsequently backfilled	10 x 8	Circa 1992
Central London (Kings Road)	Terrace sands and gravels over London Clays	Two storey deep car park with gardens at ground level. Contiguous pile wall with subsequent insitu concrete box	40 x 20	Circa 2000
Central London (Finsbury square)	Terrace sands and gravels over London Clays	Two storey deep basement below multi storey building with adjacent buildings. Contiguous pile wall with subsequent insitu concrete box	30 x 20	Circa 2002
Central London (Union Street)	Terrace sands and gravels over London Clays	Two storey deep basement below multi storey building with adjacent buildings including tube tunnels. Contiguous pile wall with subsequent insitu concrete box	40 x 30	2009
Central London (Blackfriars)	Terrace sands and gravels over London Clays	Two storey deep basement below multi storey building with adjacent buildings including railway viaduct . Contiguous pile wall with subsequent insitu concrete box	40 x 20	2005
Central London (Imperial College)	Terrace sands and gravels over London Clays	Single storey deep basement below multi storey residential block. Sheet pile walls with subsequent insitu concrete box	60 x15	2005
Coventry University	Mercia Mudstones	Single storey deep basement with three storey building over. Part cut and part sheet piled with subsequent insitu concrete box	50 x50	2010
Rabat Grand theatre Bouegrerg Morocco	Alluvial gravels over sandstone	Single storey deep basement. Open excavations and sheet piles walls with subsequent insitu concrete box. Piled foundation for super structure. Area subject to earthquakes and liquefaction. Outline design of piles, specification for piling and testing.	50 x50	2012
Central London (various locations)	London Clays occasionally overlain with terrace sands and gravels	Various existing terraced semi and detached domestic properties. New single and two storey deep basements under building foot prints and extending into gardens. Construction using traditional underpinning techniques and contiguous / secant piled walls	Various	2000 to date
Central London (Holland Park)	London Clays	Two locally three storey deep basement below new four storey block of flats. Secant piled walls and insitu concrete box	70 x 20	2014

Plan



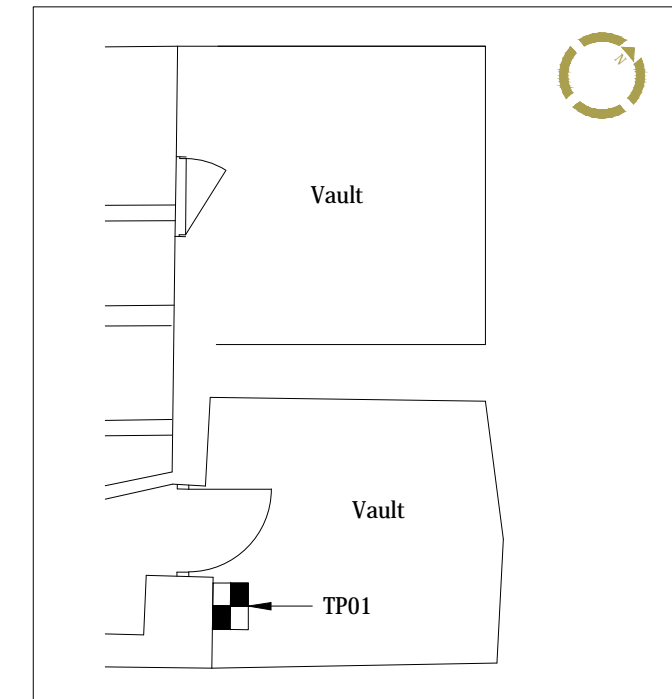
Section A-A



Photographic record



Key plan (scale 1:50 at A3)



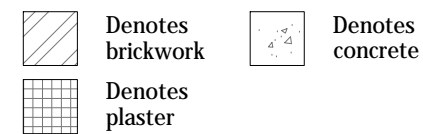
Key

A. Weak grey unreinforced CONCRETE.
(MADE GROUND)

B. Soft medium strength brown sandy gravelly CLAY. Gravel consists of concrete and brick.
(MADE GROUND)

C. Firm medium strength orange brown and grey slightly sandy CLAY.
(LONDON CLAY FORMATION)

— Observed features
- - - Assumed features



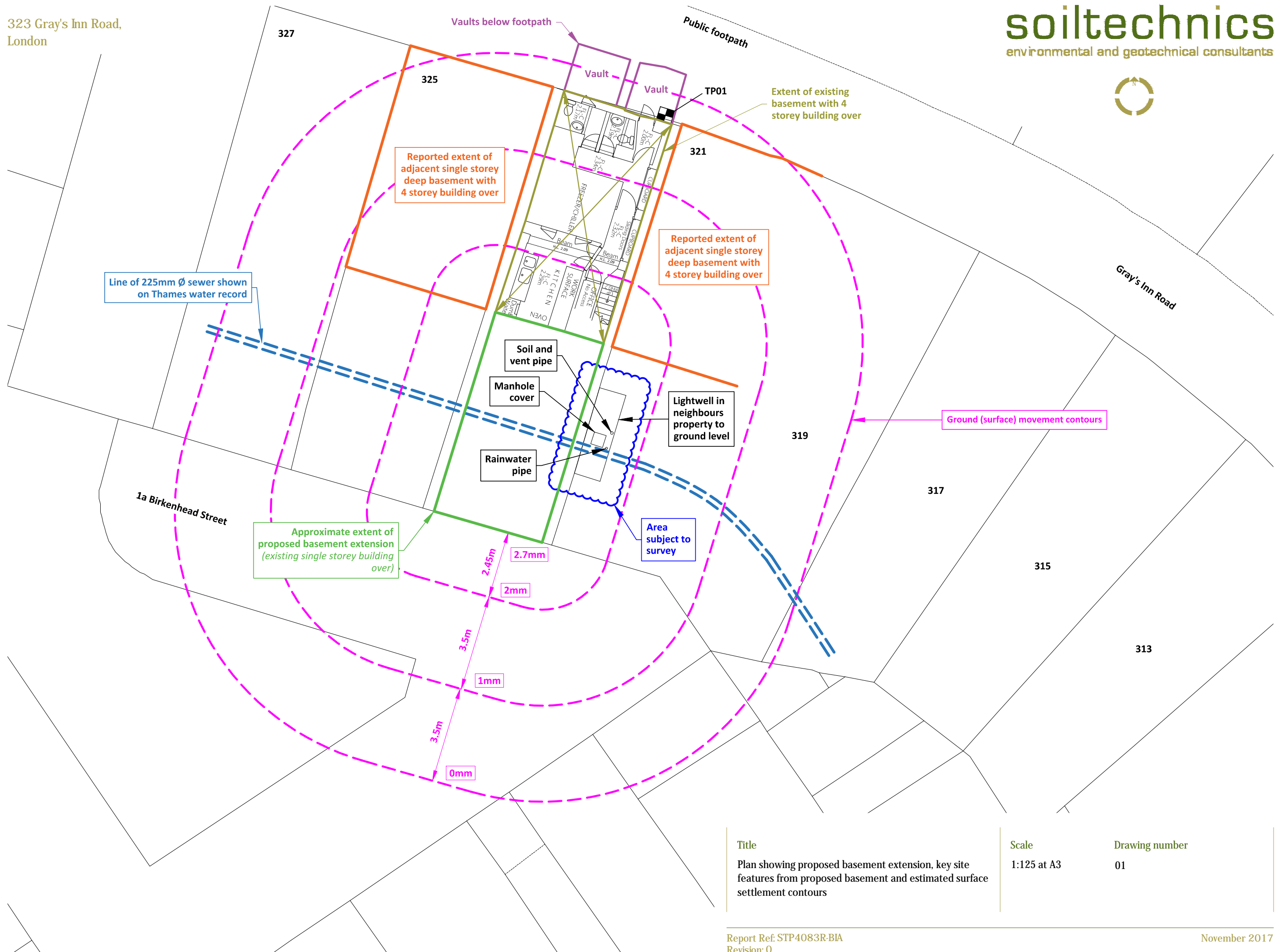
Notes

- All dimensions shown in millimetres.
- Disturbed samples taken from 0.25m and 0.5m depths.
- Pocket penetrometer testing:
 - PP 0.2m - 50 kN/m²
 - PP 0.3m - 50 kN/m²
 - PP 0.4m - 75 kN/m²

Method of excavation
Hand tools
Dimensions
As shown
Groundwater observations
No groundwater encountered

Title
Trial pit record
Date of works
24.10.2017
Scale
1:5 at A3

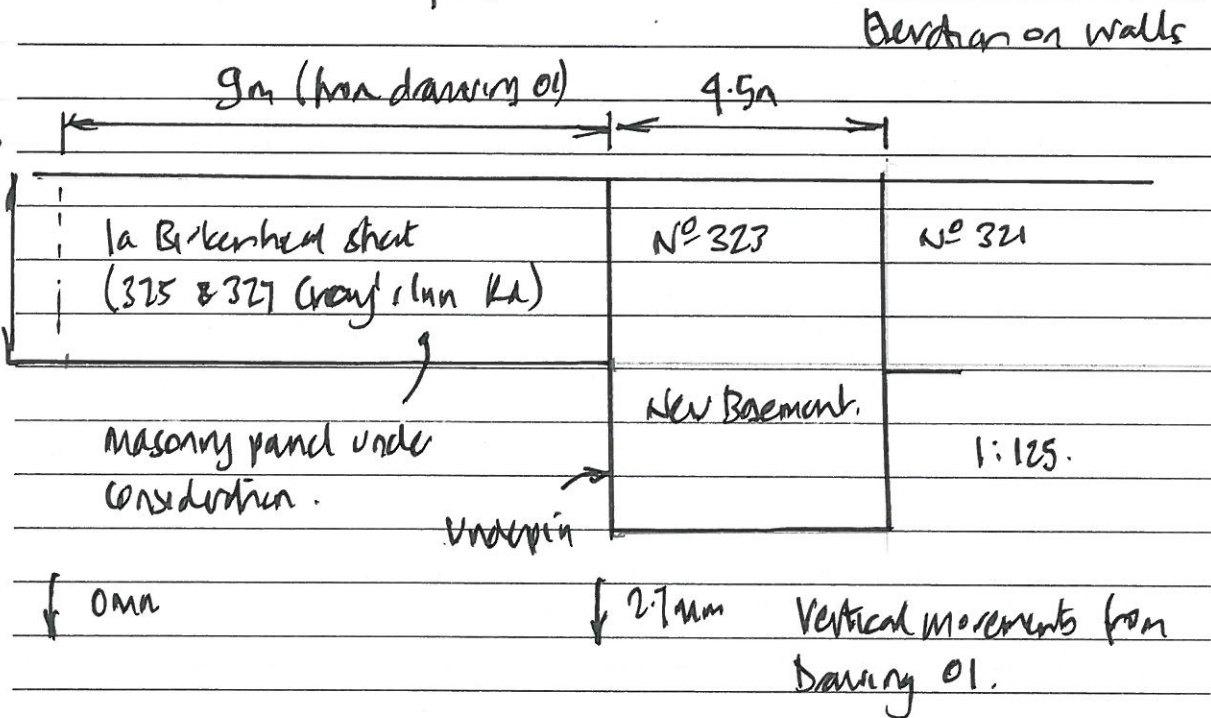
Location reference
TP01
Location plan on drawing number
01
Appendix
D



Title	Scale	Drawing number
Plan showing proposed basement extension, key site features from proposed basement and estimated surface settlement contours	1:125 at A3	01

With reference to drawing 01, Rear elevation, in part to 1a Birkenhead Street primary party wall with 325 and 327 Gray's Inn Road considered most vulnerable to movement damage due to excavation of basement.

3m (say) single storey



Determine horizontal movements (inward yielding) of top of underpinned walls following CIRIA report C760 (table B.3) for stiff clays

$$\begin{aligned} \text{Inward yielding} &= 0.15\% \text{ of basement depth (D)} = 2.7\text{m} \\ &= \frac{0.15}{100} \times 2.7 \times 1000 = 4\text{mm} \end{aligned}$$

$$\text{Distance over which inward yielding affects beyond wall} = 4 \times D = 4 \times 2.7 = 10.8\text{m}$$

Originator

NLT

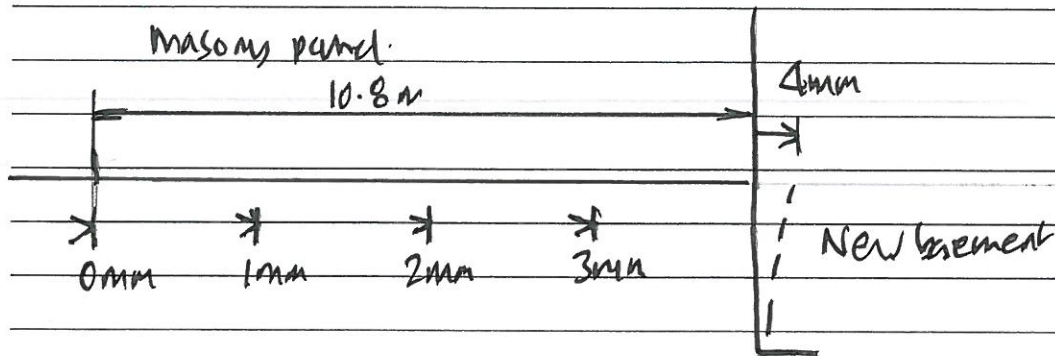
Checked

Title: Determine effects on buildings adjacent to new basement excavation

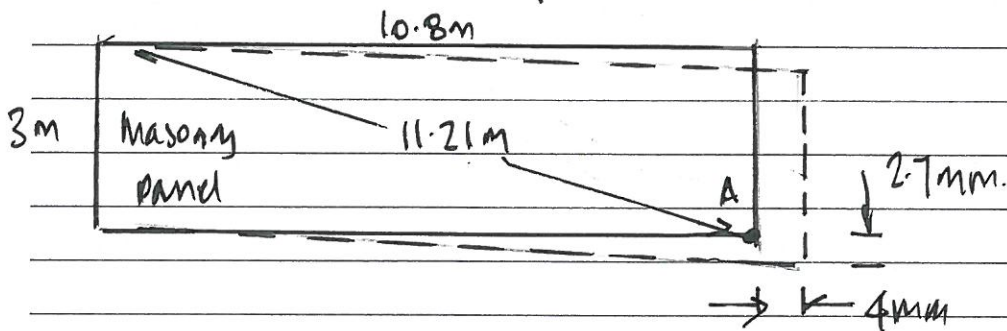
Sheet number

1 of 2

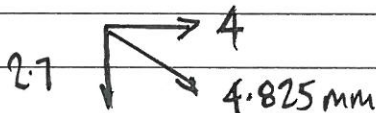
Date November 2017



Determine tensile strains on panel.



Determination for horizontal and vertical components @ A



$$\text{Tensile strain on the diagonal} = \frac{4.825}{11.210} \times 100 = 0.043\%$$

$$\text{Tensile strain on the horizontal} = \frac{4.825}{10800} \times 100 = 0.0446\%$$

Both Burland category 0.

Originator

NLT

Checked

Title: Determine effects on buildings adjacent to new basement excavation

Sheet number 2 of 2

Date November 2017

Sewer Flooding

History Enquiry



Property Searches

Soiltechnics Limited

White Lodge

Search address supplied Indian Lounge
343
Gray'S Inn Road
London
WC1X 8PX

Your reference STP4083R

Our reference SFH/SFH Standard/2017_3674219

Received date 23 October 2017

Search date 23 October 2017



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13



searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0845 070 9148

Sewer Flooding

History Enquiry



Property Searches

Search address supplied: Indian Lounge,343,Gray'S Inn Road,London,WC1X
8PX

This search is recommended to check for any sewer flooding in a specific address or area

TWUL, trading as Property Searches, are responsible in respect of the following:-

- (i) any negligent or incorrect entry in the records searched;
- (ii) any negligent or incorrect interpretation of the records searched;
- (iii) and any negligent or incorrect recording of that interpretation in the search report
- (iv) compensation payments



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13



searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0845 070 9148

History of Sewer Flooding

Is the requested address or area at risk of flooding due to overloaded public sewers?

The flooding records held by Thames Water indicate that there have been no incidents of flooding in the requested area as a result of surcharging public sewers.

For your guidance:

- A sewer is “overloaded” when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Flooding as a result of temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded.
- “Internal flooding” from public sewers is defined as flooding, which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.
- “At Risk” properties are those that the water company is required to include in the Regulatory Register that is presented annually to the Director General of Water Services. These are defined as properties that have suffered, or are likely to suffer, internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant reference period (either once or twice in ten years) as determined by the Company’s reporting procedure.
- Flooding as a result of storm events proven to be exceptional and beyond the reference period of one in ten years are not included on the At Risk Register.
- Properties may be at risk of flooding but not included on the Register where flooding incidents have not been reported to the Company.
- Public Sewers are defined as those for which the Company holds statutory responsibility under the Water Industry Act 1991.
- It should be noted that flooding can occur from private sewers and drains which are not the responsibility of the Company. This report excludes flooding from private sewers and drains and the Company makes no comment upon this matter.
- For further information please contact Thames Water on Tel: 0800 316 9800 or website www.thameswater.co.uk



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13



searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0845 070 9148



London Underground
Infrastructure Protection

3rd Floor
Albany House
55 Broadway
London SW1H 0BD

www.tfl.gov.uk/tube

Your ref:
Our ref: 20403-SI-8-120717

Emma Jeffries
Soiltechnics
Emma.Jeffries@soiltechnics.net

12 July 2017

Dear Emma,

323 Gray's Inn Road London WC1X 8PX

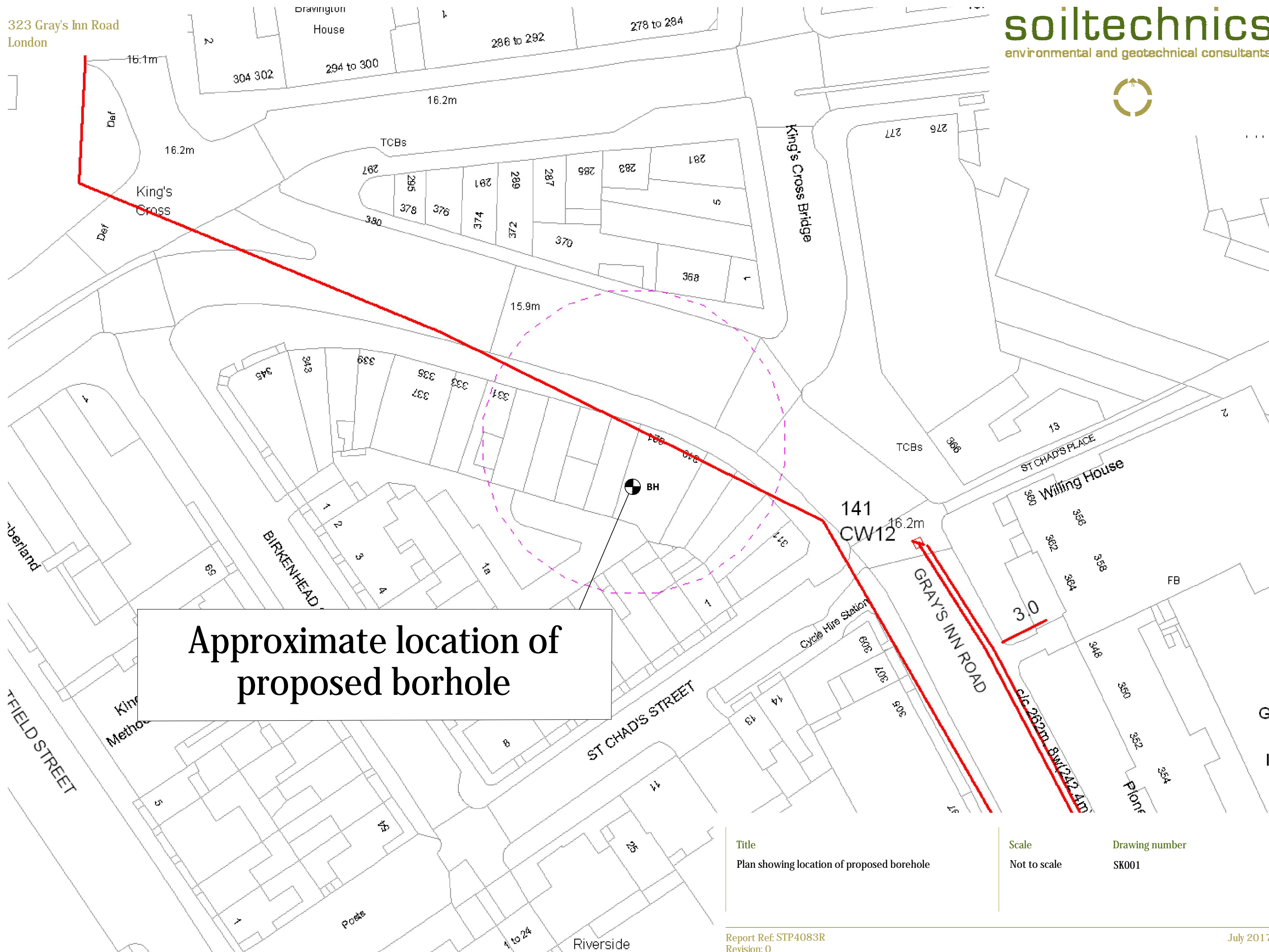
Thank you for your communication of 12th July 2017.

I can confirm that London Underground assets will not be affected by borehole works at the above location as per plan and details provided by you.

If I can be of further assistance, please contact me.

Yours sincerely

Shahina Inayathusein
Information Manager
Email: locationenquiries@tube.tfl.gov.uk
Direct line: 020 3054 1365



Approximate location of
proposed borhole

Title	Scale	Drawing number
Plan showing location of proposed borehole	Not to scale	SK001

Tia Wray

From: Emma Jeffries
Sent: 12 July 2017 09:33
To: Nigel Thornton
Subject: FW: Please send plans asap
Attachments: SI-8-120717 323 Gray's Inn Road London WC1X 8PX.pdf

Good Morning

Please see attached response from London Underground.

Kind Regards
Emma Jeffries
Administration Assistant

t 01604 781877
e emma.jeffries@soiltechnics.net
w www.soiltechnics.net

soiltechnics
environmental and geotechnical consultants



Head Office

Cedar Barn, White Lodge, Walgrave, Northamptonshire NN6 9PY t 01604 781877

Manchester Office

Ivy Mill Business Centre, Crown Street, Failsworth, Manchester M35 9BG t 0161 9470270

The information in this e-mail is confidential and may be legally privileged or prohibited from disclosure and unauthorised use. It is intended solely for the addressee, or the employee or agent responsible for delivering such materials to the addressee, and access to this e-mail by anyone else is unauthorised. If you are not the intended recipient, any form of reproduction, dissemination, copying, disclosure, modification, distribution and/or publication or any action taken or omitted to be taken in reliance upon this message or its attachments is prohibited and may be unlawful. At present the integrity of e-mail across the Internet cannot be guaranteed and messages sent via this medium are potentially at risk. We will therefore not accept liability for any claims arising as a result of the use of this medium.

From: Location Enquiries [<mailto:SMBLocationEnquiries@tfl.gov.uk>]
Sent: 12 July 2017 09:30
To: Emma Jeffries <Emma.Jeffries@soiltechnics.net>
Subject: RE: Please send plans asap

London Underground Infrastructure Protection response to your communication attached.

Kind regards

Shahina Inayathusein
Information Manager
Infrastructure Protection
London Underground
locationenquiries@tube.tfl.gov.uk
NOTE NEW NUMBER 020 3054 1365
Auto: 81365

Find out more about Infrastructure Protection - <https://youtu.be/0hGoJMTBOEg>

From: Emma Jeffries [<mailto:Emma.Jeffries@soiltechnics.net>]
Sent: 12 July 2017 09:18
To: Location Enquiries
Subject: RE: Please send plans asap

Good Morning

It will be between 4 and 5 metres.

Kind Regards
Emma Jeffries
Administration Assistant

t 01604 781877
e emma.jeffries@soiltechnics.net
w www.soiltechnics.net

soiltechnics
environmental and geotechnical consultants



Head Office

Cedar Barn, White Lodge, Walgrave, Northamptonshire NN6 9PY t 01604 781877

Manchester Office

Ivy Mill Business Centre, Crown Street, Failsworth, Manchester M35 9BG t 0161 9470270

The information in this e-mail is confidential and may be legally privileged or prohibited from disclosure and unauthorised use. It is intended solely for the addressee, or the employee or agent responsible for delivering such materials to the addressee, and access to this e-mail by anyone else is unauthorised. If you are not the intended recipient, any form of reproduction, dissemination, copying, disclosure, modification, distribution and/or publication or any action taken or omitted to be taken in reliance upon this message or its attachments is prohibited and may be unlawful. At present the integrity of e-mail across the Internet cannot be guaranteed and messages sent via this medium are potentially at risk. We will therefore not accept liability for any claims arising as a result of the use of this medium.

From: Location Enquiries [<mailto:SMBLocationEnquiries@tfl.gov.uk>]
Sent: 11 July 2017 10:12
To: Emma Jeffries <Emma.Jeffries@soiltechnics.net>
Subject: RE: Please send plans asap

Thanks Emma,

Can you please confirm the depth of the borehole.

Kind regards
Shahina

From: Emma Jeffries [<mailto:Emma.Jeffries@soiltechnics.net>]
Sent: 07 July 2017 12:34
To: Location Enquiries; Rachel Brown

Cc: Nigel Thornton
Subject: RE: Please send plans asap

Good Afternoon

Further to your below conversation with Rachel please see the attached plan showing the proposed location of the borehole.

If you require any further details please let me know.

Kind Regards
Emma Jeffries
Administration Assistant

t 01604 781877
e emma.jeffries@soiltechnics.net
w www.soiltechnics.net

soiltechnics
environmental and geotechnical consultants



Head Office

Cedar Barn, White Lodge, Walgrave, Northamptonshire NN6 9PY t 01604 781877

Manchester Office

Ivy Mill Business Centre, Crown Street, Failsworth, Manchester M35 9BG t 0161 9470270

The information in this e-mail is confidential and may be legally privileged or prohibited from disclosure and unauthorised use. It is intended solely for the addressee, or the employee or agent responsible for delivering such materials to the addressee, and access to this e-mail by anyone else is unauthorised. If you are not the intended recipient, any form of reproduction, dissemination, copying, disclosure, modification, distribution and/or publication or any action taken or omitted to be taken in reliance upon this message or its attachments is prohibited and may be unlawful. At present the integrity of e-mail across the Internet cannot be guaranteed and messages sent via this medium are potentially at risk. We will therefore not accept liability for any claims arising as a result of the use of this medium.

From: Location Enquiries [<mailto:SMBLocationEnquiries@tfl.gov.uk>]

Sent: 21 June 2017 08:59

To: Rachel Brown <Rachel.Brown@soiltechnics.net>

Subject: RE: Please send plans asap

Rachel,

This is a tricky one as we have a disused subway away from this site along the road (Gray's Inn Road) which cannot be produced on a map.

Therefore I suggest that you consult us again when you have the details of the boreholes.

Kind regards

Shahina Inayathusein
Information Manager
Infrastructure Protection
London Underground

locationenquiries@tfl.gov.uk

NOTE NEW NUMBER 020 3054 1365

Auto: 81365

Find out more about Infrastructure Protection - <https://youtu.be/0hGoJMTBOEg>

From: Rachel Brown [<mailto:Rachel.Brown@soiltechnics.net>]

Sent: 20 June 2017 10:55

To: Location Enquiries

Cc: Nigel Thornton

Subject: RE: Please send plans asap

Good morning

Apologies, no it's a standard email we send out. At present there are no plans to drill holes etc we just require plans of where the assets are so when the plans are drawn up assets can be avoided.

Many thanks

Kind regards

Rachel Brown

Senior Administrator

t 01604 781877

e rachel.brown@soiltechnics.net

w www.soiltechnics.net

soiltechnics
environmental and geotechnical consultants



Head Office

Cedar Barn, White Lodge, Walgrave, Northamptonshire NN6 9PY t 01604 781877

Manchester Office

Ivy Mill Business Centre, Crown Street, Failsworth, Manchester M35 9BG t 0161 9470270

The information in this e-mail is confidential and may be legally privileged or prohibited from disclosure and unauthorised use. It is intended solely for the addressee, or the employee or agent responsible for delivering such materials to the addressee, and access to this e-mail by anyone else is unauthorised. If you are not the intended recipient, any form of reproduction, dissemination, copying, disclosure, modification, distribution and/or publication or any action taken or omitted to be taken in reliance upon this message or its attachments is prohibited and may be unlawful. At present the integrity of e-mail across the Internet cannot be guaranteed and messages sent via this medium are potentially at risk. We will therefore not accept liability for any claims arising as a result of the use of this medium.

From: Location Enquiries [<mailto:SMBLocationEnquiries@tfl.gov.uk>]

Sent: 19 June 2017 10:45

To: Rachel Brown <Rachel.Brown@soiltechnics.net>

Subject: RE: Please send plans asap

Rachel,

If you intend drilling bore-holes, please provide a plan of the actual site with the bore-hole locations, width and depths clearly annotated. Please also indicate the method of undertaking the borehole i.e. rotary, percussive etc.

This is to enable us to provide you with the correct information.

Kind regards
Shahina

From: Rachel Brown [<mailto:Rachel.Brown@soiltechnics.net>]
Sent: 16 June 2017 15:59
To: Location Enquiries
Cc: Nigel Thornton
Subject: Please send plans asap
Importance: High

Site plan : 323 Gray's Inn Road London WC1X 8PX
Grid ref 530408, 182943

We are emailing to advise will we be drilling bore holes at the location shown on the attached plan.

Could you please advise the location of any assets that you have around the site so we may avoid damage.

A location plan is attached and we would be grateful if you would email your findings to rachel.brown@soiltechnics.net and thank you in anticipation of your assistance.

Many thanks
Kind regards

Rachel Brown
Senior Administrator

t 01604 781877
e rachel.brown@soiltechnics.net
w www.soiltechnics.net

soiltechnics
environmental and geotechnical consultants



Head Office

Cedar Barn, White Lodge, Walgrave, Northamptonshire NN6 9PY t 01604 781877

Manchester Office

Ivy Mill Business Centre, Crown Street, Failsworth, Manchester M35 9BG t 0161 9470270

The information in this e-mail is confidential and may be legally privileged or prohibited from disclosure and unauthorised use. It is intended solely for the addressee, or the employee or agent responsible for delivering such materials to the addressee, and access to this e-mail by anyone else is unauthorised. If you are not the intended recipient, any form of reproduction, dissemination, copying, disclosure, modification, distribution and/or publication or any action taken or omitted to be taken in reliance upon this message or its attachments is prohibited and may be unlawful. At present the integrity of e-mail across the Internet cannot be guaranteed and messages sent via this medium are potentially at risk. We will therefore not accept liability for any claims arising as a result of the use of this medium.

Click [here](#) to report this email as SPAM.

The contents of this e-mail and any attached files are confidential. If you have received this email in error, please notify us immediately at postmaster@tfl.gov.uk and remove it from your system. If received in error, please do not use, disseminate, forward, print or copy this email or its content. Transport for London excludes any warranty and any liability as to the quality or accuracy of the contents of this email and any attached files.

Transport for London is a statutory corporation whose principal office is at Windsor House, 42-50 Victoria Street, London, SW1H 0TL. Further information about Transport for London's subsidiary companies can be found on the following link: <http://www.tfl.gov.uk/corporate/about-tfl/>

Although TfL have scanned this email (including attachments) for viruses, recipients are advised to carry out their own virus check before opening any attachments, as TfL accepts no liability for any loss, or damage which may be caused by viruses.
