soiltechnics

environmental and geotechnical consultants

Proposed basement extension
40 Chester Terrace
London, NW1

Basement impact assessment report
(updated June 2015)

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Report originators

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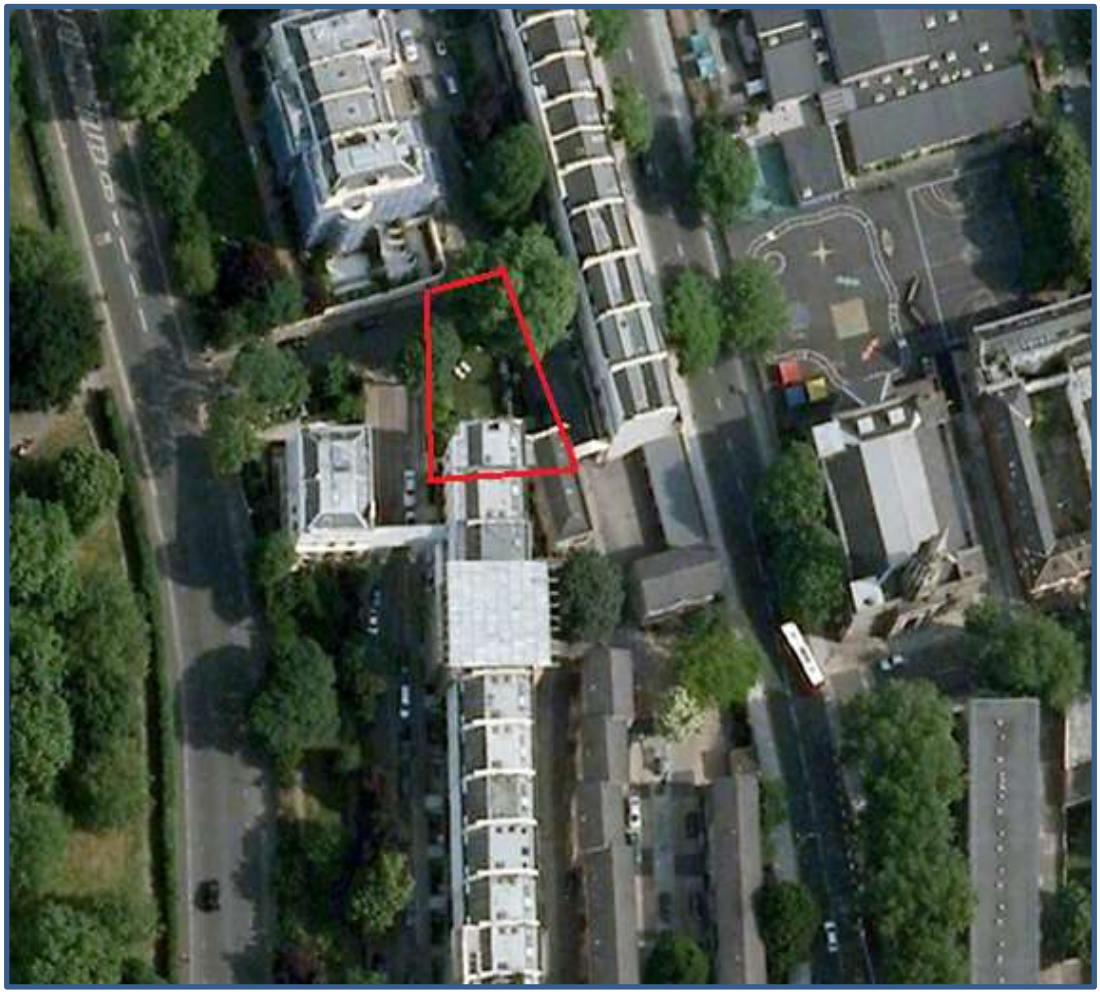
Report issue

Company	Name	Issue	Date	Paper	e-mail	FTP
Kerr Parker Associates	Roger Parker	draft	23.03.12		✓	
		First	28.03.12		✓	
		Second	05.01.15		✓	
		Third	26.06.15		✓	
Jampel Davison& Bell	Paul Bell	draft	23.03.12		✓	
		First	28.03.12		✓	
Client	Victor Segal	First	28.03.12		✓	

Aerial photograph of site



Report status and format

Report section	Principal coverage	Report status	
		Revision	Comments
1	Introduction and brief		
2	Description of the property and project proposals		
3	Desk study information and site observations		
4	Ground investigation		
5	External ground movements around basement		
6	Subterranean (Groundwater flow) screening		
7	Stability impact identification		
8	Surface flow and flooding impact identification		
9	Summary and conclusions		
10	Drawings		

List of drawings

Drawing	Principal coverage	Status	
		Revision	Comments
S1	Plan showing observed and estimated main drainage routes serving the property.		
S2	Plan of the property showing basement extent, borehole position, and estimated ground surface settlement contours		
S3	Plot summarising undrained shear strength measurements		
S4	Plot summarising dynamic cone penetration testing.		

List of appendices

Appendix	Content
A	Copy of Architects proposal drawings
B	Copies of Statutory Undertakers replies
C	Borehole record

1 Introduction and brief

1.1 Objectives

1.1.1 This report describes a basement impact assessment for a proposed basement extension at 40 Chester Terrace, London NW1.

1.1.2 The principal objective of the assessment is to present evidence to support a planning application for the project as required by Camden Planning Guidance (CPG4) '*Basements and lightwells'*.

1.1.3 This report has been updated from original reports issued in March 2012 and later in January 2015 to conform to current Camden requirements of a BIA.

1.2 Client instructions and confidentiality

1.2.1 This report has been produced following instructions received through Kerr Parker Associates (architects for the project) on behalf of Victor Segal.

1.2.2 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.

1.3 Author qualifications

1.3.1 This report has been prepared by a Chartered Civil Engineer, (C.Eng., M.I.C.E) who is also a Fellow of the Geological Society (FGS). The Author is a practising Civil Engineer with specialist experience (34 years) in geotechnical engineering (including basement construction), flood risk and drainage. A copy of my CV 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 expertise in hydrogeology. It should be noted that hydrogeological aspects of this report have not been updated from our earlier reports. Copies of their comments are presented in appendix C.

1.4 Guidance used

1.3.1 As described in paragraph 1.1.2 above we have followed Camden Planning Guidance (CPG4) '*Basements and lightwells'*, and 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. This report has also been prepared to satisfy the following parts of Camden's policy DP27, on basements and lightwells:

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 a Structural Engineer which is separately presented.

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 GPG4. Answers for these flow chart questions are provided in sections 6 to 8.

2 Description of the property and project proposals

2.1 Description of the property

The property comprises an end of terrace four storey residential building, with a two storey annex (including garage) attached to the eastern elevation of the main house. The main house also includes a single storey deep basement. There is also a garden area to the north which includes a large patio area paved in York stone flags with some mature trees on the northern extremity of the garden.

We have carried out an inspection of drainage systems serving the property. Rainwater collected by the roof is served by internal rainwater pipes which enter internal manholes which also serve internal foul water drainage systems located in the existing basement floor. This basement drainage system seems to outfall both into the Thames Water sewer in Chester Terrace and probably a sewer which follows a route along the east facing elevation of the terrace of buildings to the south of the subject property. The inspection was limited due to two manhole covers which could not be lifted in the basement. Our best estimate of the drainage system in the basement is shown on drawing S1. There are no visible drainage systems serving garden areas.

2.2 Project proposals

The project comprises an extension to the existing single storey deep basement into garden areas to the north of the house and below the two storey annex to the west. Copies of our client's architect's drawings are presented in appendix A which details the project proposals. It is proposed to retain the existing drainage system serving the property.

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3 Desk study information and site observations

3.1 Site history

3.1.1 Review of Ordnance Survey and London town maps dating back to 1873 all record the current footprint of the property and surrounding buildings.

3.2 Geology and geohydrology of the area

3.2.1 Geology

3.2.1.1 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 50m 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	Bedrock	43	Clays	Impermeable	unproductive
Woolwich and Reading Beds	Bedrock	6	Clays and sands	Marginally permeable	unproductive
Thanet sands	Bedrock	6	Fine sands	Marginally permeable	unproductive
Chalk	Bedrock	200	Chalk	Permeable	Principal

Table 3.2

The 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 brown shading representing the outcrop of the London Clays. Yellow / orange shading represents terrace sand and gravel deposits which overly the London clays within the Thames Valley basin. The property location is within the red box.

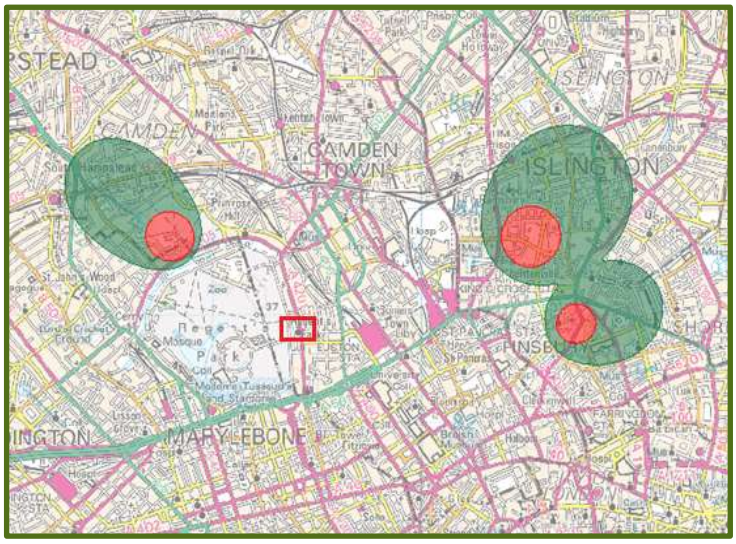
3.2.2 Geohydrology

Strata overlying the Chalk are considered unproductive strata are defined as deposits exhibiting low permeability with negligible significance for water supply or river base flow. An unproductive strata is generally regarded as not containing groundwater in exploitable quantities.

Chalk is 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 zone and red inner zone. The abstraction points within the red (inner zones) are probably within the chalk aquifer. The property is located within the red square.



3.3 Quarrying / mining

3.3.1 With reference to the coal mining and brine subsidence claims gazetteer for England and Wales, available on the Coal Authority web site reports 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 1800's) do not record any quarrying activities within 250m of the property.

3.4 Flood risk

3.4.1 Fluvial / tidal flooding

The Environment Agency Web site indicates the site is not located within a fluvial or tidal flood plain. An extract copy of the flood risk map is presented below. The blue shading represents areas at risk of flooding from the River Thames to the south of the site. The property is located within the red box.

3.4.2 Flooding from Reservoirs, Canals and other Artificial Sources

The Environment Agency Web site indicates the site is not located within an area considered at risk of flooding from beach of reservoir containment systems. An extract copy of the flood risk map is presented below. The green shading represents areas at risk of flooding. The property is located within the red box.

The site is located about 150 to the east of a basin of Regents canal. The strategic flood risk assessment report for the area does not provide any detailed information

on the risk of flooding from the canal, but we have not been able to obtain any recorded incidences of flooding of the canal in this area.

There are 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.

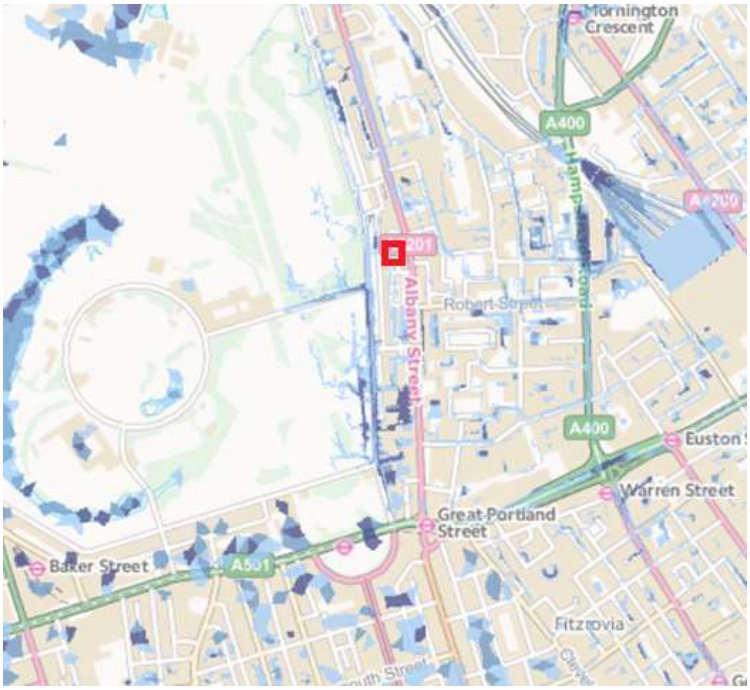
With reference to internet information the site is located midway between the former watercourses of the Fleet and Tyburn which have probably been culverted to allow urban development of London.

3.4.3 Flooding from Groundwater

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

3.4.2 Flooding from sewers

We have reviewed the Environment Agency web site which reports areas of stormwater flooding. An extract of the stormwater flooding map is presented below and indicates the property (red box) is remote from areas of reported flooding.



In conclusion based on available evidence the property is not considered to be at an enhanced risk of flooding from sewers in the area.

3.5 Enquiries with statutory undertakers

3.5.1 We have contacted the following Statutory Undertakers (SUs) to obtain copies of their records to establish if the proposals directly affect underground apparatus, but also to avoid damaging such serviced during our on site borehole investigations.

a) Thames Water
b) London Underground
c) BT Openreach
d) Transco
e) EDF energy

Copies of responses received prior to publication of this report are presented in Appendix B. These records have been obtained solely for the purposes described above. Some of these records have been obtained from the Internet and from our database without contacting the statutory undertaker direct. In addition, we have visited the linesearch web site (www.linesearch.org) which provides a report on national grid networks (National Gas and Electricity Transmission Networks). Again a copy of their report is presented in Appendix B

3.5.2 Normally Statutory Undertakers drawings record the approximate location of their services. We recommend further on site investigations be undertaken to confirm the position of the apparatus and thus establish the effect on the proposed development and the necessity or otherwise for the permanent or temporary diversion of the service to allow the construction of the development to safely and successfully proceed.

3.5.3 It should be noted that statutory undertakers' records normally exclude private services.

4 Ground investigations

4.1 Scope

One borehole has been excavated at the property; to 8m depth (DTS01) in side gardens to the property. The borehole was excavated using driven tube sampling equipment on mounted on a limited access rig. Undrained shear strengths were measured at frequent depth intervals with a summary of undrained shear strength presented on drawing S3. In addition a measure of the density of soils encountered at the site was carried out using dynamic cone penetration testing equipment mounted on the same rig. A summary of dynamic cone penetration testing (converted to an equivalent Standard Penetration Test (SPT) result is presented on drawing S4.The location of the borehole is shown on drawing S2.

The borehole record is presented in appendix C

4.2 Ground conditions encountered

The borehole encountered naturally deposited London Clays capped with 1m thickness of made ground. The London Clays essentially comprised high strength brown clays. No groundwater was encountered in the excavations. A water level monitoring standpipe was installed to full depth of each borehole and on a return visit to site no water was observed in the standpipe.

The investigations confirmed published geological maps for the near surface geology.

4.2 Foundations

Based on investigations completed to date we are of the opinion that the London Clays will adequately support new spread type foundations including traditional underpinning to existing spread type foundations to facilitate construction of a basement where appropriate or facilitate perimeter embedded piled retaining walls

5 External ground movements around basement

5.1 Construction proposals

The project comprises an extension to the existing single storey deep basement into garden areas to the north of the house and below the two storey annex to the west. Copies of our client's architect's drawings are presented in appendix A which details the project proposals. It is proposed to retain the existing drainage system serving the property.

The new basement will extend about 3.4m below rear garden levels (to basement floor level) and the excavation to basement formation level around 3.7m (say).

Our client's Structural Engineer proposes to underpin load bearing walls to the existing buildings allowing lower ground floors to be lowered. An embedded piled retaining wall installed around the perimeter of the basement is proposed in garden areas.

5.2 Settlement around and inward yielding of basement excavations

The following analysis is based on observations of ground movements around basement excavations in clays as reported in Tomlinson '*Foundation design and construction*' (seventh Edition)

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) the average maximum yield / excavation depth (%) was 0.16, with a range of 0.06 to 0.3. Assuming a maximum excavation depth of 3.7m then the likely inward yield will be in the order of 3.7 x 0.16/100 x 1000 = 6mm.

Coincidental with the inward yield, some settlement of the retained soils around the excavation will occur. Again, based on published observations, the ratio of surface settlement to excavation depth in over consolidated clays is about 0.3% (range 0.1 to 0.6). Adopting the average of 0.3, and a maximum 3.7m deep excavation, then surface settlement in the order of 3.7 x 0.3/100 x 1000 = 11mm will occur. Importantly, whilst some surface settlement will occur around the excavation, this settlement profile will extend for a distance of about 4 times the depth of excavation ie about 14.8m in a reasonably linear fashion. We have produced a plan showing estimated surface settlement contours considering the two basement excavations which is presented on drawing S2 The adjacent properties in the terrace have basements similar to that at this property, although the two storey annex building does not include basements.

The adjoining property will be most affected (in terms of the effects of surface settlement) by the basement excavations. The main terrace extends beyond the extremity of the likely extent of possible surface settlement (greater than 14.8m) Considering surface settlement of 11mm which diminishes over a horizontal distance of 14.8m, we estimate the horizontal strain will be about 0.04% on the main rear (east facing) elevation of No39. This would suggest damage would fall into category 0 as described in the following table (extract from CIRIA report 580). Taking into account the combined effects of inward yield and settlement, category 1 damage may occur, but locally to the rear quadrant of No39.

Table 2.5 *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 0.1 mm are classed as negligible.	< 0.1	0.0–0.05
1 Very slight	Fine cracks that can easily be treated during normal decoration. Perhaps isolated slight fracture in building. Cracks in external brickwork visible on inspection.	< 1	0.05–0.075
2 Slight	Cracks easily filled. Redecoration probably required. Several slight fractures showing inside of building. Cracks are visible externally and some repointing may be required externally to ensure weathertightness. Doors and windows may stick slightly.	< 5	0.075–0.15
3 Moderate	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. 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	Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Windows and frames distorted, floor sloping noticeably. 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	This requires a major repair involving partial or complete rebuilding. Beams lose bearings, walls 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.

6 Subterranean (Ground water) flow screening

6.1 General overview.

The property is located towards the floor of the Thames valley close to central London. 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 in deposits of London Clays extending to depths of 43m. There is likely to be a thin spread of made ground overlying the London clays as a result of development in the area. The property (being underlain with a substantial; thickness of London Clays) is not considered to be at risk of flooding from groundwater.

6.2 Responses to flow chart questions

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

Question 1a	Is the site located directly above an aquifer?
Response.	The property is directly constructed above some 43m thickness of London Clays. It is therefore not located directly above an aquifer
Question 1b	Will the proposed basement extend beneath the water table surface?
Response	As the London Clays comprise reasonably homogenous relatively impermeable Clays, such soils do not contain groundwater and thus the proposed basement extension will not penetrate any water tables.
Question 2	Is the site within 100m of a watercourse, well or potential spring line?
Response.	The site is remote (in excess of 100m) of any known water courses (including old water courses such as the Feet and Tyburn). The geology of the area is not conducive to spring lines or wells for extraction of water.
Question 3	Is the site within the catchment of the pond chains on Hampstead Heath?
Response	The property is located about 3km to the south (and downslope) of the pond chain on Hampstead Heath and thus not within their catchment

Question 4	Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?
Response	The basement extension will extend under a small proportion of the gardens to the north of the property. On completion the roof to the basement will be covered with 500mm thickness of soil capped with a patio to match the existing. This proposal is designed to restore natural drainage conditions which currently exist at the site. On this basis the proposed basement will not result in a change in the proportion of hard surfaced / paved areas.
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	Proposals are to restore garden areas to their current layout, with rainwater falling onto the garden area disposed of using natural absorption and natural run off (which is currently the case). No additional surface water will be discharged to the ground.
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	The site is remote (in excess of 100m) of any known water courses or ponds. The geology of the area is not conducive to spring lines or retention of groundwater as a water table.

7 Stability impact identification

7.1 General overview.

The property is located towards the floor of the Thames valley close to central London. There are no significant changes in ground levels within or indeed within a considerable distance of the property.

No trees are to be felled as part of the development. The footprint of the proposed basement extension is outside root protection zones of trees which will remain in the northern part of gardens

Proposals are to adopt an embedded piled perimeter wall solution (probably secant or contiguous bored piles) where possible to allow the basement extension to proceed whilst providing a robust support system to remaining soils outside the basement footprint and in particular the highway. Reinforced concrete underpinning techniques will be used to support existing buildings (annex to the east) to allow basement construction. The underpinning concrete will be designed as a retaining wall. Any retaining structure in close proximity to the highway / pedestrian right of way will be submitted for approval to the local highway authority for approval prior to commencement of works.

Underpinning techniques will be used on the annex building to the east of the main house to facilitate basement construction. These techniques will be used on the party wall line of the annex building. The construction in this area will be subject to agreement with the neighbour under the party wall act.

7.2 Responses to flow chart questions

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

Question 1	Does the existing site include slopes, natural or manmade greater than 7^{o}(approximately 1 in 8)
Response.	The topography of the area is reasonably flat and there are no slopes in the general area greater than7^{o}
Question 2	Will the proposed profiling of landscaping at the site change slopes at the property boundary to more than 7^{o}?
Response	Proposals are to reinstate garden areas to their current topographical condition, with no slopes exceeding 7^{o}
Question 3	Does the development neighbour land including railway cuttings and the like with slopes greater than 7^{o}(approximately 1 in 8)?
Response.	The topography of the area is reasonably flat and there are no slopes in the general area greater than7^{o}

Question 4	Is the site within a wider hillside setting in which the slope is greater than 7^{O}?
Response	The topography of the area is reasonably flat and there are no slopes in the general area greater than7^{o}
Question 5	Is the London Clay the shallowest strata at the site?
Response	The London Clays are at crop at the site. Given the topography of the area (being reasonably flat) the consequence of the geology is not conducive to slope instability.
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 trees are to be felled as part of the development. The footprint of the proposed basement extension is outside root protection zones of trees which will remain in the northern part of gardens.
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	The London Clays soils are shrinkable. Based on observations of properties in the area, we did not observe any adverse crack or movement damage attributable to adverse foundation movement due to trees. In addition the subject property does not exhibit any evidence of damage attributable to subsidence.
Question 8	Is the site within 100m of a watercourse, well or potential spring line.
Response	The site is remote (in excess of 100m) of any known water courses (including old water courses such as the Fleet and Tyburn). The geology of the area is not conducive to spring lines or wells for extraction of water.
Question 9	Is the site within an area of previously worked ground?
Response	There is no evidence to indicate the site is within an area of previously worked ground
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	The property is directly constructed above some 43m thickness of London Clays. It is therefore not located directly above an aquifer. As the London Clays comprise reasonably homogenous relatively impermeable Clays, such soils do not contain groundwater and thus the proposed basement extension will not penetrate any water tables.
Question 11	Is the site within 50m of Hampstead Heath ponds?
Response	The property is located about 3km to the south of the pond chain on Hampstead Heath.
Question 12	Is the site within 5m of a public highway or pedestrian right of way?

Response.	The site is within 5m of a public highway. Proposals are to adopt an embedded piled perimeter wall solution (probably secant or contiguous bored piles) where possible to allow the basement extension to proceed whilst providing a robust support system to remaining soils outside the basement footprint and in particular the highway. Traditional mass concrete underpinning techniques will be used to support existing buildings (annex to the east) to allow basement construction. The underpinning concrete will be designed as a gravity retaining wall. Any retaining structure in close proximity to the highway / pedestrian right of way will be submitted for approval to the local highway authority for approval prior to commencement of works.
Question 13	Will the proposed basement significantly increase the differential depth of foundations relative to adjacent properties?
Response	Underpinning techniques will be used on the annex building to the east of the main house to facilitate basement construction. These techniques will be used on the party wall line of the annex building. The construction in this area will be subject to agreement with the neighbour under the party wall act.
Question 14	Is the site over (or within the exclusion zone of) any tunnels eg Railway lines.
Response	We have contacted London Underground and have been advised that the site is not within 50m of an underground railway.

8 Surface flow and flooding impact identification

8.1 General overview.

Proposals are to restore garden areas to their current layout, with rainwater falling onto the garden area disposed of using natural absorption and natural run off (which is currently the case). No additional surface water will be discharged to the ground. On this basis surface water flows and the quality of surface waters will not materially change as a result of the development.

8.2 Responses to flow chart questions

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

Question 1	Is the site within the catchment of the pond chains on Hampstead Heath?
Response.	The property is located about 3km to the south (and downslope) of the pond chain on Hampstead Heath and thus not within their catchment
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	Proposals are to restore garden areas to their current layout, with rainwater falling onto the garden area disposed of using natural absorption and natural run off (which is currently the case). No additional surface water will be discharged to the ground. On this basis surface water flows will not materially change as a result of the development.
Question 3	Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?
Response.	The basement extension will extend under a small proportion of the gardens to the north of the property. On completion the roof to the basement will be covered with 500mm thickness of soil (which includes a 100mm thick granular drainage layer) capped with a patio to match the existing. This proposal is designed to restore current natural drainage conditions which currently exist at the site
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	Proposals are to restore soft / hard landscaping to current pre development conditions, and thus will have no impact on existing surface water flows.

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	Proposals are to restore soft / hard landscaping to current pre development conditions, and thus will have no impact on the quality of surface waters.

9 Summary and Conclusions

9.1 The project comprises an extension to the existing single storey deep basement into garden areas to the north of the house and below the two storey annex to the east.

9.2 Review of Ordnance Survey and London town maps dating back to 1873 all record the current footprint of the property and surrounding buildings.

9.3 Published BGS 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 40m in the area. The London clays are classified as 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. 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.

9.4 The topography of the area is reasonably flat and there are no slopes in the general area greater than7^{o}. Slope instability is not considered to present a risk. Installation of the basement will not induce any slope instability.

9.5 There is no evidence of any subsidence to any adjacent properties or indeed the existing buildings on the site.

9.6 No trees are to be felled as part of the development. The footprint of the proposed basement extension is outside root protection zones of trees which will remain in the northern part of gardens.

9.7 The site is within 5m of a public highway. Proposals are to adopt an embedded piled perimeter wall solution (probably secant or contiguous bored piles) where possible to allow the basement extension to proceed whilst providing a robust support system to remaining soils outside the basement footprint and in particular the highway. Traditional mass concrete underpinning techniques will be used to support existing buildings (annex to the east) to allow basement construction. The underpinning concrete will be designed as a gravity retaining wall. Any retaining structure in close proximity to the highway / pedestrian right of way will be submitted for approval to the local highway authority for approval prior to commencement of works.

9.8 The property is considered to be at no enhanced risk of being subject to flooding.

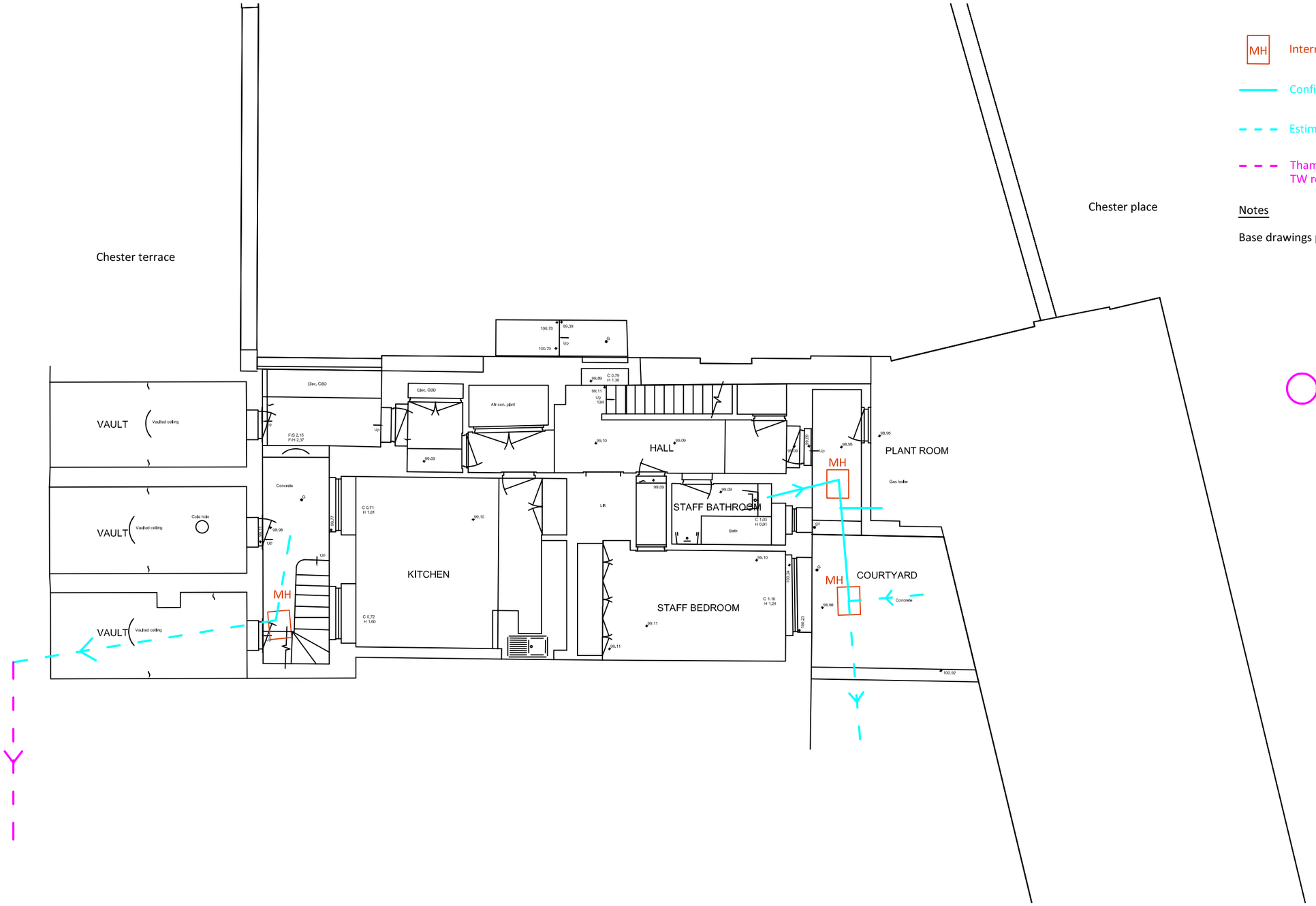
9.9 The basement extension will extend under a small proportion of the gardens to the north of the property. On completion the roof to the basement will be covered with 500mm thickness of soil (which includes a 100mm thick granular drainage layer) capped with a patio to match the existing. This proposal is designed to restore current natural drainage conditions which currently exist at the site and thus will have no impact on existing surface water flows.

9.10 The site is remote from underground tunnels.

8.11 In overall conclusion there are no outstanding issues of concern (singularly or cumulatively) from a stability, groundwater or surface water perspective.

Proposed basement extension at
40 Chester Terrace, London NW1

soiltechnics
environmental and geotechnical consultants



MH Internal manhole

Confirmed route of sewer

Estimated route of sewer

Thames Water (TW) sewers (combined) from TW records

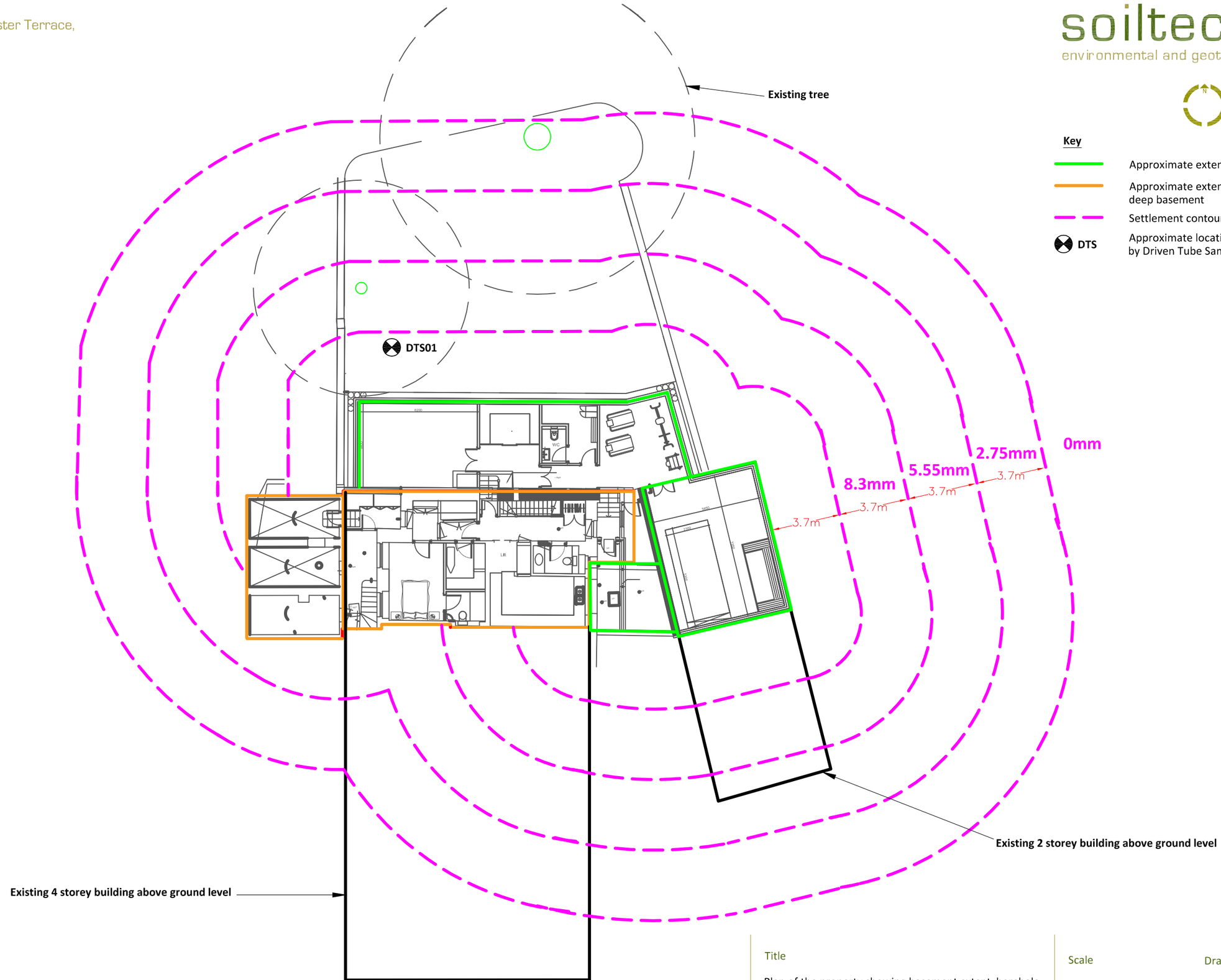
Notes

Base drawings provided by Callidus Surveys

Title	Scale	Drawing number
Plan showing observed and estimated main drainage serving property	1:100 @ *A3*	S1

40 Chester Terrace,
London

soiltechnics
environmental and geotechnical consultants

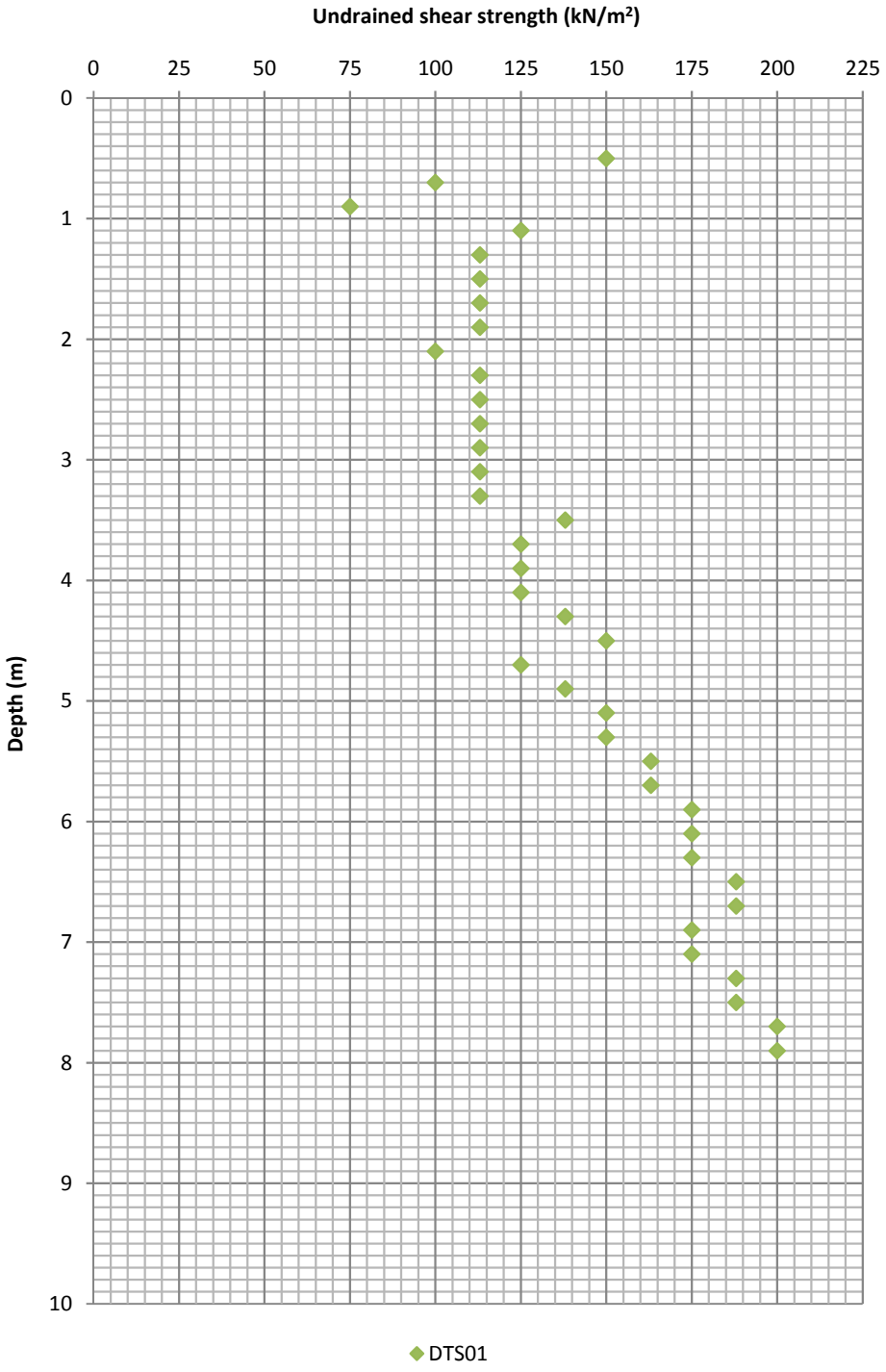


Key

- Approximate extent of proposed basement
- Approximate extent of existing single storey deep basement
- Settlement contours
- DTS — Approximate location of borehole formed by Driven Tube Sampling techniques

Title	Scale	Drawing number
Plan of the property showing basement extent, borehole position and estimated ground surface settlement contours	1:200 @ *A3*	S2

soiltechnics
environmental and geotechnical consultants

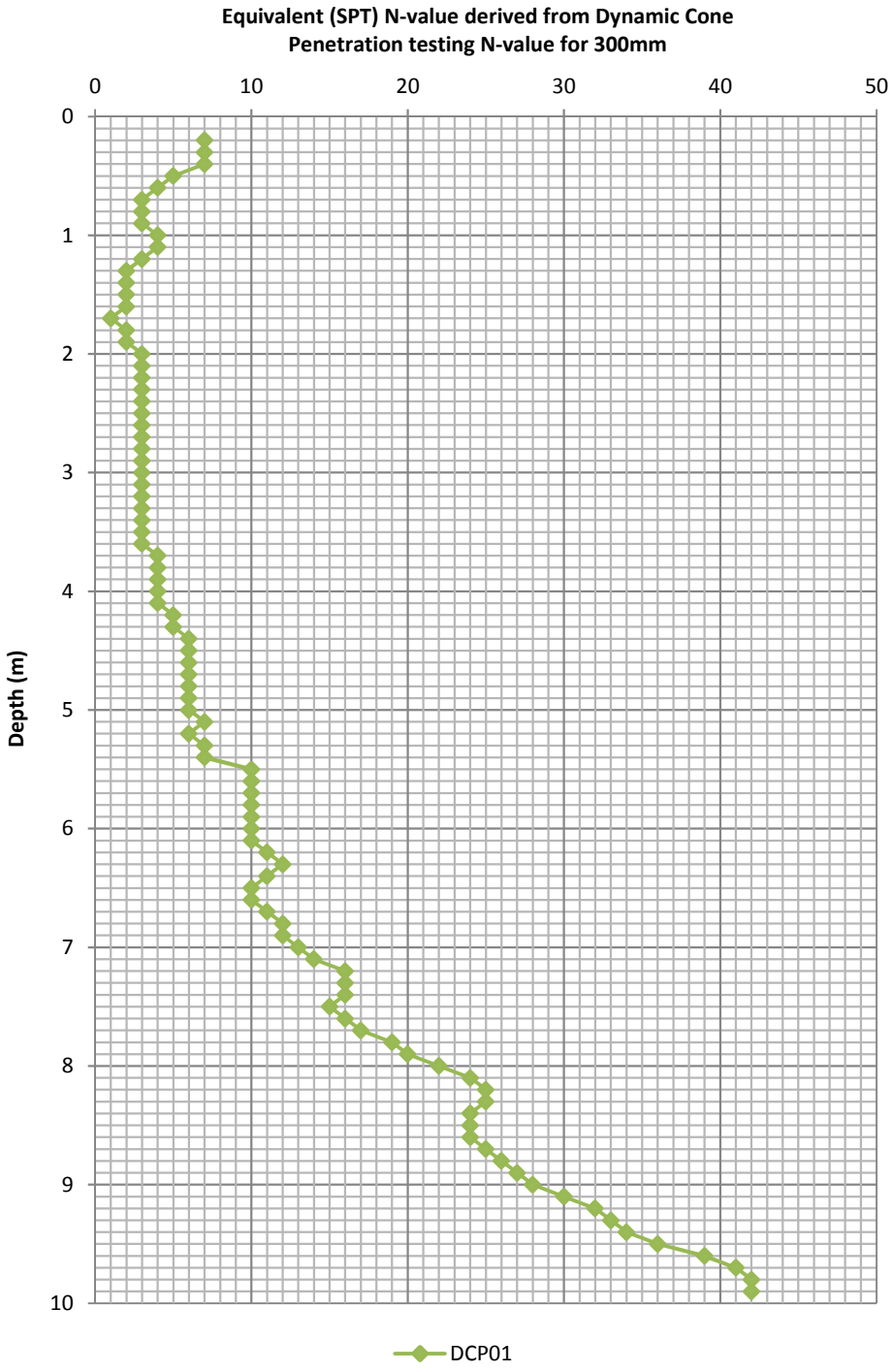


Notes

1) Equivalent undrained shear strength derived by multiplying Pocket Penetrometer (PP) results by 50

Title	Scale	Drawing number
Plot summarising undrained shear strength measurements	As shown	S3

soiltechnics
environmental and geotechnical consultants

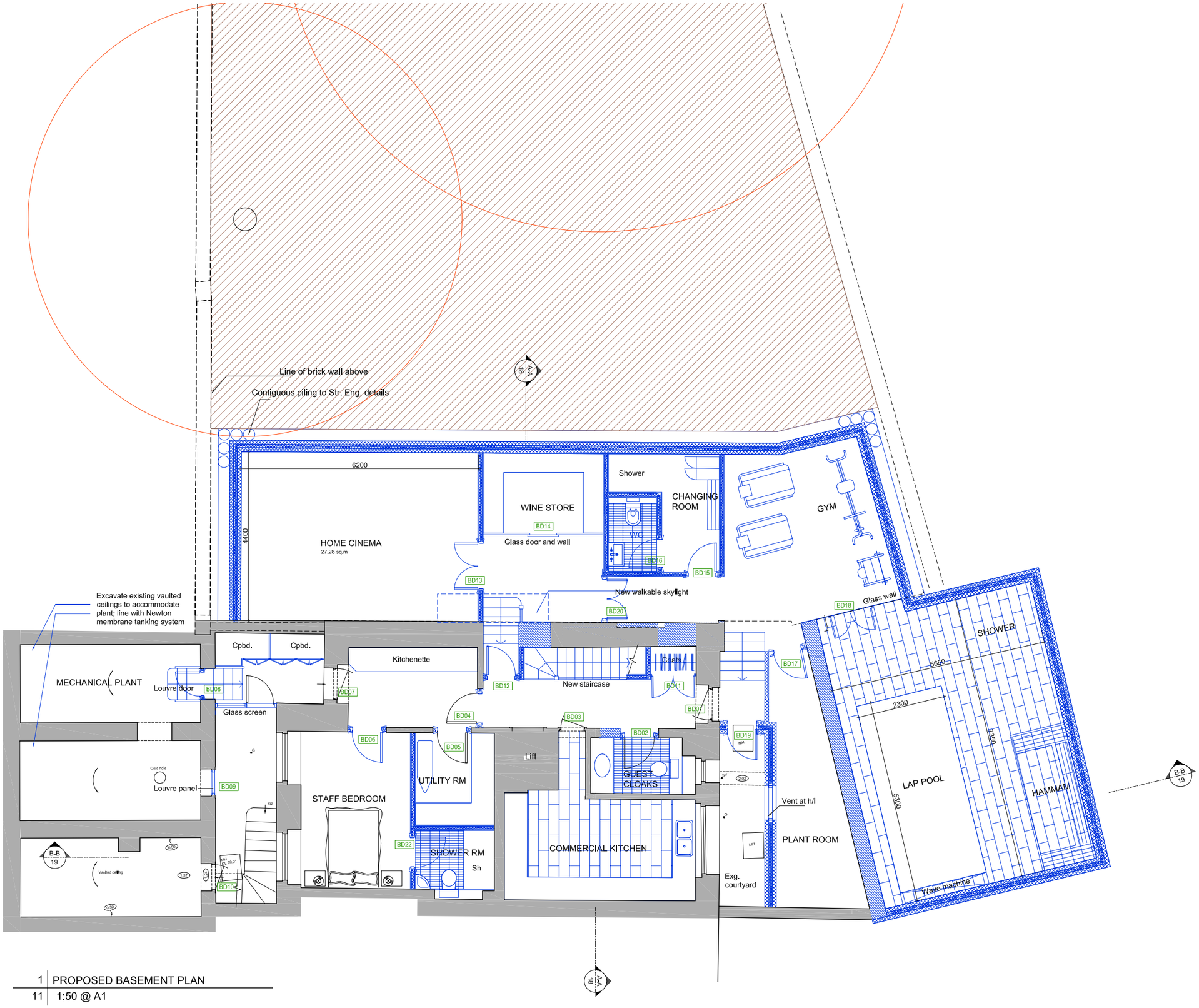


Title	Scale	Drawing number
Plot summarising dynamic cone penetration testing	As shown	S4

NOTE:

ALL DIMENSIONS IN MILIMETRES.

ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE BY THE MAIN CONTRACTOR PRIOR TO COMMENCING EXCAVATION WORKS. ANY DISCREPANCY IS TO BE REPORTED BACK TO THE ARCHITECT FOR INSTRUCTION.



1 | PROPOSED BASEMENT PLAN
11 | 1:50 @ A1

Rev.		
A	00/00/00	Planning Application

PLANNING

KERR PARKER ASSOCIATES LTD

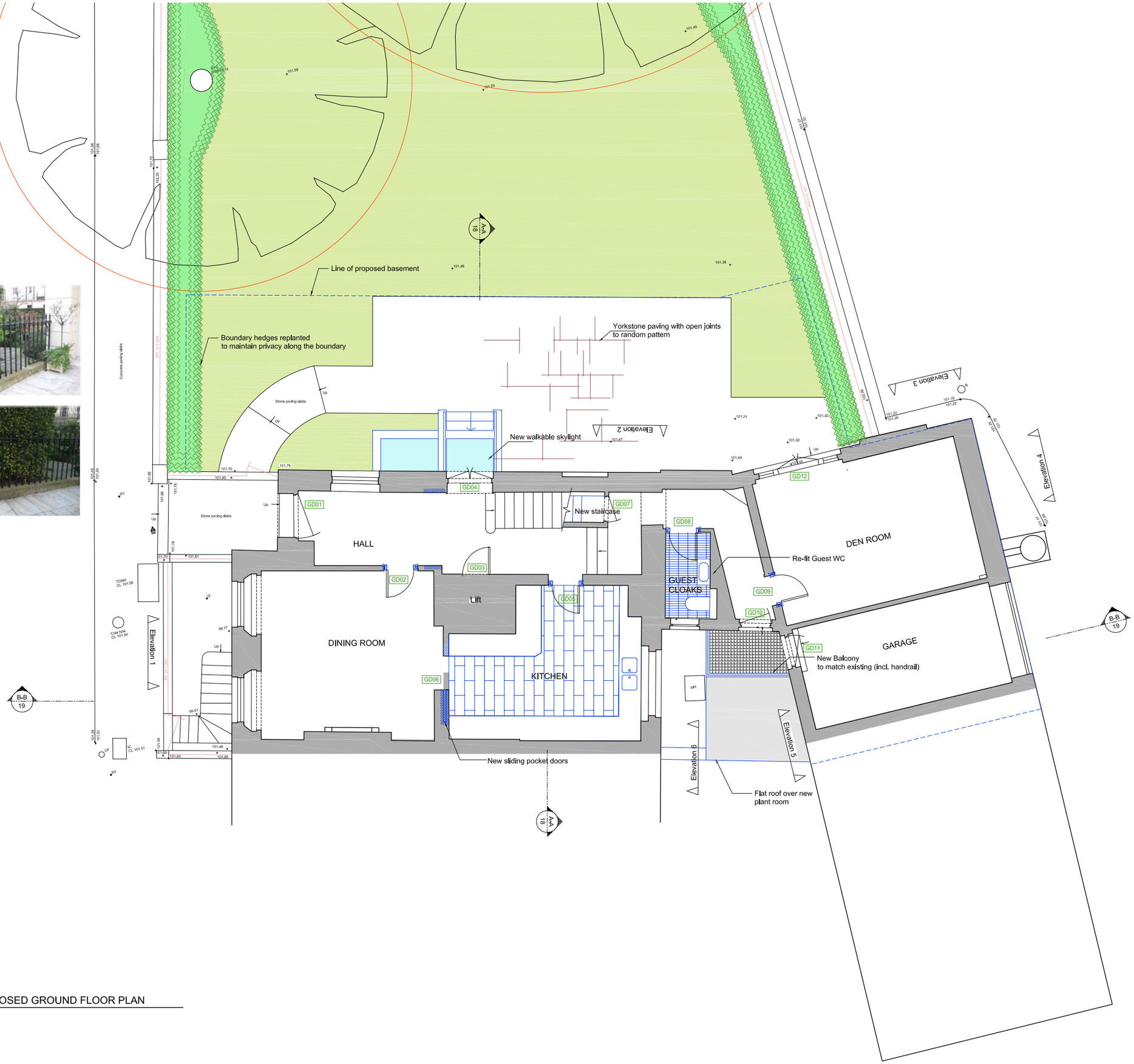
THE GRANARY, COPPID HALL, NORTH STIFFORD, ESSEX RM16 5UE
TEL: 01375-377731

CONTRACT
40 CHESTER TERRACE
LONDON NW1

DRAWING
PROPOSED BASEMENT PLAN

SCALE	DATE
1/50 @ A1	Aug 11
DRAWN	CHECKED
IHA	RP

DRAWING NO. **K-1023-11** REV. **A**



1 | PROPOSED GROUND FLOOR PLAN
12 | 1:50

NOTE:

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A	00/00/00	Planning Application

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CONTRACT
40 CHESTER TERRACE
LONDON NW1

DRAWING
PROPOSED GROUND FLOOR PLAN

SCALE	DATE
1/50 @A1	Aug 11
DRAWN	CHECKED
IHA	RP

DRAWING NO. **K-1023-12** REV. **A**

NOTE:

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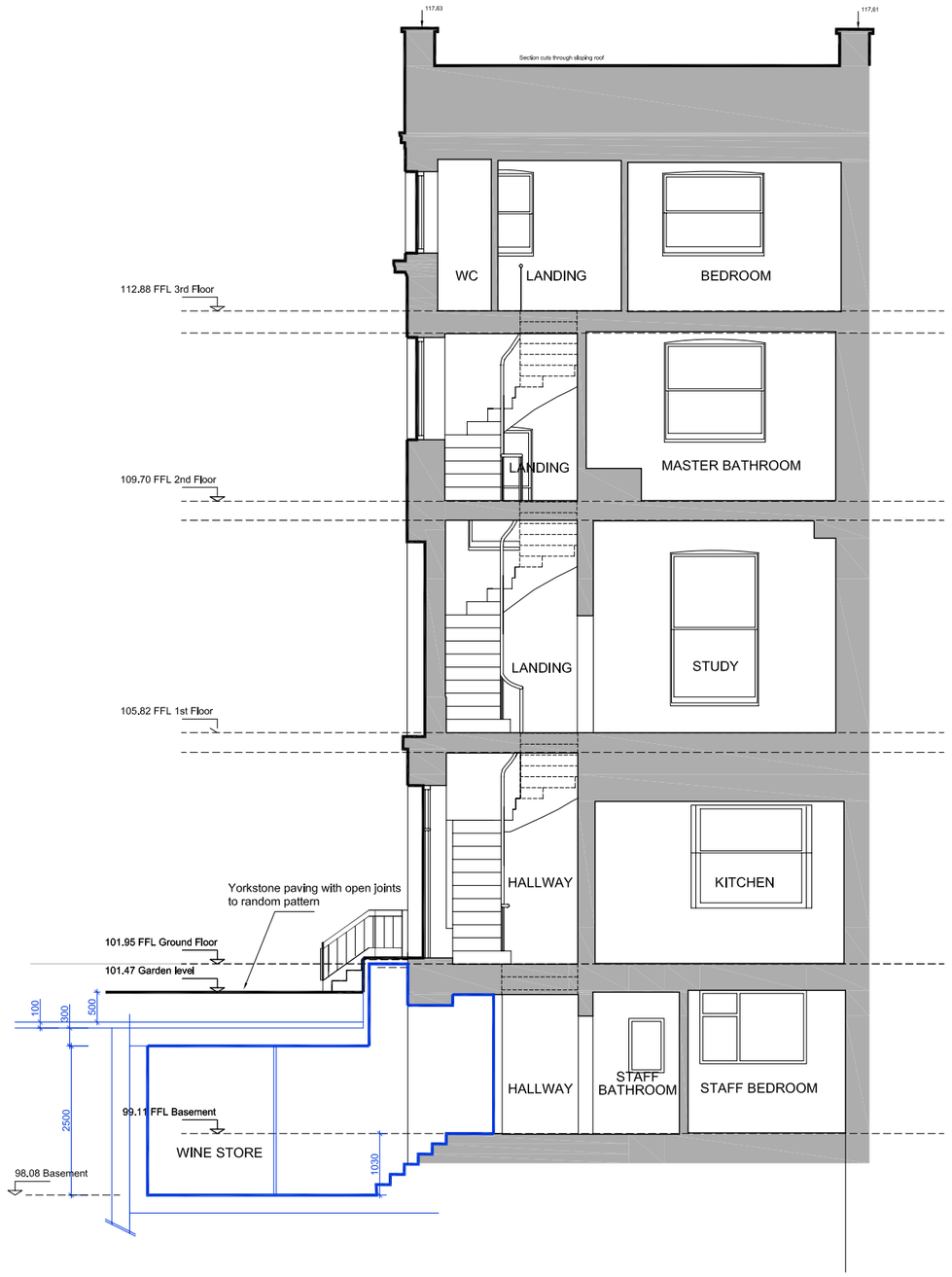

1	PROPOSED SECTION A - A
18	1:50 @ A1

Rev. A	00/00/00	Planning Application

PLANNING

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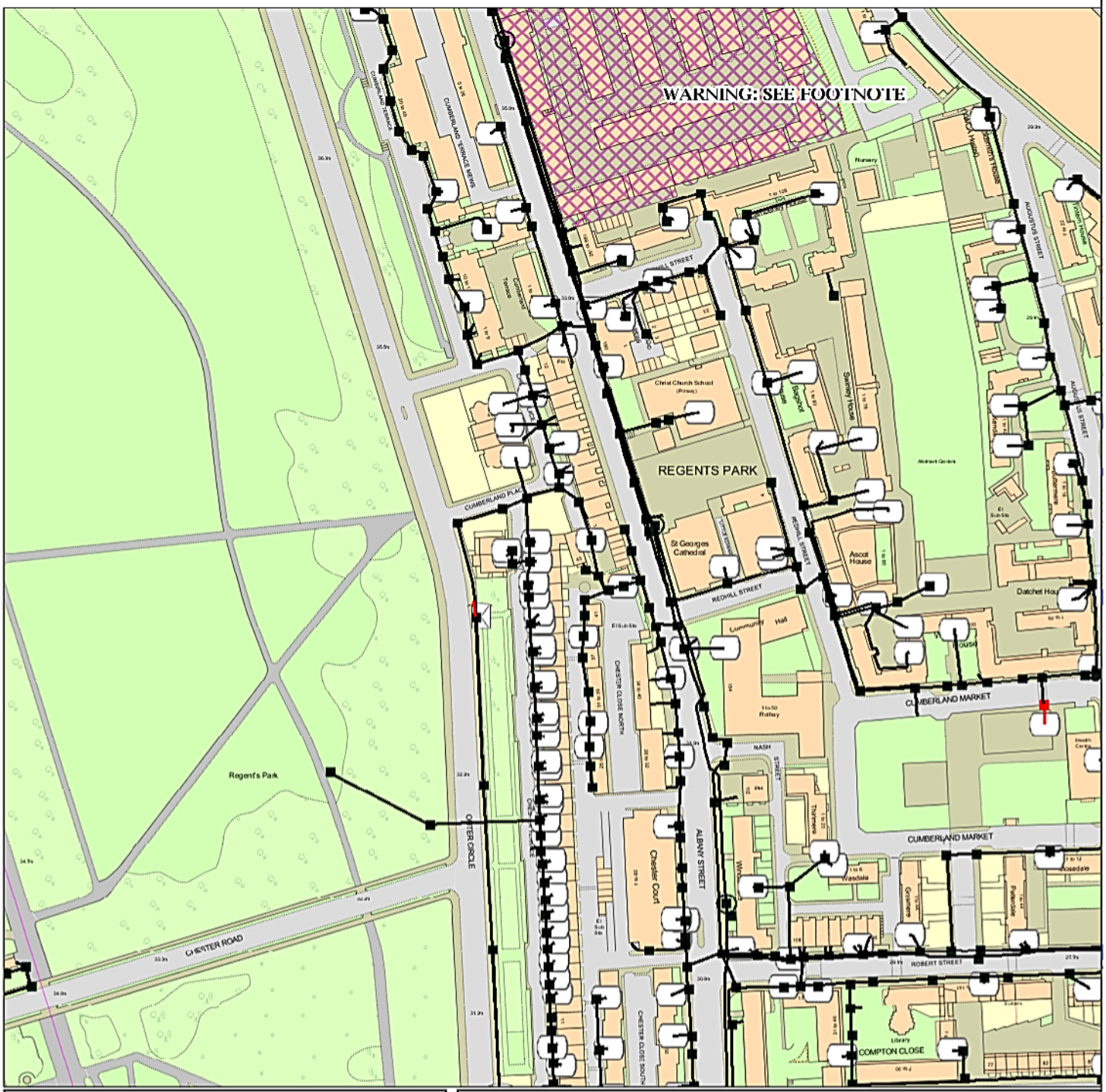
CONTRACT
40 CHESTER TERRACE
LONDON NW1

DRAWING
PROPOSED SECTION A - A

SCALE 1/50 @ A1
DATE Aug 11
DRAWN IHA
CHECKED RP

DRAWING NO. K-1023-18
REV. A

Maps by email Plant Information Reply



IMPORTANT WARNING

Information regarding the location of BT apparatus is given for your assistance and is intended for general guidance only. No guarantee is given of its accuracy. It should not be relied upon in the event of excavations or other works being made near to BT apparatus which may exist at various depths and may deviate from the marked route.

DIAL BEFORE YOU DIG

FOR PROFESSIONAL ON SITE ASSISTANCE PRIOR TO COMMENCEMENT OF EXCAVATION WORKS

ADVANCE NOTICE REQUIRED
(Office hours: Monday-Friday 08.00 to 17.00)

Tel: 0800 9173993
E-mail: dbyd@openreach.co.uk
Website: www.dialbeforeyoudig.com

KEY TO BT SYMBOLS

UNDERGROUND PLANT		POLE	
A/C, D/W or W	OVERHEAD PLANT	CABINET	
JOINT BOX		BURIED JOINT	
456 OR 456	DISTRIBUTION POINT	J	JOINTING POST
MANHOLE OR 72		PROPOSED U/G	
DP BOUNDARY		A/C, D/W or W	PROPOSED O/H
OTHER BT BOUNDARY OR		PROPOSED BOX	

Other proposed plant is shown using dashed lines. BT symbols not listed above may be disregarded. Existing BT plant may not be recorded. Information valid at the time of preparation.

openreach
a BT Group business

BT Ref : XWZ03278D
Map Reference : (centre) TQ2875182896
Easting/Northing : (centre) 528751,182896
Issued : 26/05/2015 15:28:19

FOOTNOTE: WARNING IT IS ESSENTIAL THAT YOU CONTACT NATIONAL NETWORK HANDLING CENTRE BY EMAIL nnhc@openreach.co.uk BEFORE PROCEEDING WITH ANY WORK IN THE HATCHED AREA

Ms. Rachel Brown
Soiltechnics
Cedar Barn
White Lodge
Walgrove
Northampton
NN6 9PY

Our Ref: 2015/2189008
Your Ref:
02/06/2015

Dear Sir/Madam

40, CHESTER TERRACE, LONDON, NW1 4ND

Thank you for your letter of 26/05/2015 in which you asked if there are any electric lines and/or electrical plant belonging to UK Power Networks (LPN) plc ("UK Power Networks") within the land identified by your enquiry.

I enclose a copy of UK Power Networks record of its electric lines and/or electrical plant at the site identified by your enquiry. If the records provided do not relate to the land to which you had intended to refer please resubmit your enquiry.

This information is made available to you on the terms set out below.

1. **UK Power Networks does not warrant that the information provided to you is correct. You rely upon it at your own risk.**

2. UK Power Networks does not exclude or limit its liability if it causes the death of any person or causes personal injury to a person where such death or personal injury is caused by its negligence.

3. **Subject to paragraph 2 UK Power Networks has no liability to you in contract, in tort (including negligence), for breach of statutory duty or otherwise how for any loss, damage, costs, claims, demands, or expenses that you or any third party may suffer or incur as a result of using the information provided whether for physical damage to property or for any economic loss (including without limitation loss of profit, loss of opportunity, loss of savings, loss of goodwill, loss of business, loss of use) or any special or consequential loss or damage whatsoever.**

4. The information about UK Power Networks electrical plant and/or electric lines provided to you belongs to and remains the property of UK Power Networks. You must not alter it in any respect.

5. **The information provided to you about the electrical plant and/or electric lines depicted on the plans may NOT be a complete record of such apparatus belonging to UK Power Networks. The information provided relates to electric lines and/or electrical plant belonging to UK Power Networks that it believes to be present but the plans are NOT definitive: other electric lines and/or electrical plant may be present and that may or may not belong to UK Power Networks.**

6. **Other apparatus not belonging to UK Power Networks is not shown on the plan. It is your responsibility to make your own enquiries elsewhere to discover whether apparatus belonging to others is present. It would be prudent to assume that other apparatus is present.**

7. You are responsible for ensuring that the information made available to you is passed to those acting on your behalf and that all such persons are made aware of the contents of this letter.

8. Because the information provided to you may **NOT** be accurate, you are recommended to ascertain the presence of UK Power Networks electric lines and/or electrical plant by the digging of trial holes. **Trial holes should be dug by hand only**.

Excavations must be carried out in line with the Health and Safety Executive guidance document HSG 47. We will not undertake this work. A copy of HSG 47 can be obtained from the Health an Safety Executives website.

All electric lines discovered must be considered LIVE and DANGEROUS at all times and must not be cut, resited, suspended, bent or interfered with unless specially authorised by UK Power Networks.

The electric line and electrical plant belonging to UK Power Networks remains so even when made dead and abandoned and any such electric line and/or electrical plant exposed shall be reported to UK Power Networks.

Where your works are likely to affect our electric lines and/or electrical plant an estimate of the price of any protective /diversionary works can be prepared by UK Power Networks Branch at Metropolitan House, Darkes Lane, Potters Bar, Herts. , EN6 1AG, telephone no. 0845 2340040

9 **Any work near to any overhead electric lines must be carried out by you in accordance with the Health and Safety Executive guidance document GS6 and the Electricity at Work Regulations**.

The GS6 Recommendations may be purchased from HSE Books or downloaded from the Energy Networks Association's website.

If given a reasonable period of prior notice UK Power Networks will attend on site without charge to advise how and where "goal posts" should be erected. If you wish to avail yourself of this service, in the first instance please telephone: 0845 6014516 between 08:30 and 17:00 Monday to Friday, Public and bank holidays excepted.

10. You are responsible for the security of the information provided to you. It must not be given, sold or made available upon payment of a fee to a third party.

11. If in carrying out work on land in, on, under or over which is installed an electric line and/or electrical plant that belongs to UK Power Networks you and/or anyone working on your behalf damages (however slightly) that apparatus you must inform immediately UK Power Networks by telephone at the number below providing:

- your name, address and telephone number; and
- the date, time and place at which such damage was caused; and
- a description of the electric line and/or electrical plant to which damage was caused; and
- the name of the person whom it appears to you is responsible for that damage; and
- the nature of the damage

In the East of England or London 0800 780078 (24 Hours).

12. The expression "UK Power Networks" includes UK Power Networks (EPN) plc, UK Power Networks (LPN) plc, UK Power Networks (SEPN) plc, UK Power Networks and any of their successors and predecessors in title.

IF YOU DO **NOT** ACCEPT AND/OR **DO NOT** UNDERSTAND THE TERMS OF USE SET OUT IN PARAGRAPHS 1 TO 12 INCLUSIVE ABOVE YOU MUST NOT USE THE PLANS AND RETURN THEM TO ME.

I would remind you that work adjacent to electric lines and/or electrical plant represents a serious risk to health and safety and as such should feature amongst the items you have assessed in your workplace risk assessment and method statement.

I shall be pleased to supply you with further assistance if you require it.

Yours sincerely

Kav Singh - Telephone: 0800 0565 866
Plan Provision

0m 10m 20m 30m 40m 50m 60m 70m

Plotted On : 02/06/2015

Plotted By : Kav Singh

Plot Description: 40, CHESTER TERRACE, LONDON, NW1 4ND

2015/2189008/ways

Map Centre : TQ2882NE

UK Power Networks
Plan Provision
Fore Hamlet
IPSWICH
Suffolk
IP3 8AA
Tel 0800 0565 866
Fax 08701 963782

For details of the symbology please refer to http://www.ukpowernetworks.co.uk/safety-emergencies/in-the-workplace/understanding-safety-symbols.shtml

PRIMARY CABLES
EXTRA HIGH VOLTAGE CABLES (EHV) 22,000 TO 132,000 Volts

Depth normally 750mm cover in carriageway & 600mm cover in footway.

Before digging within one metre of these cable routes Telephone 0800 056 5866 in order that the Company's apparatus may be located on site and any necessary protection works agreed.

N.B. THRUST BORERS OR MOLES MUST NOT BE USED WITHIN THE VICINITY OF ANY CABLES BELONGING TO UK POWER NETWORKS WITHOUT FIRST CONTACTING THIS COMPANY.

1. The position of the apparatus shown on this drawing is believed to be correct but the original landmarks may have been altered since the apparatus was installed.
2. The exact position of the apparatus should be verified – use approved cable avoidance tools prior to excavation using suitable hand tools.
3. It is essential that trial holes are carefully made avoiding the use of mechanical tools or picks until the exact location of all cables have been determined.
4. It must be assumed that each property and item of street furniture has an electricity supply. A separate record is kept for each service cable but its route is not necessarily shown on this record.
5. All cables must be treated as being live unless proved otherwise by UK Power Networks.
6. The information provided must be given to all people working near UK Power Networks' plant & equipment. Do not use plans more than 3 months after the issue date for excavation purposes.
7. Please be aware that electric cables/lines belonging to other owners of licensed electricity distribution systems may be present and it is your responsibility to identify their location.

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2. UK Power Networks Ltd does not exclude or limit its liability if it causes the death of a person or causes personal injury to a person where such death or personal injury is caused by its negligence.
3. Subject to paragraph 2, UK Power Networks Ltd has no liability to you in contract, in tort (including negligence), for breach of statutory duty or otherwise howsoever for any loss, damage, costs, claims, demands or expenses that you or any third party may suffer or incur as a result of using the information provided whether for physical damage to property or for any economic loss (including without limitation loss of profit, loss of opportunity, loss of savings, loss of goodwill, loss of business, loss of use) or any special or consequential loss or damage whatsoever.

ADVICE TO CONTRACTORS ON AVOIDING DANGER FROM BURIED ELECTRICITY CABLES.

1) Do have cable drawings with you on site and check them before you start the excavation.
2) Do have a cable locator tool on site and use it to help you.
3) Mark out the location of electricity cables.
4) Do not use a mechanical excavator within 0.5m of electricity cables.
5) Use spades and shovels in preference to other tools.
6) Never disturb electricity cables and joints or their protective covers.

IF IN DOUBT – ASK! PHONE 0800 056 5866
EMERGENCY – If you damage a cable or line Phone 0800 780 0780 (24hrs) URGENTLY

These basic safety precautions are explained in detail in the HSE booklet. HS(G)47 – Avoiding Danger from Underground Services, a copy of which may be obtained from your supervisor or HMSO.

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Plotted On : 02/06/2015

Plotted By : Kav Singh

Plot Description: 40, CHESTER TERRACE, LONDON, NW1 4ND

2015/2189008/mains

Map Centre : TQ2882NE

UK Power Networks
Plan Provision
Fore Hamlet
IPSWICH
Suffolk
IP3 8AA
Tel 0800 0565 866
Fax 08701 963782

For details of the symbology please refer to http://www.ukpowernetworks.co.uk/safety-emergencies/in-the-workplace/understanding-safety-symbols.shtml

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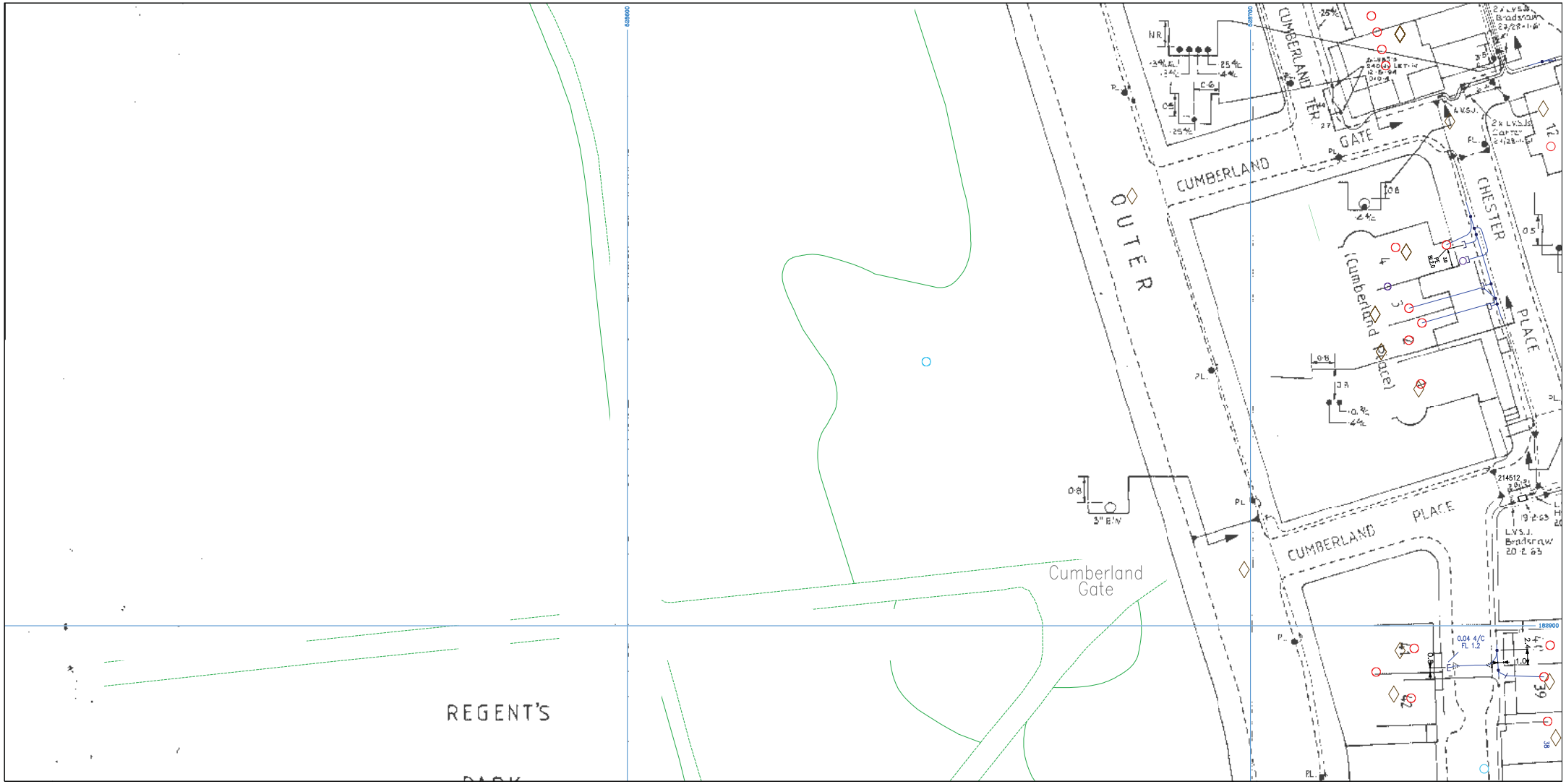

Plotted On : 02/06/2015

Plotted By : Kav Singh

Plot Description: 40, CHESTER TERRACE, LONDON, NW1 4ND

2015/2189008/comp

Map Centre : TQ2882NE

UK Power Networks
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For details of the symbology please refer to
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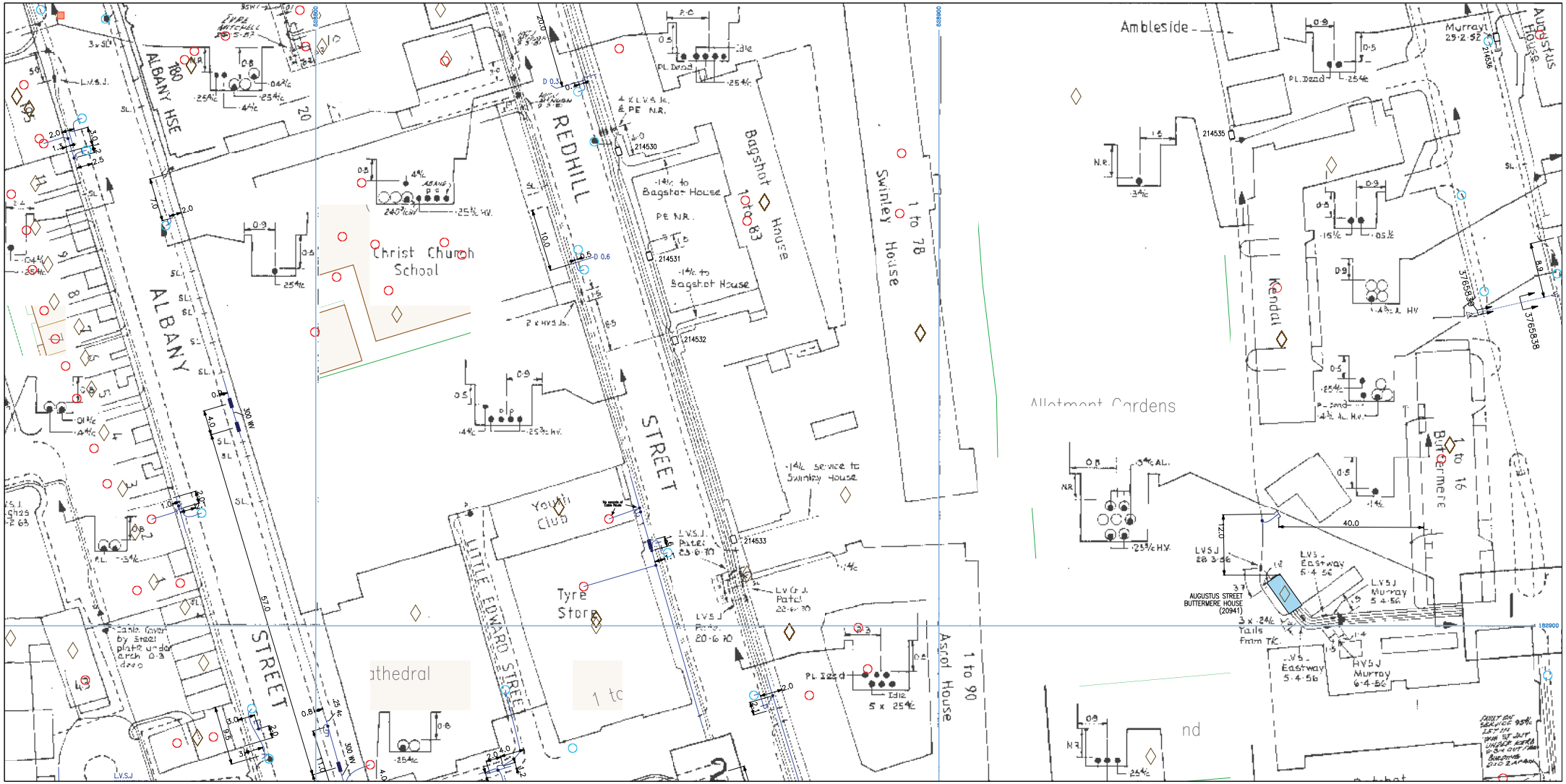

Plotted On : 02/06/2015

Plotted By : Kav Singh

Plot Description: 40, CHESTER TERRACE, LONDON, NW1 4ND

2015/2189008/comp

Map Centre : TQ2882NE

UK Power Networks
Plan Provision
Fore Hamlet
IPSWICH
Suffolk
IP3 8AA
Tel 0800 0565 866
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2. UK Power Networks Ltd does not exclude or limit its liability if it causes the death of a person or causes personal injury to a person where such death or personal injury is caused by its negligence.
3. Subject to paragraph 2, UK Power Networks Ltd has no liability to you in contract, in tort (including negligence), for breach of statutory duty or otherwise howsoever for any loss, damage, costs, claims, demands or expenses that you or any third party may suffer or incur as a result of using the information provided whether for physical damage to property or for any economic loss (including without limitation loss of profit, loss of opportunity, loss of savings, loss of goodwill, loss of business, loss of use) or any special or consequential loss or damage whatsoever.

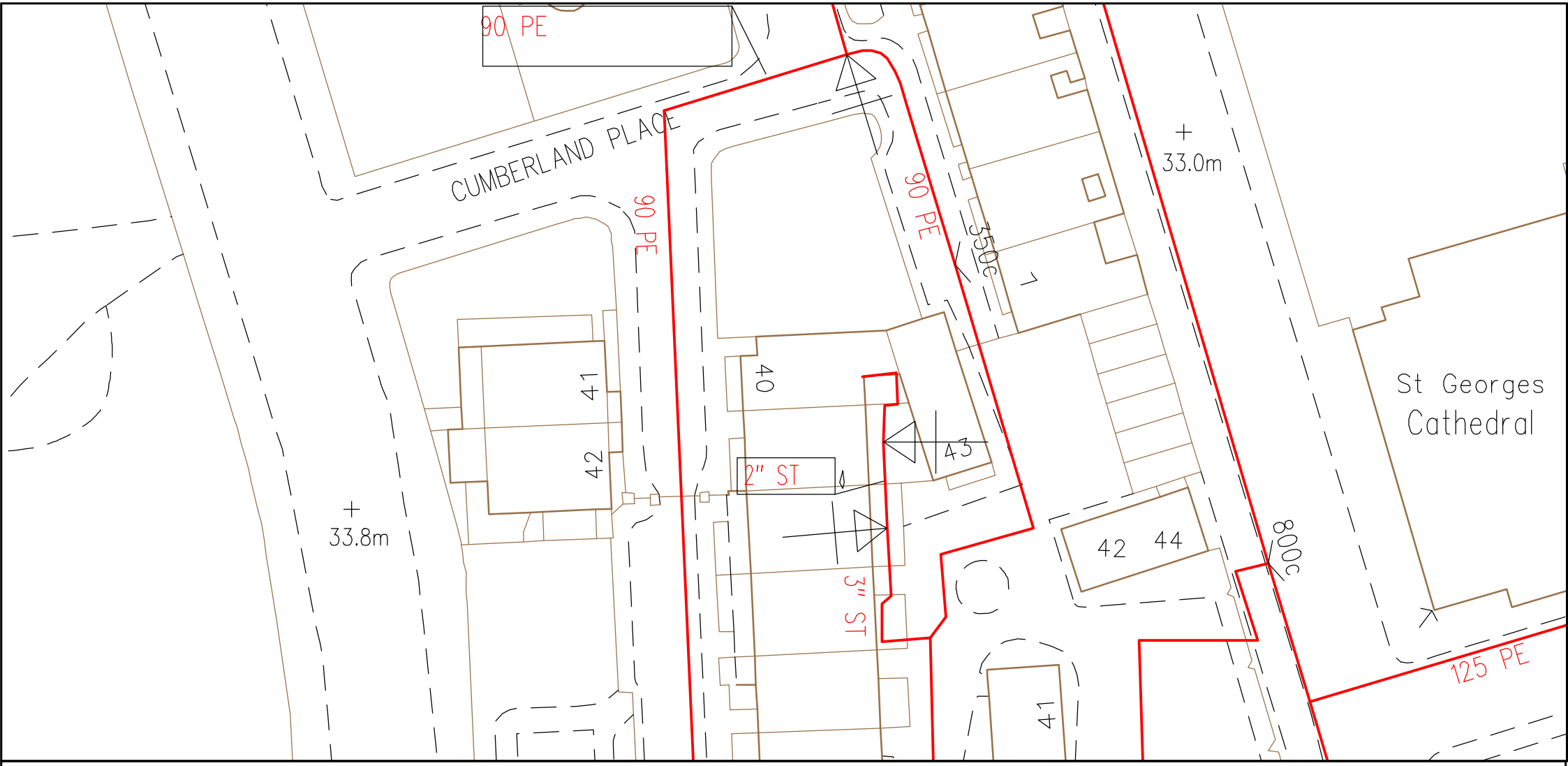
ADVICE TO CONTRACTORS ON AVOIDING DANGER FROM BURIED ELECTRICITY CABLES.

1) Do have cable drawings with you on site and check them before you start the excavation.
2) Do have a cable locator tool on site and use it to help you.
3) Mark out the location of electricity cables.
4) Do not use a mechanical excavator within 0.5m of electricity cables.
5) Use spades and shovels in preference to other tools.
6) Never disturb electricity cables and joints or their protective covers.

IF IN DOUBT – ASK! PHONE 0800 056 5866
EMERGENCY – If you damage a cable or line Phone 0800 780 0780 (24hrs) URGENTLY

These basic safety precautions are explained in detail in the HSE booklet. HS(G)47 – Avoiding Danger from Underground Services, a copy of which may be obtained from your supervisor or HMSO.

Please be aware that electric lines belonging to other owners of licensed electricity distribution systems may be present and it is your responsibility to identify their location.



SCALE: Not to scale

USER ID: RachelB

DATE: 26/05/2015

EXTRACT DATE: 26/03/2015

MAP REF: TQ2882

CENTRE: 528747, 182897

LP MAINS

MP MAINS

IP MAINS

LHP MAINS

NHP MAINS

Some examples of Plant Items:

Valve | Depth of Cover | Syphon | Diameter Change | Material Change

This plan shows those pipes owned by National Grid Gas plc in their role as a Licensed Gas Transporter (GT). Gas pipes owned by other GTs, or otherwise privately owned, may be present in this area. Information with regard to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections, etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by National Grid Gas plc or their agents, servants or contractors for any error or omission. Safe digging practices, in accordance with HS(G)47, must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue. Further information on all DR4s can be determined by calling the DR4 hotline on 01455 892426 (9am-5pm) A DR4 is where a potential error has been identified within the asset record and a process is currently underway to investigate and resolve the error as appropriate.

MAPS Viewer Version 5.6.7.0

Local Machine

Enquiry Confirmation

LSBUD Ref: 6878072

Date of enquiry: 26/05/2015
Time of enquiry: 15:38

Enquirer

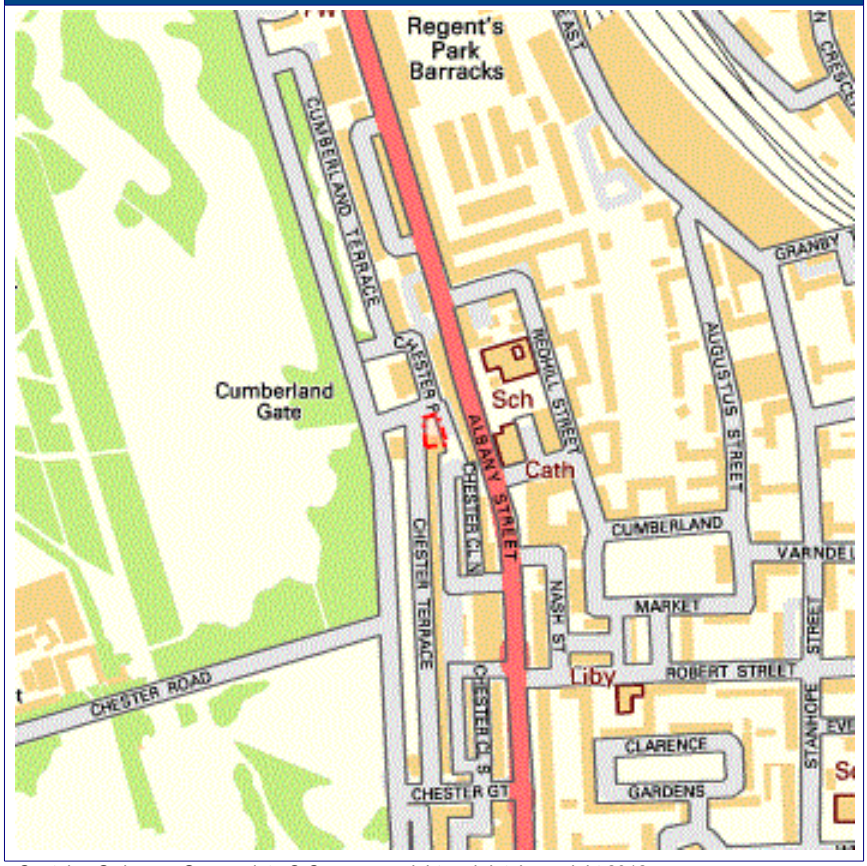
Name	Mrs R Brown	Phone	01604781877
Company	Soiltechnics Limited	Mobile	Not Supplied
		Fax	Not Supplied
Address	Cedar Barn White Lodge Walgrave Northamptonshire nn6 9PY		
Email	rachel.brown@soiltechnics.net		
Notes	Please ensure your contact details are correct and up to date on the system in case the Asset Owners need to contact you. Where Asset Owners charge for plans they have been requested to send you a quote before proceeding.		

Enquiry Details

Scheme/Reference	STM3174A		
Enquiry type	Initial Enquiry	Work category	Development Projects
Start date	28/05/2015	Work type	Commercial/industrial
End date	28/05/2015	Site size	369 metres square
Searched location	XY= 528751, 182896 Easting/Northing	Work type buffer*	25 metres
Confirmed location	528750 182904		

* The WORK TYPE BUFFER is a distance added to your search area based on the Work type you have chosen

Site Map



V3.3.1

Enquiry Confirmation

LSBUD Ref: 6878072

Date of enquiry: 26/05/2015
Time of enquiry: 15:38

Asset Owners

Subject always to our standard terms and conditions, this enquiry result is valid for 28 days only from the date of enquiry and is based on the confirmed information you entered. If the location of the work changes then a further enquiry must be made. Should the work not be undertaken within 28 days of the enquiry then a further enquiry must be made.

Where applicable listed below are those registered Asset Owners who have been notified, those to whom you need to send further information and those who have no apparatus within your search area. In addition your response will include other non-registered Asset Owners contact details who have NOT been notified, which may be of interest to you.

Please be aware that the lists below are not exhaustive and that not all Asset Owners are registered with this service.
In particular please note that the LinesearchbeforeUdig system only contains information on National Grid's Gas above 2 bar asset and all National Grid Electricity Transmission asset. For National Grid Gas below 2 bar asset information please go to www.beforeyoudig.nationalgrid.com

If you are required to email additional info please note that we need the following:
Site contact name and number, Location plan, Detailed plan (minimum scale 1:2500), Cross sectional drawings (if available), Work Specification.

Asset Owners who DO have assets near your proposed work site.

In the Zone of Interest
No LinesearchbeforeUdig Asset Owners within the Zone of Interest

LinesearchbeforeUdig Asset Owners who DO NOT have assets in the immediate vicinity of your proposed work site.

Not in the Zone of Interest		
AWE Pipeline	FibreSpeed Limited	Perenco UK Limited (Purbeck Southampton Pipeline)
BOC Limited (A Member of the Linde Group)	Gamma	Phillips 66
BP Midstream Pipelines	Humbly Grove Energy	Premier Transmission Ltd (SNIP)
BPA	HV Cables	Redundant Pipelines - LPDA
Carrington Gas Pipeline	IGas Energy	RWEnpower (Little Barford and South Haven)
Centrica Energy	Ineos Enterprises Limited	SABIC UK Petrochemicals
Centrica Storage Ltd	INEOS Manufacturing (Scotland and TSEP)	Scottish Power Generation
CLH Pipeline System Ltd	Lark Energy	Seabank Power Ltd
ConocoPhillips (UK) Ltd	Lightsource SPV Limited	Shell Pipelines
Coryton Energy Co Ltd (Gas Pipeline)	Mainline Pipelines Limited	Total (Finaline, Colnbrook & Colwick Pipelines)
CSP Fibre c/o Centara	Manchester Jetline Limited	Transmission Capital
EirGrid	Manx Cable Company	Vattenfall
Electricity North West Limited	Marchwood Power Ltd (Gas Pipeline)	Western Power Distribution
E-on UK Plc (Gas Pipelines Only)	National Grid Gas (above2 bar) and National Grid Electricity Transmission	Wingas Storage UK Ltd
ESP Utilities Group	Northumbrian Water Group	Zayo Group UK Ltd c/o JSM Group Ltd
ESSAR	NPower CHP Pipelines	
Esso Petroleum Company Limited	Oikos Storage Limited	

Enquiry Confirmation

LSBUD Ref: 6878072

Date of enquiry: 26/05/2015
Time of enquiry: 15:38

The following Asset Owners are NOT currently members of LinesearchbeforeUdig, however you should contact them before proceeding. Please be aware that this list is not exhaustive and that **IT IS YOUR RESPONSIBILITY TO IDENTIFY AND CONTACT ALL ASSET OWNERS WITHIN YOUR SEARCH AREA.**

Not Notified			
Asset Owner	**Preferred contact method**	**Phone**	**Status**
BskyB Telecommunications	nrswa@bskyb.com	02070323234	Not Notified
BT	https://www.swns.bt.com/pls/mbe/welcome.home	08009173993	Not Notified
Colt	plantenquiries@catelecomuk.com	01227768427	Not Notified
Energetics Electricity	plantenquiries@energetics-uk.com	01698404646	Not Notified
EUNetworks Fiber UK Limited	fibreuk@eunetworks.com	02031788003	Not Notified
Fulcrum	FPLplantprotection@fulcrum.co.uk	03330146455	Not Notified
GTC	https://pe.gtc-uk.co.uk/PlantEnqMembership	01359240363	Not Notified
Instalcom	plantenquiries@instalcom.co.uk	02087314613	Not Notified
Interoute	interoute.enquiries@plancast.co.uk	02070259000	Not Notified
National Grid Gas Distribution (below 2 bar)	plantprotection@nationalgrid.com	0800688588	Not Notified
Tata, KPN (c/- McNicholas)	plantenquiries@mcnicholas.co.uk	03300558469	Not Notified
Teliasonera	telenttelia.plantenquiries@telent.com	0800526015	Not Notified
Thames Water	http://www.digdat.co.uk	08450709145	Not Notified
UK Power Networks	plans@ukpowernetworks.co.uk	08000565866	Not Notified
Verizon Business	osp-team@uk.verizonbusiness.com	01293611736	Not Notified
Virgin Media	http://www.digdat.co.uk	08708883116	Not Notified
Vodafone	osm.enquiries@atkinsglobal.com	01454662881	Not Notified
Vtesse Networks	https://vtplant.vtesse.com	01992532100	Not Notified

Transport for London
London Underground

London Underground
Infrastructure Protection

3rd Floor
Albany House
55 Broadway
London SW1H 0BD

www.tfl.gov.uk/tube

Your ref: STM3174A
Our ref: 20878-SI-8-280515

Rachel Brown
Soil Technics
Rachel.Brown@soiltechnics.net

28 May 2015

Dear Rachel,

40 Chester Terrace London NW1 4ND

Thank you for your communication of 26th May 2015.

I can confirm that London Underground has no assets within 50 metres of your site as shown on the plan you provided.

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 7918 0016

Soiltechnics
Cedar Barn
White Lodge
Walgrave
Northamptonshire
NN6 9PY

Virgin Media
Field Services
Units 1-12
Broad Lane
Mayfair Business Park
Bradford
Yorkshire
BD4 8PW

Tel: 0870 888 3116 Opt 2
Fax: 01268 468557

Plant Enquiry Ref:	VM.119915
Your Letter Date:	27.05.2015
Your Ref:	3174
Date:	16.06.2015

Hello,

Enquiry Location: 40 Chester Terrace, London, 528751 182896

Thank you for your enquiry regarding work at the above location.

Virgin Media and Viatel plant should not be affected by your proposed work and no strategic additions to our existing network are envisaged in the immediate future.

Should your request be in relation to a New Development and you require an estimate to be prepared for Virgin Media to service your proposed development, please submit this request for costs along with site drawings (scale 1:500) to:

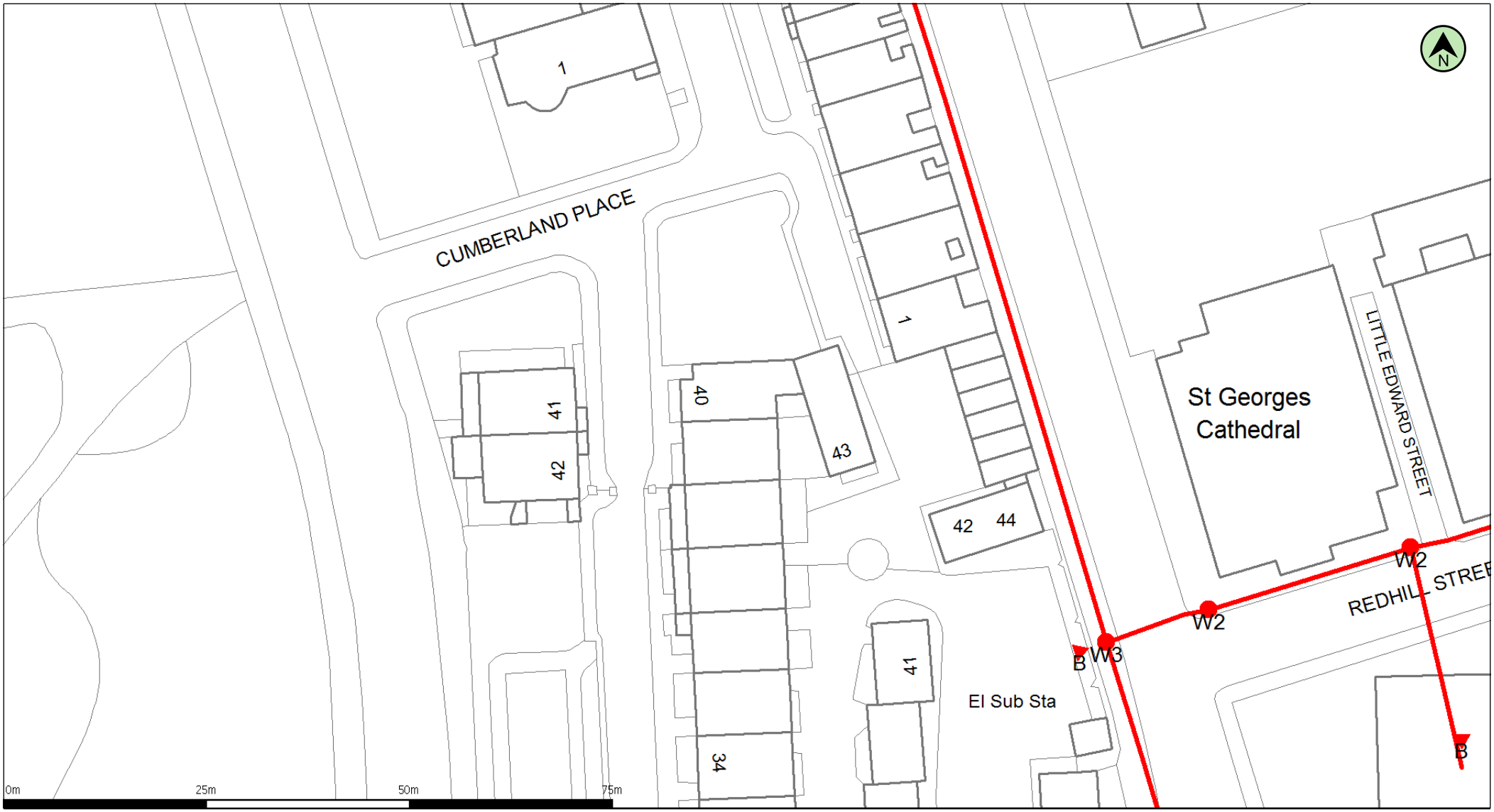
Virgin Media
New Build
Virgin Media
1 Dove Wynd
Strathclyde Business Park
Bellshill
ML4 3AL

This information is only valid on the date of issue. If your start date is 3 months or more from the date of this letter, please re-apply for updated information.

Yours faithfully,

National Plant Enquiries Team
email: plant.enquiries.team@virginmedia.co.uk

Please note: National Plant Enquiries Team (Bradford) cover and respond to plant enquiries for all ex ntl:Telewest franchise areas.



Date: 16/06/15 Scale: 1:661 Map Centre: 528751,182896 Data updated: 01/05/15 Telecoms Plan A4

Important Information - please read

The purpose of this plan is to identify Virgin Media apparatus. We have tried to make it as accurate as possible but we cannot warrant its accuracy. In addition, we caution that within Virgin Media apparatus there may be instances where mains voltage power cables have been placed inside green, rather than black ducting. Further details can be found using the 'Affected Postcodes.pdf', which can be downloaded from this website.

Therefore, you must not rely solely on this plan if you are carrying out any excavation or other works in the vicinity of Virgin Media apparatus. The actual position of any underground service must be verified by cable detection equipment, etc. and established on site before any mechanical plant is used. Accordingly, unless it is due to the negligence of Virgin Media, its employees or agents, Virgin Media will not have any liability for any omissions or inaccuracies in the plan or for any loss or damage caused or arising from the use of and/or any reliance on this plan.

Duct, Trench

Chamber

Cabinet

miridula.rai@virginmedia.co.uk

Virgin media

Soiltechnics
Cedar Barn
White Lodge
Walgrave
Northamptonshire
NN6 9PY

Virgin Media
Field Services
Units 1-12
Broad Lane
Mayfair Business Park
Bradford
Yorkshire
BD4 8PW

Tel: 0870 888 3116 Opt 2
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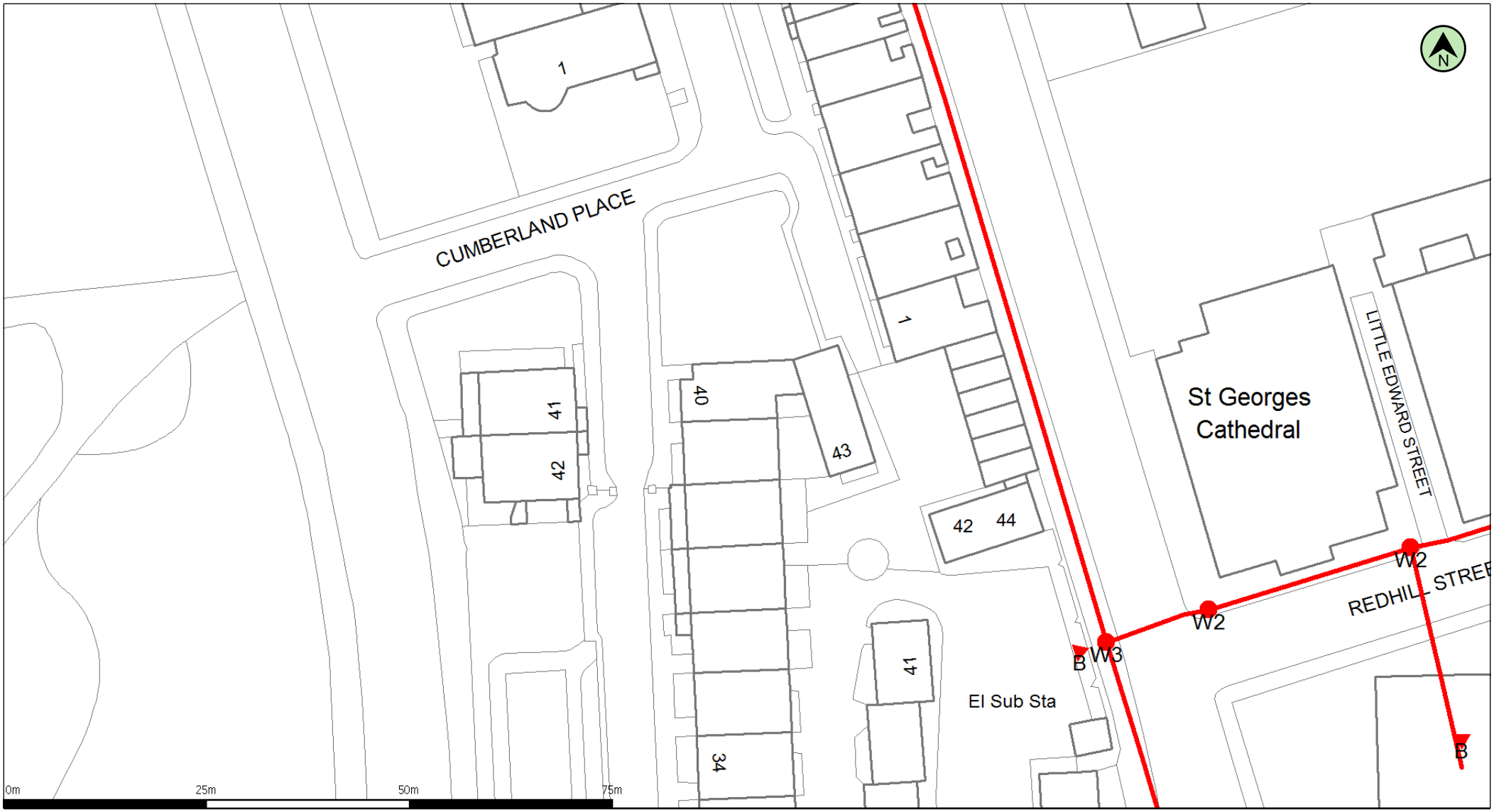

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Duct, Trench

Chamber

Cabinet

miridula.rai@virginmedia.co.uk

Virgin media

Asset Location Search

Soiltechnics Limited
Cedar Barn Walgrave,Cedar Barn

NORTHAMPTON
NN6 9PY

Search address supplied 40
Chester Terrace
London

Your reference STM3174A

Our reference ALS/ALS Standard/2015_3051490

Search date 26 May 2015

You are now able to order your Asset Location Search requests online by visiting
www.thameswater-propertysearches.co.uk

Asset Location Search

Search address supplied: 40, Chester Terrace, London,

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This searchprovides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0845 070 9148, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk
Web: www.thameswater-propertysearches.co.uk

Asset Location Search

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an ‘as constructed’ record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies.

For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and

pressure test to be carried out for a fee.

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.

Asset Location Search

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0845 850 2777
Email: developer.services@thameswater.co.uk

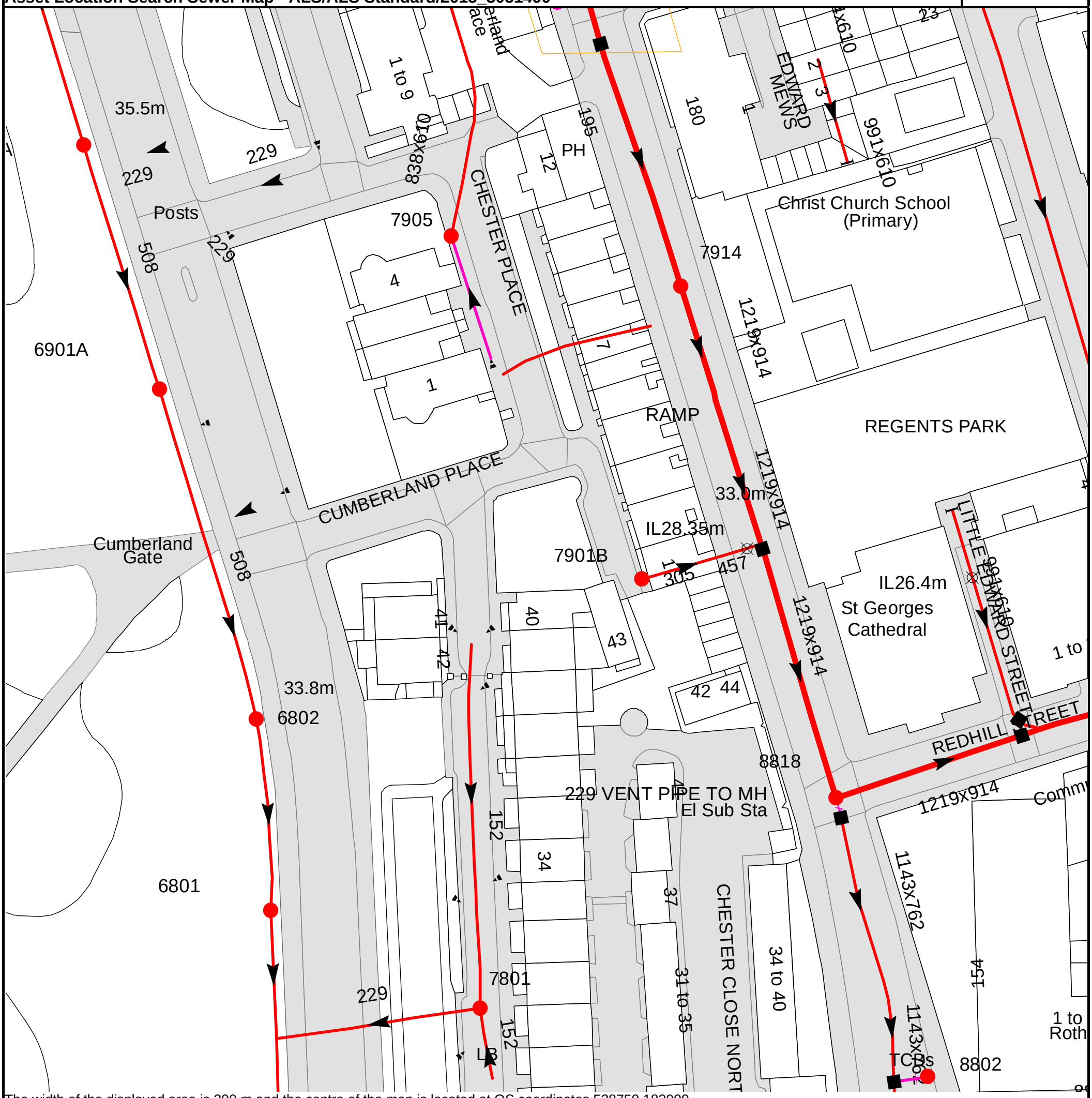
Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0845 850 2777
Email: developer.services@thameswater.co.uk

Asset Location Search Sewer Map - ALS/ALS Standard/2015_3051490



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 528750,182909

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
7901B	n/a	28.71
6901A	34.95	33.02
7914	33.31	25.03
7905	n/a	n/a
6902A	35.53	33.55
8802	n/a	n/a
7801	33.31	31.85
6801	33.24	31.7
8818	32.33	23.62
6802	33.71	32.41

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

ALS Sewer Map Key

Public Sewer Types (Operated & Maintained by Thames Water)

Foul: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

Trunk Surface Water

Trunk Foul

Storm Relief

Trunk Combined

Vent Pipe

Bio-solids (Sludge)

Proposed Thames Surface Water Sewer

Proposed Thames Water Foul Sewer

Gallery

Foul Rising Main

Surface Water Rising Main

Combined Rising Main

Sludge Rising Main

Proposed Thames Water Rising Main

Vacuum

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

Air Valve

Dam Chase

Fitting

Meter

Vent Column

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

Control Valve

Drop Pipe

Ancillary

Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol, Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

Outfall

Undefined End

Inlet

Other Symbols

Symbols used on maps which do not fall under other general categories

Public/Private Pumping Station

Change of characteristic indicator (C.O.C.I.)

Invert Level

Summit

Areas

Lines denoting areas of underground surveys, etc.

Agreement

Operational Site

Chamber

Tunnel

Conduit Bridge

Other Sewer Types (Not Operated or Maintained by Thames Water)

Foul Sewer

Surface Water Sewer

Combined Sewer

Gulley

Culverted Watercourse

Proposed

Abandoned Sewer

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.

2) All measurements on the plans are metric.

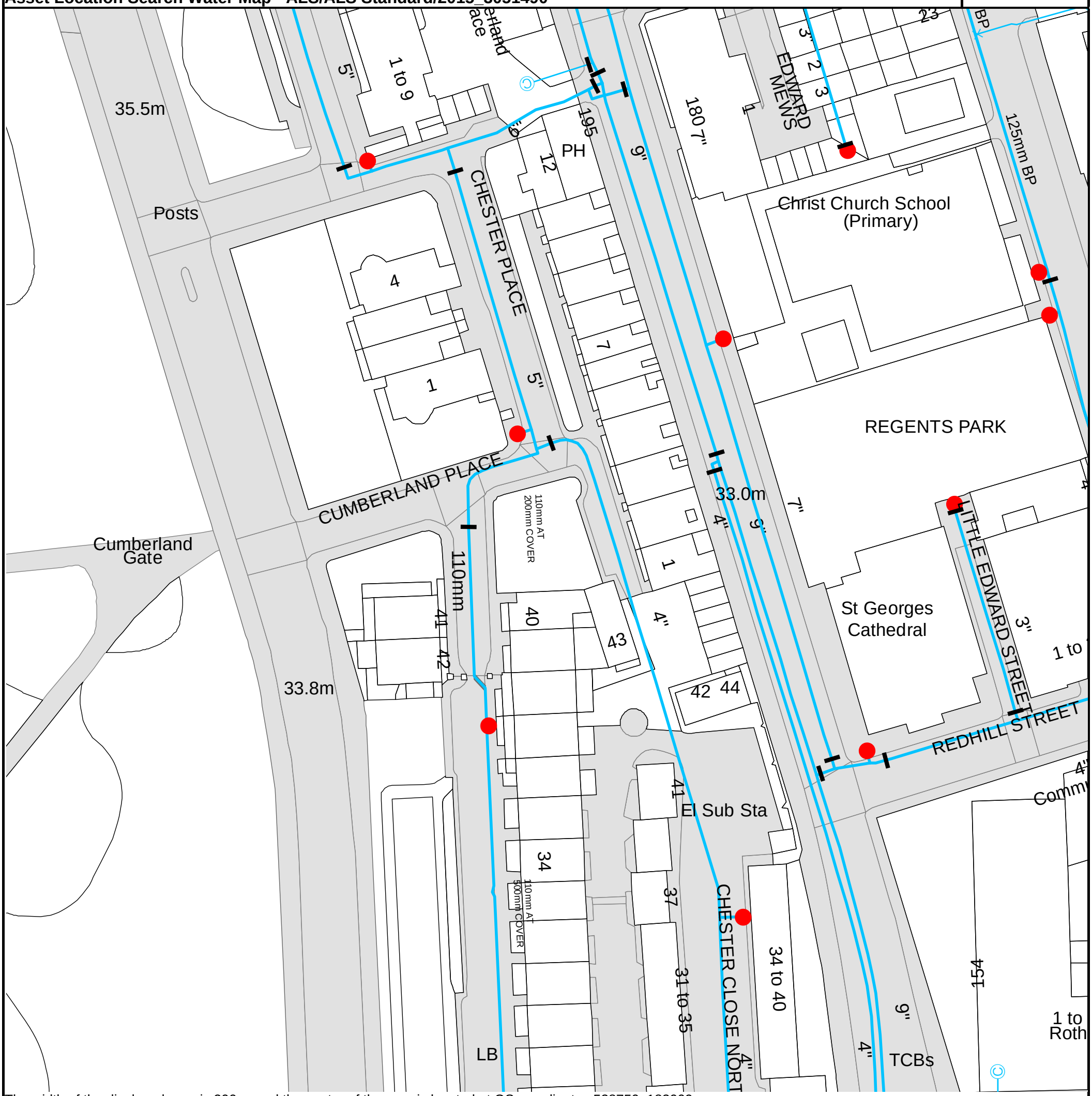
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.

4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

5) 'na' or '0' on a manhole level indicates that data is unavailable.

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in milimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Insight on 0845 070 9148.

Asset Location Search Water Map - ALS/ALS Standard/2015_3051490



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 528750, 182909.

ALS Water Map Key

Water Pipes (Operated & Maintained by Thames Water)

4"

Distribution Main: The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.

16"

Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.

3" SUPPLY

Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties.

3" FIRE

Fire Main: Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.

3" METERED

Metered Pipe: A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.

Transmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.

Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

Symbol indicating what happens at the end of a water main.

- Blank Flange
- Capped End
- Emptying Pit
- Undefined End
- Manifold
- Customer Supply
- Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Other Water Pipes (Not Operated or Maintained by Thames Water)

Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.

Private Main: Indiates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
4. Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
5. In case of dispute TWUL`s terms and conditions shall apply.
6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
8. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800

If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to him at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	**BACS Payment**	**Telephone Banking**	**Cheque**
Call **0845 070 9148** quoting your invoice number starting CBA or ADS.	Account number **90478703** Sort code **60-00-01** A remittance advice must be sent to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.** or email **ps.billing@thameswater.co.uk**	By calling your bank and quoting: Account number **90478703** Sort code **60-00-01** and your invoice number	Made payable to '**Thames Water Utilities Ltd**' Write your Thames Water account number on the back. Send to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW** or by DX to **151280 Slough 13**

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.

Search Code

IMPORTANT CONSUMER PROTECTION INFORMATION

This search has been produced by Thames Water Property Searches, Clearwater Court, Vastern Road, Reading RG1 8DB, which is registered with the Property Codes Compliance Board (PCCB) as a subscriber to the Search Code. The PCCB independently monitors how registered search firms maintain compliance with the Code.

The Search Code:

- provides protection for homebuyers, sellers, estate agents, conveyancers and mortgage lenders who rely on the information included in property search reports undertaken by subscribers on residential and commercial property within the United Kingdom
- sets out minimum standards which firms compiling and selling search reports have to meet
- promotes the best practise and quality standards within the industry for the benefit of consumers and property professionals
- enables consumers and property professionals to have confidence in firms which subscribe to the code, their products and services.

By giving you this information, the search firm is confirming that they keep to the principles of the Code. This provides important protection for you.

The Code's core principles

Firms which subscribe to the Search Code will:

- display the Search Code logo prominently on their search reports
- act with integrity and carry out work with due skill, care and diligence
- at all times maintain adequate and appropriate insurance to protect consumers
- conduct business in an honest, fair and professional manner
- handle complaints speedily and fairly
- ensure that products and services comply with industry registration rules and standards and relevant laws
- monitor their compliance with the Code

Complaints

If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure. If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award compensation of up to £5,000 to you if he finds that you have suffered actual loss as a result of your search provider failing to keep to the Code.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs or to the PCCB.

TPOs Contact Details

The Property Ombudsman scheme
Milford House
43-55 Milford Street
Salisbury
Wiltshire SP1 2BP
Tel: 01722 333306
Fax: 01722 332296
Email: admin@tpos.co.uk

You can get more information about the PCCB from www.propertycodes.org.uk

PLEASE ASK YOUR SEARCH PROVIDER IF YOU WOULD LIKE A COPY OF THE SEARCH CODE

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WELL	DESCRIPTION	LEGEND	DEPTH (m)	WATER STRIKE	TEST RESULTS TYPE/ DEPTH (m)	TEST RESULTS RESULT	SAMPLING FROM (m)	SAMPLING TO (m)	SAMPLING TYPE
	Dark brown slightly sandy slightly gravelly silty CLAY. Gravel consists of flint and occasional brick. MADE GROUND						0.00	0.20	D
	High strength brown and light brown slightly gravelly silty CLAY. Gravel consists of occasional brick. Occasional roots up to 30mm diameter in size observed. MADE GROUND		0.40		PP 0.50	150	0.50		D
					PP 0.70	100			
					PP 0.90	75			
	High becoming very high strength light brown slightly gravelly CLAY. Gravel consists of siltstone. LONDON CLAY FORMATION		1.00		PP 1.10	125	1.00		D
					PP 1.30	113			
					PP 1.50	113			
					PP 1.70	113			
					PP 1.90	113			
					PP 2.10	100	2.00		D
					PP 2.30	113			
					PP 2.50	113			
					PP 2.70	113			
					PP 2.90	113			
					PP 3.10	113	3.00		D
					PP 3.30	113			
					PP 3.50	138			
					PP 3.70	125			
					PP 3.90	125			
					PP 4.10	125	4.00		D
					PP 4.30	138			
					PP 4.50	150			
					PP 4.70	125			
					PP 4.90	138			
	CONTINUED ON NEXT SHEET								

Notes: For Dynamic Cone Penetration testing, refer to DCP01.

Ground level (mAOD)

Co-ordinates

Title
Driven tube sampler borehole record

Surface breaking
No

Groundwater observations
No groundwater encountered.

Date of excavation (range if applicable)
05/06/2015

Appendix
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Location plan on drawing number
02

DTS01

40 Chester Terrrace
London

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WELL	DESCRIPTION	LEGEND	DEPTH (m)	WATER STRIKE	TEST RESULTS		SAMPLING		
					TYPE/ DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
					PP 5.10	150	5.00		D
					PP 5.30	150			
					PP 5.50	163			
					PP 5.70	163			
					PP 5.90	175			
	...from 6m depth, becoming brown in colour.						6.00		D
					PP 6.10	175			
					PP 6.30	175			
					PP 6.50	188			
					PP 6.70	188			
					PP 6.90	175			
					PP 7.10	175	7.00		D
					PP 7.30	188			
					PP 7.50	188			
					PP 7.70	200			
					PP 7.90	200			
	BOREHOLE TERMINATED AT 8.00m		8.00						

Notes: For Dynamic Cone Penetration testing, refer to DCP01.

Ground level (mAOD)

Co-ordinates

Title
Driven tube sampler borehole record

Surface breaking
No

Groundwater observations
No groundwater encountered.

Date of excavation (range if applicable)
05/06/2015

Appendix
-

Location plan on drawing number
02

DTS01

Report ref: STJ2117T-

Revision: 02