soils LIMITED

Basement Impact Assessment

at
12 Platt's Lane, London NW3 7NR

for
Orly Weinberger

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This is not a valid document for use in the design of the project unless it is titled Final in the document status box.

Current regulations and good practice were used in the preparation of this report. The recommendations given in this report must be reviewed by an appropriately qualified person at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.

Commission

Soils Limited was commissioned by Orly Weinberger to undertake a Basement Impact Assessment on land at 12 Platt's Lane, London NW3 7NR. The scope of the investigation was outlined in the Soils Limited quotation reference Q17659/NJL/1, dated 25th May 2016.

This document comprises the Basement Impact Assessment and incorporates the results, discussion and conclusions.

Standards

The site works, soil descriptions and geotechnical laboratory testing was undertaken in accordance with the following standards:

- BS EN 1997-1:2004+A1:2013 Eurocode 7. Geotechnical design
- BS EN ISO 14688-1:2002+A1:2013 - Geotechnical investigation and testing - Identification and description
- BS EN ISO 14688-2:2004+A1:2013 - Geotechnical investigation and testing - Principles for a classification

The geotechnical laboratory testing was performed by GEO Site & Testing Services Ltd (GSTL) in accordance with the methods given in BS 1377:1990 Parts 1 to 8 and their UKAS accredited test methods.

For the preparation of this report, the relevant BS code of practice was adopted for the geotechnical laboratory testing technical specifications, in the absence of the relevant Eurocode specifications (ref: ISO TS 17892).

The chemical analyses were undertaken by QTS Environmental Limited in accordance with their UKAS and MCERTS accredited test methods or their documented in-house testing procedures. This investigation did not comprise an environmental audit of the site or its environs.

Trial hole is a generic term used to describe a method of direct investigation. The term trial pit, borehole or window sample borehole implies the specific technique used to produce a trial hole.

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Section 1 Introduction

1.1 Objective of Investigation

Soils Limited was commissioned by Orly Weinberger to undertake a Basement Impact Assessment (BIA). The objective of this investigation was to establish the impact and risk of the proposed basement at 12 Platt's Lane, London NW3 7NR.

The report provides details on the ground and groundwater conditions onsite and presents calculations to determine the potential impact of the proposed development on neighbouring properties. In addition, the report provides a qualitative risk assessment of the potential impacts the proposed development might have on groundwater levels, surface water flows and flooding.

It is recognised that any Basement Impact Assessment is a live document and that further detailed assessments will be ongoing, if appropriate, as the design and construction progresses.

1.2 Limitations and Disclaimers

Soils Limited was commissioned by Orly Weinberger to undertake a Basement Impact Assessment to supply a risk based impact assessment with regard to hydrology, hydrogeology and land stability.

Soils Limited disclaims any responsibility to the Client and others in respect of any matters outside the scope of the above.

The report is personal and confidential to the Client and Soils Limited accept no responsibility of whatever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report wholly at its own risk.

The Client may not assign the benefit of the report or any part to any third party without the written consent of Soils Limited.

The ground is a product of continuing natural and artificial processes. As a result, the ground will exhibit a variety of characteristics that vary from place to place across a site, and also with time. Whilst a ground investigation will mitigate to a greater or lesser degree against the resulting risk from variation, the risks cannot be eliminated.

Current regulations and good practice were used in the preparation of this report. An appropriately qualified person must review the recommendations given in this report at the time of preparation of the scheme to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.

Section 2 Site Context

2.1 Location

The site was located at 12 Platt's Lane, London NW3 7NR. The approximate O.S Land Ranger Grid Reference was TQ 25245 85963.

The site location plan is given in Figure 1.

2.2 Site Details

The site comprised a semi-detached three storeys residential building. To the front of the building there was hard landscaping, represented by the access driveway, and a flowerbed with a couple of mature and immature trees were observed. Soft landscaping was present to the rear of the building, where hedges and mature trees were found.

The site was bordered by 10 Platt's Lane to the south-west, by 14 Platt's Lane to the north-east, by Platt's Lane from the south-west to the north-east and from the south-east to the north-west by St. Luke's Church and by the tennis pitches of the West Heath Lawn Tennis Club.

2.3 Proposed Development

The proposed redevelopment is to comprise the construction of a basement with light wells localised to the front and to the north-east flank of the building. The proposed basement is to be used for locating kitchen, living room, playroom, gym, yoga room, shower and plant room.

The top of the proposed basement slab would be about 3.00m below the external ground level, therefore the proposed excavations for the basement slab construction were anticipated to a depth of approximately 3.40 – 3.60m below existing ground level.

The proposed plans showed no areas of soft landscaping.

In compiling this report reliance was placed on drawings no. C8415/1 and C8415/2, dated May 2016 and prepared by Laser Surveyors, and on the architectural drawings nos. 1610-PA01 Rev.6, 1610-PA02 Rev.7, 1610-PA03 Rev.4 and 1610-PA04 Rev.4 dated May – July 2016 and prepared by XUL Architecture. All the drawings were provided by the Client. Any change or deviation from the scheme outlined in the drawing could invalidate the recommendations presented within this report. Soils Limited must be notified about any such changes.

The proposed development layout as provided by the client is included in Appendix D.

2.4 Topography

The site was generally flat and level. The site was located within a hillside setting, presenting a downward sloping from the north/north-east to the south/south-west lower than 7% in the area of interest.

2.5 Published Geological Data

The 1:50,000 BGS map showed the site to be located directly on bedrock of the Claygate Member with no overlying superficial geology recorded. The soils of the London Clay Formation and of the Bagshot Formation were also noted as constituting the bedrock at very short distance from the site.

2.5.1 Claygate Member

The Claygate Member comprises dark grey clays with sand laminae, passing up into thin alternations of clays, silts and fine-grained sand, with beds of bioturbated silt. Ferruginous concretions and septarian nodules occur in places. The presence of fossils is also recorded within the Claygate Member.

2.5.2 London Clay Formation

The London Clay Formation comprises stiff grey fissured clay, weathering to brown near surface. Concretions of argillaceous limestone in nodular form (Claystones) occur throughout the formation. Crystals of gypsum (Selenite) are often found within the weathered part of the London Clay, and precautions against sulphate attack to concrete are sometimes required.

In the north London area, the upper part of the London Clay has been disturbed by periglacial processes and may contain pockets of sand and gravel.

2.5.3 Bagshot Formation

The Bagshot Formation is composed of mainly pale yellow-brown to pale grey or white, locally orange or crimson, fine- to coarse-grained sand that is frequently micaceous and locally clayey, with sparse glauconite and sparse seams of gravel. The sands are commonly cross-bedded but some are laminated. Thin beds and lenses of laminated pale grey to white sandy or silty clay or clay ('pipe-clay') occur sporadically, becoming thicker towards the top of the formation. A thick clay bed is included at the top, while a basal bed of gravelly coarse-grained sand is observed. Fossil fauna of mostly marine molluscs and indistinct plant is occasionally observed. The most of organic material has been destroyed by oxidation or dissolution. In places the lower part of the Bagshot Formation includes an interval of bioturbated sandy clay, silt and fine-grained sand overlying a unit of fine- to coarse-grained sand.

2.6 Unpublished Geology

Published information on four boreholes was available in a radius of about 300m from the site. Soils described as Made Ground were described in the majority of the boreholes, generally observed from ground level to depths ranging from 0.60m to 1.40m bgl. The Made Ground typically comprised firm friable brown to dark brown to black to grey mottled sandy gravelly CLAY with occasional brick, ash, concrete, rubble, clinker and coal fragments.

Soils from weathered strata of the London Clay Formation were observed from below the Made ground to depths ranging from 5.50m to 7.50m bgl in three out of the four boreholes available. The soils of the Weathered London Clay Formation comprised firm becoming stiff to very stiff and fissured brown to brown orange to brown grey mottled CLAY with occasional selenite crystals and orange brown stained fissures.

Soils identified as belonging to the Claygate Member were observed in one out of the three boreholes from directly below the Made Ground to a depth of about 5.80m bgl and typically comprised firm becoming stiff grey mottled and brown to light grey brown sandy clayey SILT.

The London Clay Formation was observed in all of the four boreholes at depths ranging from 5.50m to 7.50m bgl to the full depths of the investigation and typically comprised stiff to very stiff and closely fissured dark grey to dark brown silty CLAY with occasional light brown to brown fine sand and silt partings and rare fine gypsum.

2.6.1 Groundwater

Groundwater was generally not reported in the unpublished data. Where observed, it was found at depths ranging from 1.20 m to 2.30m bgl. It must be pointed out that the groundwater levels from unpublished geology may describe conditions that differ from the results of the site investigation.

2.7 Hydrology

The nearest surface water feature was the Golders Hill Chain of ponds recorded ~750m to the north-east of the site.

The site was recorded at an elevation of approximately 95 m AOD, and the ponds of the Golders Hill Chain were at approximately 102 m AOD.

2.8 Hydrogeology

The Environment Agency has produced an aquifer designation system consistent with the requirements of the Water Framework Directive. The designations have been set for superficial and bedrock geology and are based on the importance of aquifers for potable water supply and their role in supporting water bodies and wetland ecosystems.

Information presented by the Environment Agency classifies the Claygate Member bedrock as a Secondary 'A' aquifer and the London Clay Formation bedrock as unproductive strata.

Any water infiltrating the London Clay Formation will generally tend to flow vertically downwards at a very slow rate. Due to the predominantly cohesive nature of the soils, the groundwater flow rate is anticipated to be very slow. Published permeability data for the London Clay Formation indicates the horizontal permeability to generally range between 10^{-10} m/s and 10^{-8} m/s, with an even lower vertical permeability.

Vertical permeability within the Claygate is slow in view of the presence of layers of clay, but horizontal permeability is likely to be one or two orders of magnitude higher, especially if sandy lenses will be encountered.

2.9 Flood Risk

The site does not lie within a flood risk zone. The EA also does not note the presence of any surface water flood risks associated with drainage issues in the area.

The site falls outside from the Critical Drainage areas of the London Burough of Camden, but, as reported in the LBC Strategic Flood Risk Assessment, Platt's Lane was highlighted as a street suffering flooding from surface water in 2002.

2.10 Underground Infrastructure

There is no known information with regards to buried infrastructure in close proximity to the site.

There are no reported Network Rail or London Underground Limited assets within the site's vicinity.

Section 3 Screening

3.1 Introduction

Soils Limited has adopted a screening process to meet the requirements of the London Borough of Camden (LBC), Camden Planning Guidance for Basements and Lightwells CPG4 to identify potential risks to the ground, groundwater/surface water, land stability, adjacent properties and infrastructure. The assessment is undertaken in the form of tabulated questions, setting out relevant considerations for conditions in the borough. Where simple answers may be provided without further analysis, these are provided.

A number of screening tools are included in the Arup document (Ref: Camden geological, hydrogeological and hydrological study, Guidance for subterranean Development, Issue01/November 2010), which includes a series of questions within a screening flowchart for three categories; surface water flow, groundwater flow and land stability. Responses to the questions are tabulated below.

3.2 Subterranean (Groundwater) Screening Assessment

The response to the Subterranean (Groundwater) Screening Assessment is given in Table 3.1.

Table 3.1 – Subterranean (Groundwater) Screening

Question	Response	Action Required
1a. Is the site located directly above an aquifer?	Yes Secondary 'A' Aquifer	Dewatering will be potentially needed with the risk of potential ground settlement. The zone of settlement will extend from the dewatering zone, and thus could extend beyond a sites boundary and affect neighbouring structures. Monitoring needed. Groundwater flow will not be adversely affected, as flow around and below the basement will not be denied.
1b. Will the proposed basement extend beneath the water table surface?	Yes	Groundwater monitoring to be completed as part of the design process to confirm the level of the water table. The basement design would take into account the potential of water ingress over the lifetime of the structure and would include appropriate water proofing design.

Question	Response	Action Required
2. Is the site within 100 m of a watercourse, well (used/ disused) or potential spring line?	No	None
3. Is the site within the catchment of the pond chains of Hampstead Heath?	No	None
4. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	No Construction of lightwell on the flank of the building.	None: the change in ratio due to the presence of lightwell is negligible. Front lightwell and rear patio are in previously paved areas. Rear garden still existing.
5. As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?	No	None
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 or spring line?	No	None

3.3 Stability Screening Assessment

The response to the Stability Screening Assessment is given in Table 3.2.

Table 3.2 – Stability Screening

Question	Response	Action Required
1. Does the existing site include slopes, natural or manmade, greater than 7°?	No	None
2. Will the proposed re-profiling of landscaping at the site change slopes at the property boundary to more than 7°?	No	None
3. Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7°?	No	None
4. Is the site within a wider hillside setting in which the general slope is greater than 7°?	No	None
5. Is the London Clay the shallowest strata at the site?	No	None
6. Will any trees be felled as part of the proposed development and / or are any works proposed within any tree protection zones where trees are to be retained?	No	None
7. Is there a history of seasonal shrink-swell subsidence in the local area and / or evidence of such effects at the site?	Unknown	Investigation Not in the purpose of the BIA
8. Is the site within 100 m of a watercourse or potential spring line?	No	None
9. Is the site within an area of previously worked ground?	No	None: no evidence of previous pits, cuttings, etc.

Question	Response	Action Required
10. Is the site within an aquifer?	Yes Secondary 'A' Aquifer	Dewatering will be potentially needed with the risk of potential ground settlement. The zone of settlement will extend from the dewatering zone, and thus could extend beyond a sites boundary and affect neighbouring structures. Monitoring needed. Groundwater flow will not be adversely affected, as flow around and below the basement will not be denied.
11. Is the site within 50 m of the Hampstead Heath ponds?	No	None
12. Is the site within 5 m of a highway or pedestrian right of way?	No	None
13. Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	Yes	Basement Impact Assessment
14. Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines?	No	None

3.4 Surface Flow and Flooding Screening Assessment

The response to the Surface Flow and Flood Screening Assessment is given in Table 3.3.

Table 3.3 – Surface Flow and Flooding Screening

Question	Response	Action Required
1. Is the site within the catchment of the pond chains of Hampstead Heath?	No	None
2. As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route?	No	None
3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	No Construction of lightwell on the flank of the building.	None: the change in ratio due to the presence of lightwell is negligible. Front lightwell and rear patio are in previously paved areas. Rear garden still existing.
4. Will the proposed basement development result in changes to the profile of the inflows (instantaneous and long term) of surface water	No	None

being received by adjacent properties or downstream watercourses?		
5. Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	No	None
6. Is the site in an area known to be at risk from surface water flooding?	Yes No according to CDA and SFRA. One single event recorded in 2002	None: the construction of the basement does not increase the risk of surface water flooding.

3.5 Summary

Based on the screening exercise, further stages of the basement impact assessment are required. A summary of the basement impact assessment requirements has been provided in Table 3.4, Table 3.5 and Table 3.6.

Table 3.4 – Subterranean (Groundwater Flow)

Item	Description
1a	Dewatering will be potentially needed with the risk of potential ground settlement. The zone of settlement will extend from the dewatering zone, and thus could extend beyond a sites boundary and affect neighbouring structures. Monitoring needed. Groundwater flow will not be adversely affected, as flow around and below the basement will not be denied.
1b	Groundwater monitoring to be completed as part of the design process to confirm the level of the water table. The basement design would take into account the potential of water ingress over the lifetime of the structure and would include appropriate water proofing design.

Table 3.5 – Ground Movement (Land stability)

Item	Description
7	Investigation to assess the risk for seasonal shrink-swell subsidence (not in the purpose of the present BIA)
10	Dewatering will be potentially needed with the risk of potential ground settlement. The zone of settlement will extend from the dewatering zone, and thus could extend beyond a sites boundary and affect neighbouring structures. Monitoring needed. Groundwater flow will not be adversely affected, as flow around and below the basement will not be denied.
13	BIA for the effects of construction on the neighbouring buildings

Table 3.6 – Surface Flow and Flooding

Item	Description
6	None: the construction of the basement does not increase the risk of surface water flooding.

Section 4 Intrusive Investigation

4.1 Ground Conditions

On the 17th June 2016, three windowless sampler boreholes (WS1, WS2, WS3) were attempted on site, at locations selected by Soils Limited, where access could be gained and no live services were identified, adjacent to the footprint of the proposed redevelopment. The depth investigated ranged from 5.00m (WS3) to 5.80m bgl (WS1 and WS2).

Dynamic probing (DP1 and DP2) was undertaken prior and adjacent to the respective boreholes (WS1 and WS2) using a Super Heavy Dynamic Probe (DPSH) to depths ranging from 3.00m and 10.00m bgl.

Standpipe monitoring wells were installed in all of the three boreholes to a depth of 5.0 metres bgl to allow long-term groundwater levels monitoring, on one occasion, following agreement with the client.

On 10th August 2016, three trial pits for foundation exposure tests were dug at locations selected by the Client and modified on site due to site constraints. After the tests, the trial pits were then backfilled with arisings.

The borehole locations are outlined in Figure 3.

Table 4.1 outlines the depths of each trial-hole.

Table 4.1 – Investigatory Depths of Trial-holes

Trial-hole (WS)	Final Depth (m bgl)	Trial-hole (WS)	Final Depth (m bgl)
WS1	5.80	DP2	3.00
WS2	5.80	FE1	1.00
WS3	5.00	FE2	0.65
DP1	10.00	FE3	0.90

Ground conditions encountered are presented below; detailed information including logs are presented in Appendix A:

Made Ground (MG)
Claygate Member (CLGB)

Table 4.2 summarises the ground conditions encountered.

Table 4.2 – Ground Conditions

Stratum	Epoch	Depth Range (m bgl)		Thickness (m)	Description
		Top	Bottom		
MG	Recent	GL	0.30 – 1.40	1.00	Pavement and fine to coarse concrete and brick over soft yellow brown to grey/brown slightly clayey gravelly SAND to silty CLAY to soft light brown to light brown mottled light grey slightly sandy slightly gravelly to slightly sandy gravelly CLAY to soft greyish brown to dark grey slightly sandy SILT to CLAY.
CLGB	Palaeogene	0.30 – 1.40	5.00[1] – 6.00[1]	Not proven[2]	Soft to firm to stiff light brown mottled light grey and orange to brown mottled light grey and orange to grey to greyish brown CLAY to slightly sandy slightly silty to sandy CLAY.

Note: [1] Final depth of trial hole. [2] Base of strata not encountered.

4.1.1 Made Ground

Made Ground was encountered in five out of the six trial holes from ground level to depths ranging from 0.30m to 1.40 m bgl and comprised pavement and fine to coarse concrete and brick over soft yellow brown to grey/brown slightly clayey gravelly SAND to silty CLAY to soft light brown to light brown mottled light grey slightly sandy slightly gravelly to slightly sandy gravelly CLAY to soft greyish brown to dark grey slightly sandy SILT to CLAY. Sand was fine to medium. Gravel was fine to medium sub-angular brick and concrete with occasional to rare fine clinker fragments. Rare to occasional fine ash fragments.

4.1.2 Claygate Member

Soils described as Claygate Member were found in all of the six trial holes directly beneath the Made Ground and comprised soft to firm to stiff light brown mottled light grey and orange to brown mottled light grey and orange to grey to greyish brown CLAY to slightly sandy slightly silty to sandy CLAY with occasional to frequent lenses and pockets of silty fine sand. Sand was fine. Soft consistency was noted in particular in the area of borehole WS3.

4.1.3 Roots

Fine roots and rootlets were encountered in three out of the six trial holes to depths ranging from 1.00m (WS1) to 4.00m bgl (WS3). The depth to roots and/or of desiccation may vary from that found during the investigation. The client is responsible for establishing the depth to roots and/or of desiccation on a plot by plot basis prior to the construction of foundations. Supplied site surveys may not include substantial shrubs or bushes and is also unlikely to have data or any trees, bushes or shrubs removed prior to or following the site survey.

Where trees are mentioned in the text this means existing trees, substantial bushes or shrubs, recently removed trees (approximately 20 years to full recovery on cohesive soils) and those planned as part of the site landscaping).

4.1.4 Groundwater

Groundwater equilibrium conditions may only be conclusively established if a series of observations are made via groundwater monitoring wells. Groundwater monitoring wells were installed into all of the three windowless sampler borehole to 5.0 m bgl.

Groundwater was recorded during the site investigation at depths ranging from 3.00m (WS3) to 4.90m bgl (WS1). The intrusive investigation was carried out in June (2015), when groundwater levels should be lowering towards their annual minimum (i.e. lowest) elevation which typically occurs around September.

Further groundwater monitoring was conducted within the 3No. standpipes installed on site following completion of site works and has been presented in Table 4.3. Not all the wells were accessible during the site visits because of the ongoing site works, causing some of the locations to be covered with spoil or damaged by others.

Table 4.3 - Groundwater Monitoring

Trial Hole	Depth to Water (m bgl)		
	17/06/2016	15/07/2016	10/08/2016
WS1	4.90	2.20	2.95
WS2	4.00	- [1]	- [2]
WS3	3.00	1.30	- [1]

Note: [1] Well not accessible. [2] Well damaged.

Groundwater was observed at shallow depth, rising from its lowest elevation recorded at 4.90m bgl during the intrusive investigation to 1.30m bgl in July 2016. That behaviour was considered a consequence of the permeability of the soils of the Claygate Member, characterised by very low vertical values, but potentially also by higher horizontal permeability due to the presence of sandy layers.

4.2 Foundation Exposures

Foundations exposures were carried out in FE1, FE2 and FE3. Different locations were initially selected by the Client, but slight relocations were needed due to site constraints. The final locations were agreed with the Client. A concrete foundation slab was encountered at a depth between 0.61m and 0.90m bgl.

Trial pits FE1 and FE2 were dug to the front of the building, indicatively under the bay windows, while FE3 was dug to the north-east flank of the building. The trial holes locations were reported in Figure 3.

No proper foundation was observed within trial pit FE1. According to information provided by the Client, in the area of the trial pit a ramp down into a garage was previously located.

In trial pits FE2 and FE3 brickworks were observed to depths ranging from 0.28m and 0.57m bgl and overlaying mass concrete blocks, potentially identifying previous trench fills or local underpins.

The full foundations sketched for FE1 and FE2 are presented in Appendix A.1.

Section 5 Discussion of Geotechnical In-Situ and Laboratory Testing

5.1 Dynamic Probe Tests

Dynamic probing (DPSH) was undertaken at two locations (DP1 and DP2) adjacent and prior to the drilling of the respective windowless sampler boreholes to depths ranging from 3.00m (DP2) to 10.00m bgl (DP1). The results were converted to equivalent SPT "N" values based on dynamic energy using commercial computer software (Geostru). The results were then interpreted based on the classifications outlined in Appendix B.1, Table B.1.1 to Table B.1.3.

The Claygate Member recorded equivalent SPT "N" values between 3 and 24. The cohesive soils of the Claygate Member were classified as very low to high strength with inferred undrained cohesive strength of 15kPa to 120kPa.

A full interpretation of the DPSH tests are outlined in Appendix B.2, Table B.2.1.

5.2 Atterberg Limit Tests

Atterberg Limit test were performed on six sample from the Claygate Member. The results were classified in accordance with BRE Digest 240 and NHBC Standards Chapter 4.2.

The soils of the Claygate Member were classified as medium volume change potential in accordance with both BRE Digest 240 and NHBC Standards Chapter 4.2.

A full interpretation of the Atterberg Limit tests is outlined in Table B.2.2, Appendix B.2 and the laboratory report in Appendix B.3.

5.3 Sulphate and pH Tests

Three samples were taken from the Claygate Member (WS1:2.30m bgl; WS2:1.70m bgl; WS3:3.00m bgl) for water soluble sulphate (2:1) and pH testing in accordance with Building Research Establishment Special Digest 1, 2005, 'Concrete in Aggressive Ground'.

The tests recorded water soluble sulphate between 11mg/l and 23mg/l with pH values of 7.5 to 8.0.

The significance of the sulphate and pH Test results are discussed in Section 6.2 and the laboratory report in Appendix B.3.

Section 6 Foundation Design

6.1 Allowable Bearing Values

Assuming a strip foundation, 5.00m x 0.75m in plan, the recommended allowable bearing pressure for the Claygate Member at basement formation level is 95kPa. The evaluation of the expected settlements was reported in detail in Section 7.

6.2 Subsurface Concrete

Sulphate concentration measured in 2:1 water/soil extracts fell into Class **DS-1** of the BRE Special Digest 1 2005, *'Concrete in Aggressive Ground'.* Table C2 of the Digest indicated ACEC (Aggressive Chemical Environment for Concrete) site classifications of **AC-1**. The pH of the soils tested ranged between 7.5 and 8.0. The classification given was determined using the mobile groundwater case, as groundwater was encountered. The laboratory results are presented in Appendix B.3.

Concrete to be placed in contact with soil or groundwater must be designed in accordance with the recommendations of Building Research Establishment Special Digest 1 2005, *'Concrete in Aggressive Ground'* taking into account any possible exposure of potentially pyrite bearing natural ground and the pH of the soils.

Section 7 Basement Impact Assessment – Land/Slope Stability

7.1 Introduction

This section provides calculations to determine ground movements that may result from the construction of the additional basement level and to assess how these may affect adjacent structures.

Movements are likely to occur through the following mechanisms:

7.1.1 Heave movements

The excavation will unload the Claygate Member and the London Clay Formation and will cause a degree of heave, and/or settlement after construction.

7.1.2 Underpin Settlement

Construction of underpins can lead to settlement. With good workmanship, this would be expected to be limited to 5mm of settlement per underpin 'lift'. Settlement may potentially also occur where foundation loads are transferred to deeper, previously unload, soils.

7.2 Ground Movement arising from Basement Excavation

The soils at formation level will be subject to stress relief during excavation, as up to about 3.60m of overburden is to be removed under the house, the rear garden and the lightwells. This is likely to give rise to a degree of heave over the short term and potential heave or settlement over the longer term as structural loads are reapplied.

A ground movement assessment has been undertaken using OASYS Limited PDISP (Pressure induced DISPlacement analysis) analysis software. PDISP assumes that the ground behaves as an elastic material under loading, with movements calculated based on the applied loads and the soil stiffness (E_u and E') for each stratum input by the user. PDISP assumes perfectly flexible loaded areas and as such tends to overestimate movements in the centre of loaded areas and underestimate movements around the perimeters. Notwithstanding this, the structure has not been modelled as an evenly loaded flexible raft and loads from underpins around the perimeter have been accounted for and modelled in the analysis. The calculated movements are therefore, not considered to be underestimated.

The proposed development gives rise to a net unloading of the underlying strata both during construction and over the long term. The excavation will unload the soils under the house by approximately 61kPa, assuming that the ground conditions encountered during the site investigation are laterally continuous across the extent of the proposed new basement. These values assume a typical bulk unit weight of 16.6kN/m^3 and a saturated unit weight of 18.4kN/m^3 for the soils above the foundation level formation. The combined effects of both the immediate undrained unloading and the long-term drained recovery of pore pressures have been analysed.

7.2.1 Short Term Heave

Calculated short term heave was divided by a factor equal to three, as suggested by Simons and Menzies (2000) in order to take into account the increase in stiffness along a path of unloading and reloading.

Maximum short term heave is predicted to be of the order of -4.00mm, occurring towards the rear patio and the front lightwell. The movement decreases towards the underpins located along the boundary lengths of the basement. Settlement was noted to occur within these areas up to a maximum of -1.50mm due to the net increase of surcharged load. The movement decreases with negligible movement at 5m from the boundary underpins and towards the front of the property.

7.2.2 Long Term Ground Movement

Long term movements depend on the almost contemporary development of the increase of heave (negative settlements) in the long term due to the reduction in stiffness of the soils and the development of (positive) settlements due to the construction of the basement and the application of the loads from the upper structure to greater depths. Those movements develop contemporary and cannot be distinguished.

Maximum long term ground movements are of the order of -21.00mm, occurring in the rear patio and the front lightwell. The movement decreases to an average of 1.00mm around the party wall and negligible movement at 5.0m from the excavation. A maximum settlement of 2.10mm was noted at the underpins face along the property boundaries. A contour plot showing the variation of long term movements across the entire basement footprint is presented in Figure 8.

7.2.3 Settlement Due To Workmanship

The heave/settlement assessment undertaken within PDisp assumes perfect workmanship in the underpin construction and does not allow for settlement of the dry pack between existing footings and the new concrete. With good construction practice, these would be expected to not exceed 5.00mm (assuming 5.00mm per underpin lift). This value will be applied to the overall ground movement and corresponding impact assessment to give a worst case damage category for the adjacent party wall properties.

7.3 Ground Movement Due To Underpin Wall Deflection

The retained height of the underpin wall is to be a maximum of some 3.70m beneath the ground floor, assuming 440mm thick concrete underpins, and taking no account of a liner wall for long-term movements, deflections of the underpins would be expected to be less than 6mm. The calculations were carried out using Wallap. It is assumed that underpins are propped in the temporary condition in order to prevent lateral movement. Over the long-term, temporary props will be eliminated and the underpins will act as a cantilever wall, propped by just the basement floor slab.

Section 8 Damage Category Assessment

8.1 Introduction

These ground movements were considered for assessing the expected potential damage category that the construction of a new basement was expected to induce to the neighbouring properties. The assessment was carried out considering the method described in CIRIA Special Publication 200 (Burland et al., 2001) and CIRIA C580 (Gaba et al., 2003), based upon the method proposed by Burland et al. (2001) and taking into account the works by Burland and Wroth (1974) and Boscardin and Cording (1989).

The general categories of damage entity were summarised in Table 6.1.

Table 8.1 – Classification Of Visible Damage To Walls

Category	Description
0 (Negligible)	Negligible – hairline cracks
1 (Very slight)	Fine cracks that can easily be treated during normal decoration (crack width <1mm)
2 (Slight)	Cracks easily filled, redecoration probably required. Some repointing may be required externally (crack width <5mm)
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 (crack width 5 to 15mm or a number of cracks > 3mm).
4 (Severe)	Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows (crack width 15mm to 25mm but also depends on number of cracks).
5 (Very severe)	This requires a major repair involving partial or complete re-building (crack width usually >25mm but depends on number of cracks).

The London Borough of Camden, Camden Planning Guidance, Basements and Lightwells (CPG4), July 2015 indicates that the design and construction methodology should aim to restrict the damage category to neighbouring properties to not higher than Category 2 damage (slight damage), as it will only imply the risk of aesthetic damages to the buildings.

However, the Council considers that neighbouring residential properties are particularly sensitive to damage, where relatively minor internal damage to a person's home can incur cost and considerable inconvenience to repair and redecorate. The Council therefore will expect BIAs to provide mitigation measures where any risk of damage is identified of Burland category 1 (very slight) or higher. Following inclusion of mitigation measures into the proposed scheme the changes in attributes are to be re-evaluated and new net consequences determined.

8.2 Summary of Ground Movements and Evaluation of Relative Deflection

One critical section was identified in the neighbouring property at 10 Platt's Lane. The ground movements reported in Section 6 allowed to estimate a relative deflection not greater than 1.40mm, corresponding to an expected Damage Category of 1 (Very slight). The results were summarised in Table 8.2.

Table 8.2 - Expected Damage Category

Critical Section	Horizontal Movement (mm)	Vertical Deflection (mm)	Horizontal Strain ε_h (%)	Deflection Ratio Δ/L (%)	Damage Category
10 Platt's Lane	<6.00	<1.40	<0.054	0.013	1 (Very slight)

The results consider the effects of good workmanship to increase the potential damage, but it must be pointed out that the use of a good construction control and of a continuous ground monitoring could improve the performances of the structures, with a further minimisation of the construction effects (Ball et al., 2014).

Section 9 Conclusions and Recommendations

9.1 General considerations

The findings of this report are informed by site investigation data and information regarding construction methods, sequence, loading and allowable bearing capacity provided by the client. The analysis is undertaken on the assumption of high quality workmanship.

The analysis is based on site investigation data, particularly within the Claygate Member of the London Clay Formation and regarding to the groundwater depths. Soils Limited must be notified if different conditions will be observed during the construction phase.

The formation level of the basement will be constructed within the Claygate Member, below the seepage level encountered during the ground investigation in one out of the three boreholes.

The observations carried out at the time of the intrusive investigation showed that the supposed foundation level could be positioned below the groundwater. The basement design would take into account the potential of water ingress over the lifetime of the structure and would include appropriate water proofing design as also the presence of appropriate water sumps.

The proposed development will consider a negligible change in the proportion between paved and unpaved areas due to the construction of a small lightwell to the north-east flank of the building. The lightwell to the front and the patio to the rear of the building will be constructed over previously paved areas and will not change the proportion. The effect on surface water flow or flooding can be, as a consequence, considered as negligible.

As the formation level of the basement will be below the level of seepage recorded on site, groundwater control measures may be required to keep isolated underpin excavations dry prior to concrete placement.

9.2 On the Expected Damage Category

The construction of the basement will generate ground movements due to a variety of causes including; heave, settlement, underpin construction and underpin wall deflection during and after excavation. Calculations indicate that these could give rise to a damage category within 'Category 1' (Very slight) for the adjacent property. The above assumes a good standard of workmanship and limiting horizontal deflection of the underpins during construction.

It is recommended that all party wall foundations are propped prior to excavation commencing below them. The underpins should also be propped at regular intervals as construction progresses. This is required to control horizontal deflection and prevent rotation and sliding of underpins prior to the basement and ground floor slab being cast.

A robust propping sequence must be adopted by the contractor responsible for the works in order to limit movements due to the surcharge imposed behind underpins by the adjacent structure.

It is proposed that an appropriate monitoring regime be adopted to manage risk and potential damage to the neighbouring structures with a further minimisation of the construction effects as construction progresses onsite (Ball et al., 2014).

List of Figures

List of Appendices

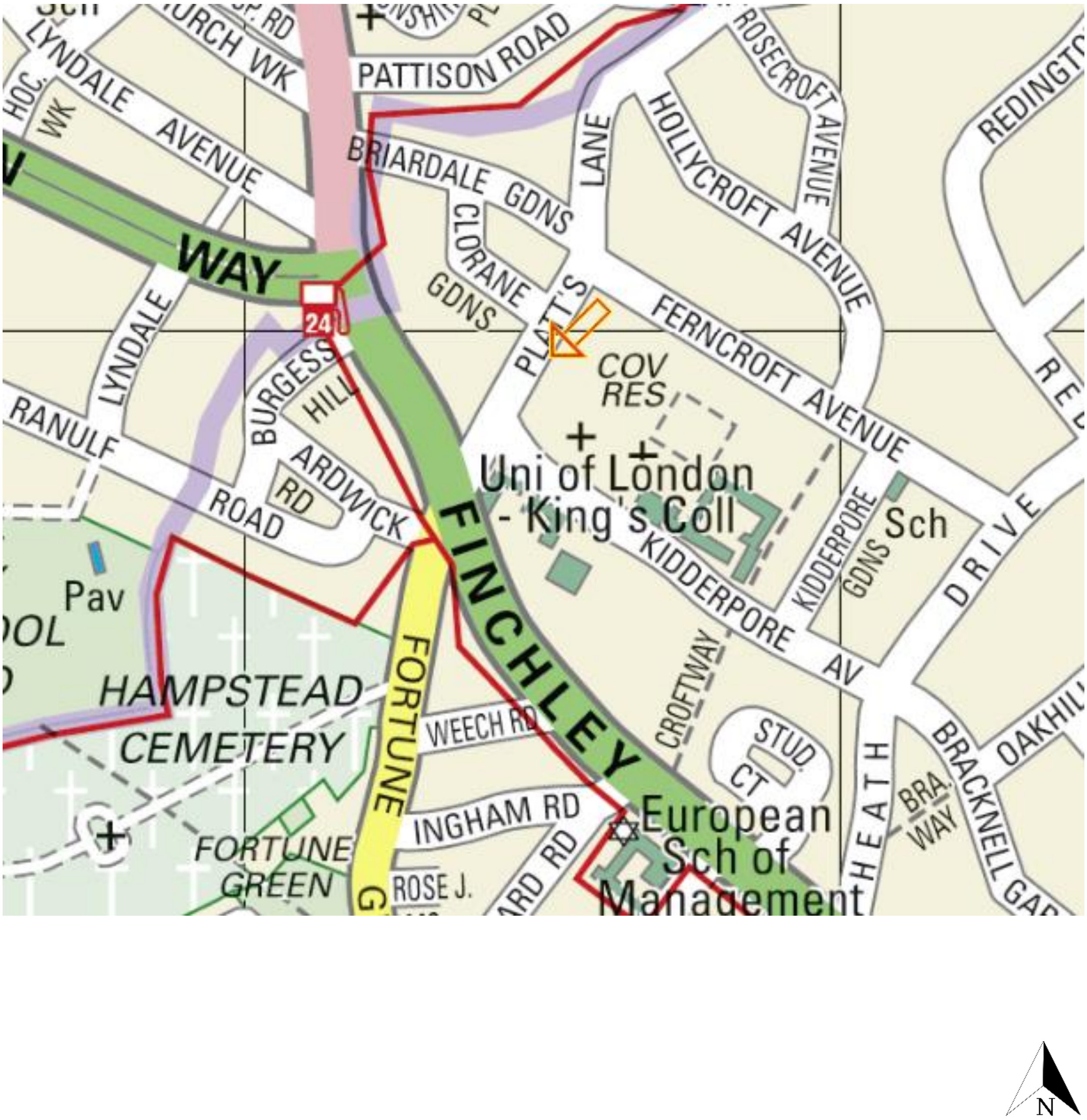

Figure 1 – Site Location Map

Job Number	**Project**
15655	12 Platt's Lane, London NW3 7NR
Client	**Date**
Orly Weinberger	August 2016

Figure 2 – Aerial Photograph

Project
12 Platt's Lane, London NW3 7NR

Client
Orly Weinberger

Date
August 2016

Job Number
15655

Figure 3 – Boreholes Location

Project
12 Platt's Lane, London NW3 7NR

Client
Orly Weinberger

Date
August 2016

Job Number
15655

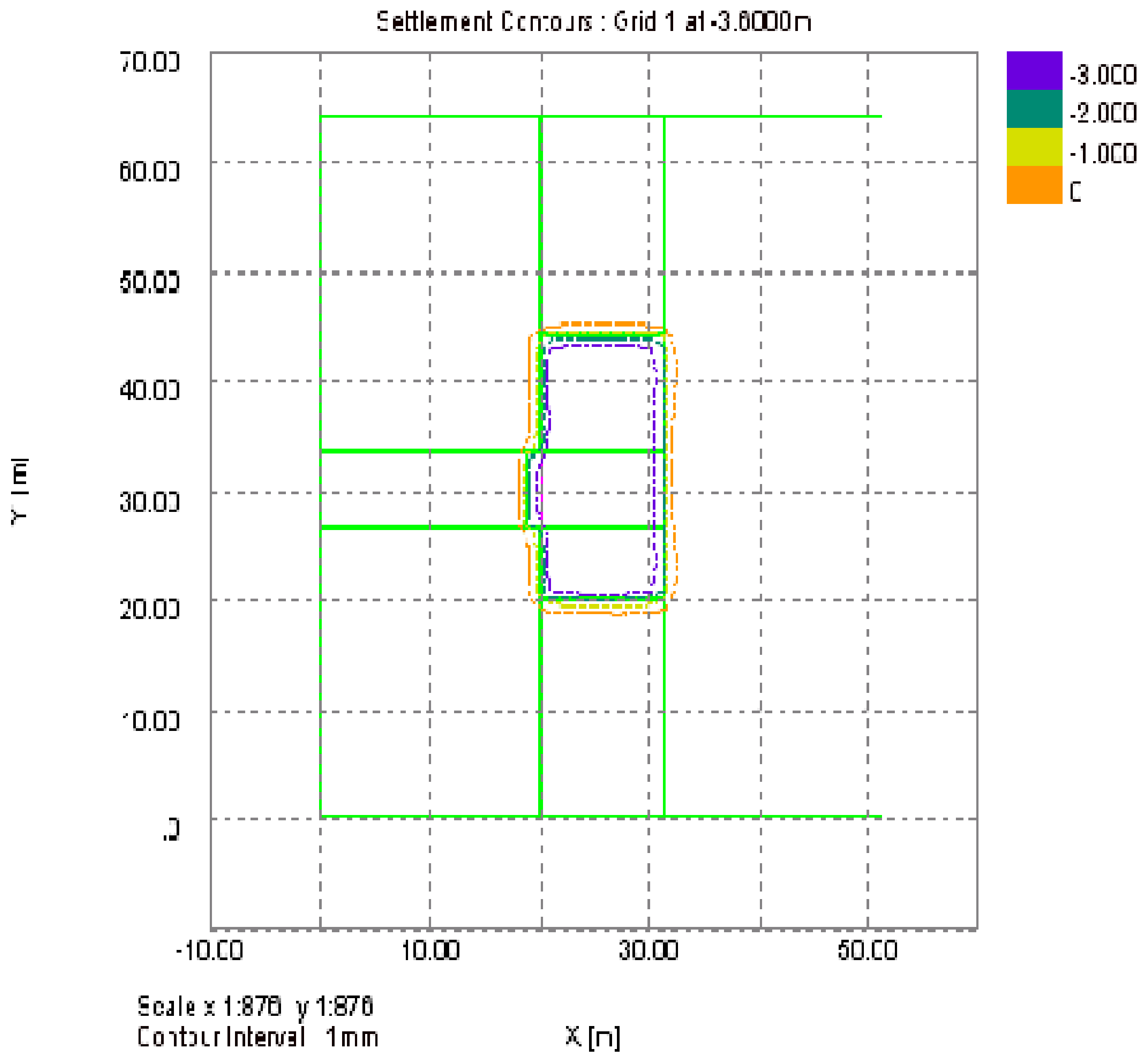

Figure 4 – Undrained Heave

Project
12 Platt's Lane, London NW3 7NR

Client
Orly Weinberger

Date
August 2016

Job Number
15655

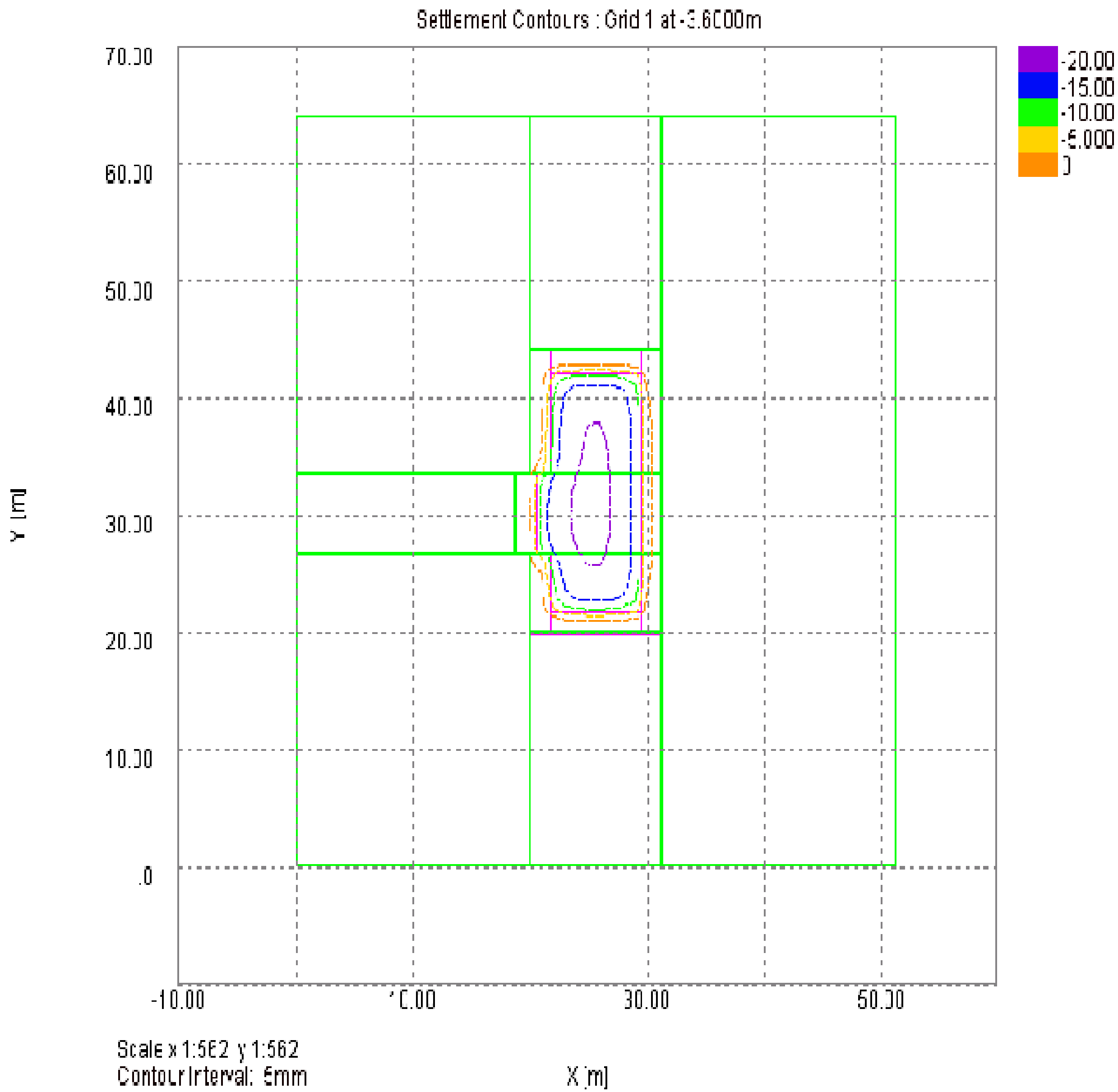

Figure 5 – Drained Movements

Project
12 Platt's Lane, London NW3 7NR

Client
Orly Weinberger

Date
August 2016

Job Number
15655

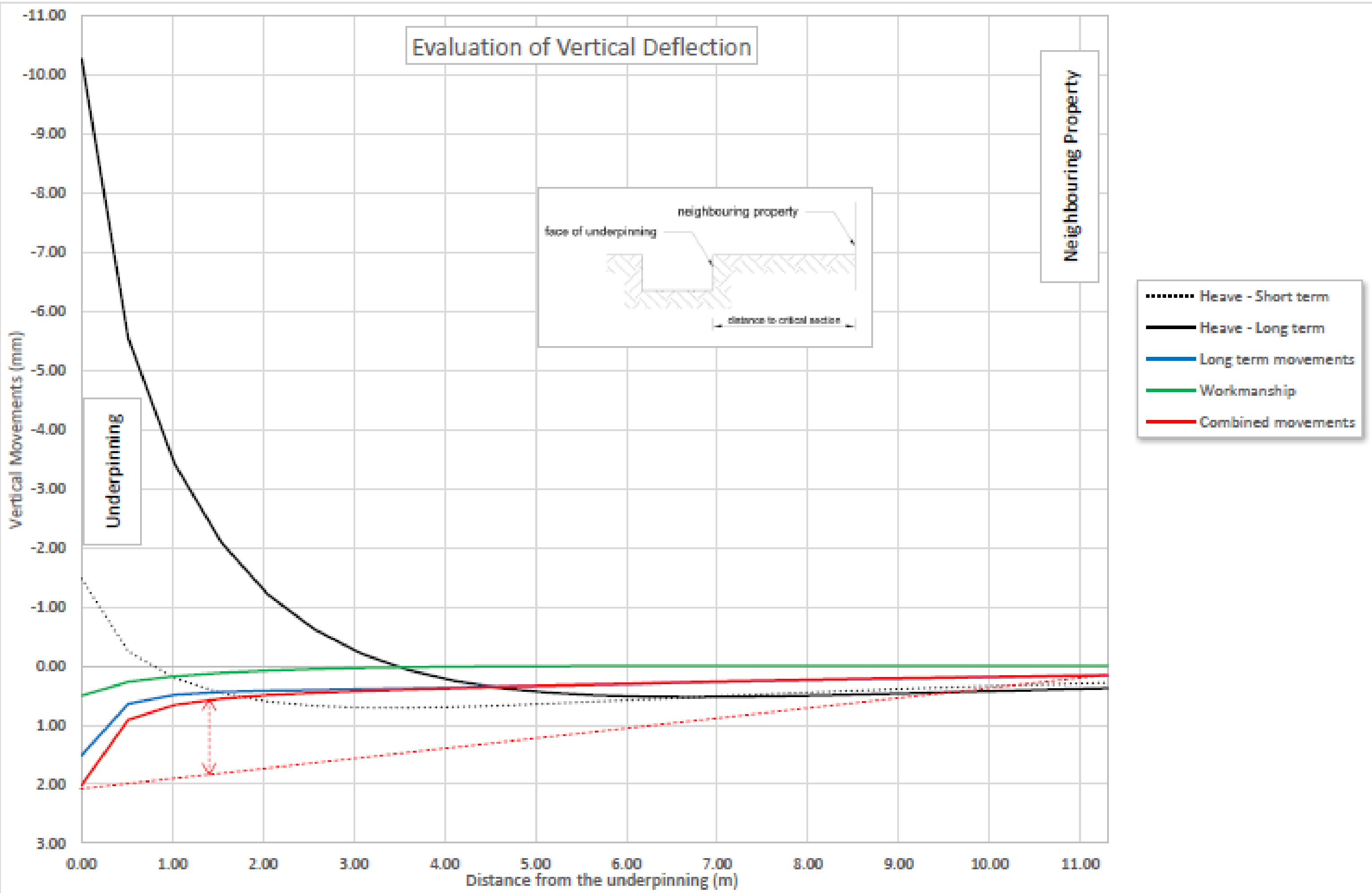

Figure 6 – Deflection

Project
12 Platt's Lane, London NW3 7NR

Client
Orly Weinberger

Date
August 2016

Job Number
15655

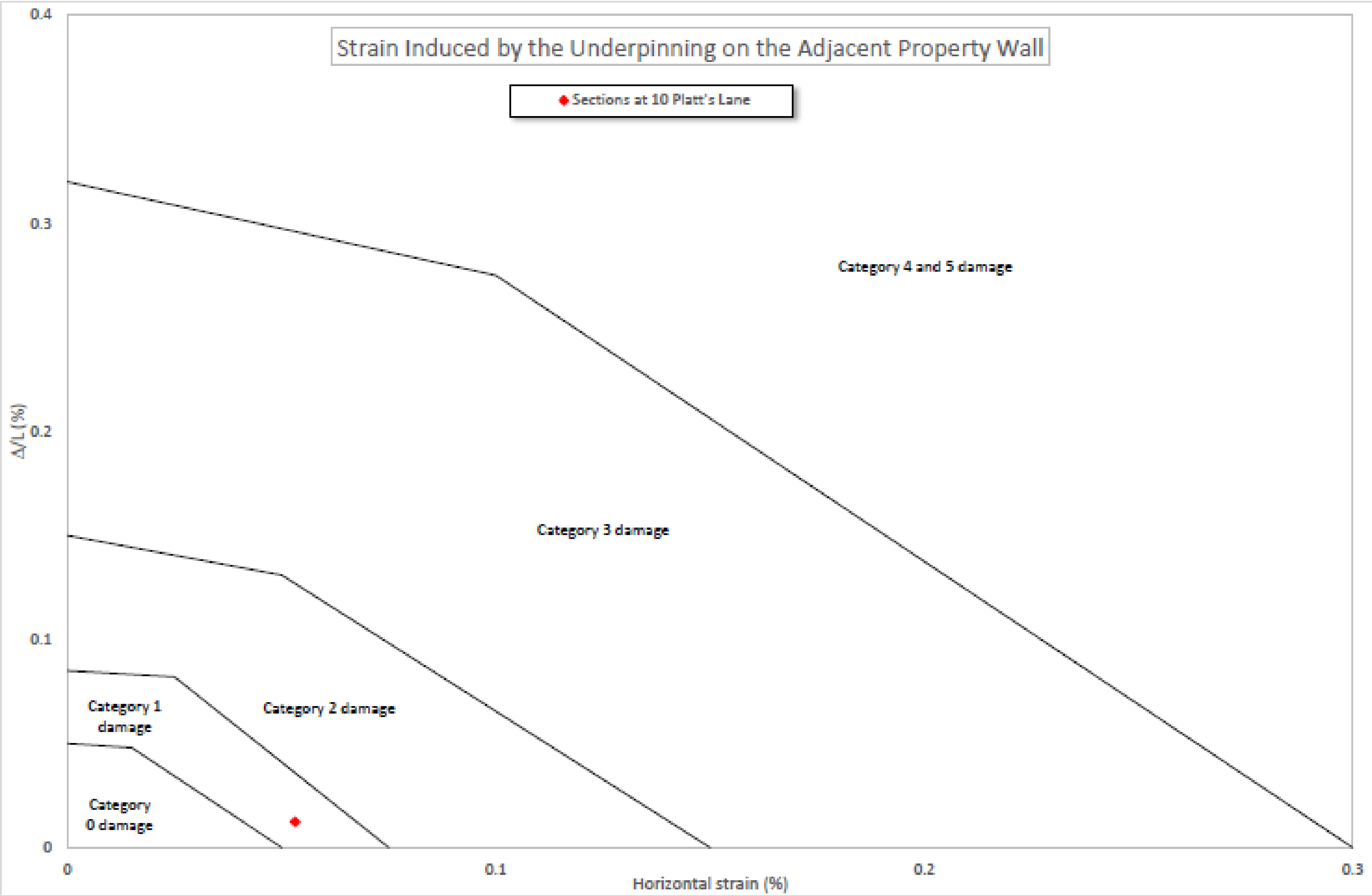

Figure 7 – Damage Category

Project
12 Platt's Lane, London NW3 7NR

Client
Orly Weinberger

Date
August 2016

Job Number
15655

Appendix A Field Work

Appendix A.1 Engineers Logs

Soils Limited
Geotechnical & Environmental Consultants

Borehole Log

Borehole No. WS1	Sheet 1 of 1			
Project Name: 12 Platt's Lane	Project No. 15655	Co-ords: -	Hole Type WS	
Location: Finchley London NW3 7NR		Level:	Scale 1:50	
Client: Orly Weinberger		Dates: 17/06/2016 - 17/06/2016	Logged By OK	

Water Strikes	Sample Depth (m)	Type	Results	Depth (m)	Level (m)	Stratum Description
	0.30	J+D		0.30		Fine to coarse concrete and brick GRAVEL. MADE GROUND D SAMPLE
	0.50	J+D		0.50		Soft light brown slightly sandy gravelly CLAY. Sand is fine to medium. Gravel is fine to medium sub-angular brick and concrete. Occasional fine clinker fragments. Rare fine roots. MADE GROUND D SAMPLE
	1.00	J+D		1.00		Soft light brown mottled light grey slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is fine to medium sub-angular flint brick and concrete. Occasional fine clinker fragments. Rare fine roots. MADE GROUND D SAMPLE
	1.30	D		1.40		Soft light brown mottled light grey slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is fine to medium sub-angular flint brick and concrete. Rare fine clinker fragments. Occasional ash. MADE GROUND
	1.80	D		2.00		Firm light brown mottled light grey and orange CLAY with occasional lenses and pockets of silty fine sand.
	2.30	D				
	2.80	D		3.00		Soft light brown mottled light grey and orange CLAY with frequent lenses and pockets of silty fine sand.
	3.30	D				
	3.80	D		4.00		Firm brown mottled grey and orange CLAY with occasional lenses and pockets of silty fine sand.
	4.30	D				Firm brown mottled grey and orange CLAY with frequent lenses and pockets of silty fine sand.
▼	4.70	D		4.90		Stiff grey CLAY with frequent lenses of silty fine sand becoming soft at 5.50.
	5.30	D				
	5.80	D		6.00		End of borehole at 6.00 m

Depth scale: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Remarks
Fine roots observed to 1.00m bgl. Groundwater strike at 4.90m bgl.

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soils LIMITED Geotechnical & Environmental Consultants

Borehole Log

Project Name: 12 Platt's Lane	Project No. 15655	Co-ords: -	Borehole No. WS2 Sheet 1 of 1
Location: Finchley London NW3 7NR		Level:	Hole Type WS
			Scale 1:50
Client: Orly Weinberger		Dates: 17/06/2016 - 17/06/2016	Logged By OK

Well	Water Strikes	Samples and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.20	J+D		0.20			Light brown mottled light grey and orange slightly sandy clayey SILT. Sand is fine. Occasional pockets of soft silty clay. Rare decomposed material. Occasional fine roots and rootlets. D SAMPLE
		0.50	J+D		0.50			Firm light brown mottled light grey and orange sandy CLAY. Sand is fine. A single sub-angular medium flint gravel. Occasional decomposed material. Occasional fine roots and rootlets. D SAMPLE
		1.00	D		1.00			Stiff light brown mottled light grey and orange CLAY with occasional lenses of silty fine sand. Occasional fine roots and rootlets. D SAMPLE
		1.30	D					Stiff light brown mottled light grey and orange CLAY with occasional lenses of silty fine sand. A pocket of clayey silty fine sand at 1.70 to 1.80. Occasional fine to medium roots and rootlets.
		1.70	D					
					2.00			Firm brown mottled light grey and orange CLAY with frequent lenses and pockets of silty fine sand becoming stiff at 3.0. Rare fine roots to 3.0.
		2.30	D					
		2.80	D					
		3.30	D					
		3.80	D					
	▼				4.00			Stiff brown mottled orange CLAY with frequent lenses and pockets of silty fine sand.
		4.30	D					
					4.70			Stiff grey CLAY with frequent lenses and pockets of silty fine sand becoming soft at 5.0.
		4.80	D					
		5.30	D					
		5.80	D					
					6.00			End of borehole at 6.00 m

Depth scale: 1 2 3 4 5 6 7 8 9 10

Remarks
Fine to medium roots and rootlets observed to 2.00m bgl. Fine roots and rootlets observed to 3.00m bgl. Groundwater strike at 4.00m bgl.

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Soils Limited
Geotechnical & Environmental Consultants

Borehole Log

Project Name: 12 Platt's Lane	Project No. 15655	Co-ords: -	Borehole No. **WS3** Sheet 1 of 1
Location: Finchley London NW3 7NR		Level:	Hole Type WS
			Scale 1:50
Client: Orly Weinberger		Dates: 17/06/2016 - 17/06/2016	Logged By OK

Well	Water Strikes	Samples and In Situ Testing Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
		0.20	D		0.20			Dark grey slightly sandy SILT. Sand is fine. Very rare fine brick fragments. Rare fine ash fragments. Frequent fine roots and rootlets. D SAMPLE
		0.50	D		0.50			Soft greyish brown slightly sandy CLAY. Sand is fine. Rare fine to medium brick fragments. Occasional fine ash fragments. Occasional fine roots and rootlets. MADE GROUND D SAMPLE
		1.00	D		1.00			Soft orange mottled light grey slightly sandy slightly silty CLAY. Sand is fine. A single medium sub-angular flint gravel. Occasional rootlets.
		1.50	D		1.50			Soft orangish brown mottled light grey slightly sandy slightly silty CLAY. Sand is fine. D SAMPLE
		2.00	D		2.00			Soft orange brown mottled light grey and orange CLAY with occasional lenses of silty fine sand. D SAMPLE
		2.50	D		2.50			Soft light brown mottled light grey CLAY with frequent lenses and pockets of silty fine sand. D SAMPLE
	▼	3.00	D		3.00			Soft light brown mottled light grey CLAY with frequent lenses and pockets of silty fine sand. D SAMPLE
		3.50	D		3.50			Soft brown mottled grey CLAY with occasional lenses of silty fine sand. D SAMPLE
		4.00	D		4.00			Soft brown mottled grey CLAY with occasional lenses of silty fine sand. Rare rootlets. D SAMPLE
		4.50	D		4.50			Firm brown CLAY with occasional lenses of silty fine sand. D SAMPLE
		5.00	D		5.00			Firm greyish brown slightly silty sandy CLAY. Sand is fine. D SAMPLE

End of borehole at 5.00 m

1 2 3 4 5 6 7 8 9 10

Remarks
Fine roots observed to 0.50m bgl. Rootlets observed to 4.00m bgl. Groundwater strike at 3.00m bgl.

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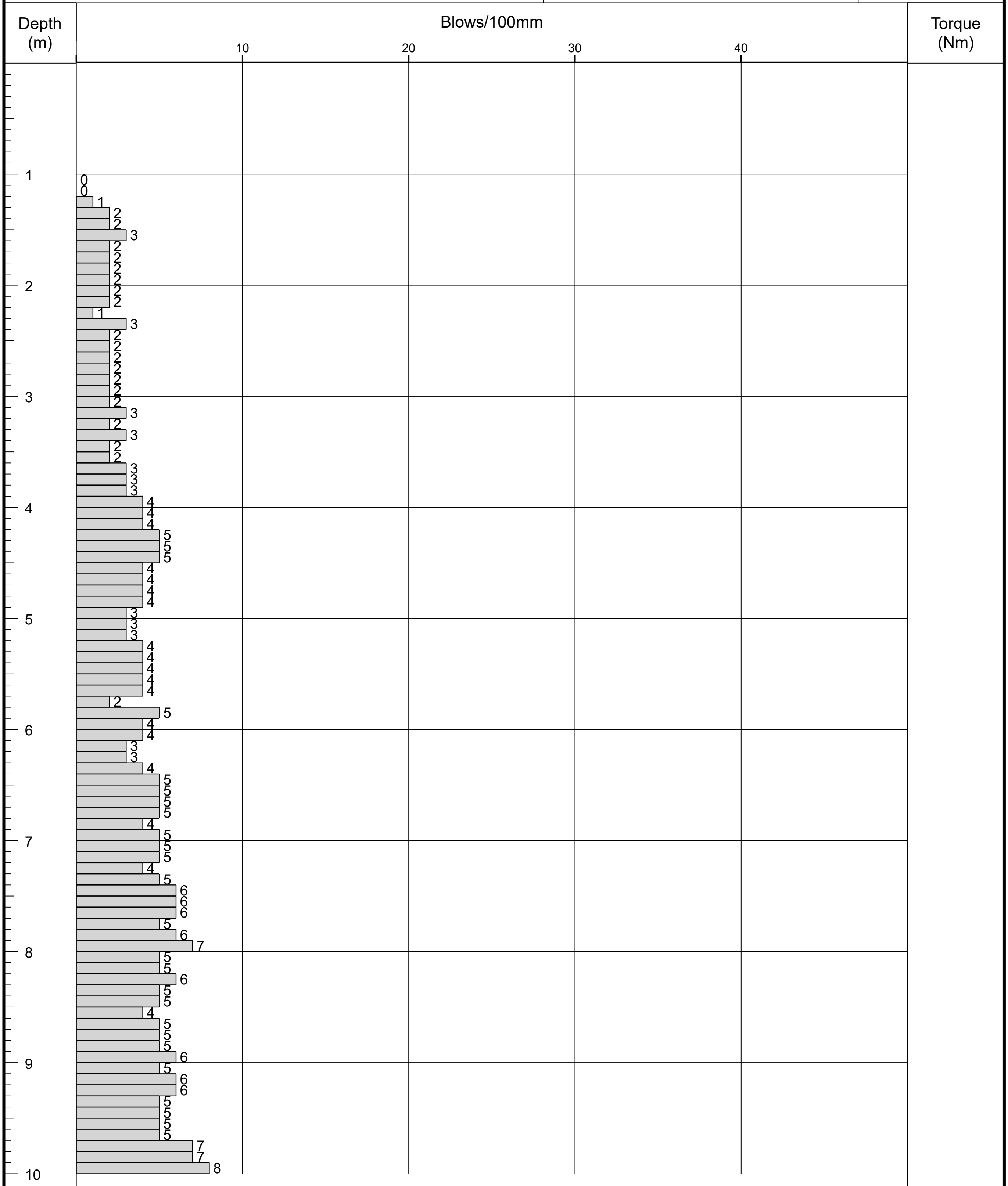
Geotechnical & Environmental Consultants

Probe Log

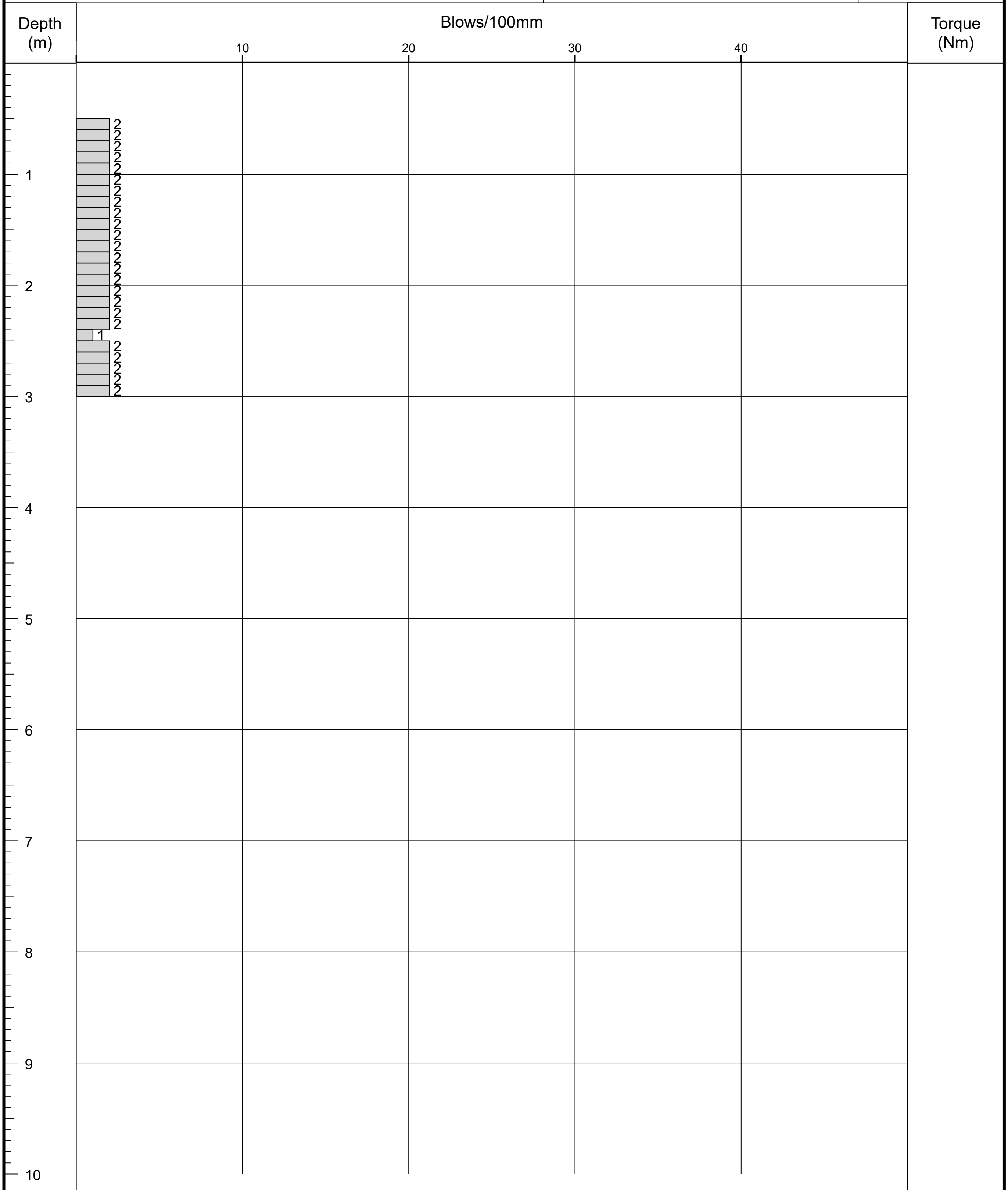
Project Name: 12 Platt's Lane	Project No. 15655	Co-ords: -	Borehole No. **DP1** Sheet 1 of 1
Location: Finchley London NW3 7NR		Level:	Hole Type DP
			Scale 1:50
Client: Orly Weinberger		Dates: 17/06/2016 - 17/06/2016	Logged By



Remarks	Fall Height	Cone Base Diameter	
	Hammer Wt	Final Depth	9.90
	Probe Type	Log Scale	1:50

AGS

soils LIMITED Geotechnical & Environmental Consultants	# Probe Log			Borehole No. **DP2** Sheet 1 of 1
Project Name: 12 Platt's Lane	Project No. 15655	Co-ords: -		Hole Type DP
Location: Finchley London NW3 7NR		Level:		Scale 1:50
Client: Orly Weinberger		Dates: 17/06/2016 - 17/06/2016		Logged By



Remarks	Fall Height	Cone Base Diameter	
	Hammer Wt	Final Depth	2.90
	Probe Type	Log Scale	1:50

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Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **FE1**

Sheet 1 of 1

Project Name: 12 Platt's Lane	Project No.: 15655	Method:	Hole Type TP
Location: Finchley London NW3 7NR		Plant:	
		Support:	Scale 1:25
Client: Orly Weinberger	Trial Pit Length: m	Trial Pit Width: m	Logged By
Dates: 10/08/2016	Level:	Co-ords:	

Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.55			Grey/brown slightly clayey gravelly SAND with frequent fine to medium to coarse brick and concrete fragments. Fine to medium sub-angular to sub-rounded gravel. MADE GROUND
				1.00			Soft orange/brown CLAY.
							End of Pit at 1.00m

Depth scale: 1, 2, 3, 4, 5

General Remarks:

Groundwater Remarks:

Sample Type

D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited Newton House, Cross Road, Tadworth KT20 5SR Tel: 01737 814221 Email: admin@soilslimited.co.uk		# Trial Pit Log	Trial Pit No. **FE2** Sheet 1 of 1
Project Name: 12 Platt's Lane	Project No.: 15655	Method: Plant: Support:	Hole Type TP
Location: Finchley London NW3 7NR			Scale 1:25
Client: Orly Weinberger	Trial Pit Length: m	Trial Pit Width: m	Logged By
Dates: 10/08/2016	Level:	Co-ords:	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
							Pavement and concrete
				0.15			Soft yellow brown slightly silty CLAY with occasional gravel and occasional brick and concrete fragments. Fine to medium sub-angular to sub-rounded gravel.
				0.65			End of Pit at 0.65m

1
2
3
4
5

General Remarks:

Groundwater Remarks:

Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water

Soils Limited
Geotechnical & Environmental Consultants
Soils Limited
Newton House, Cross Road, Tadworth KT20 5SR
Tel: 01737 814221 Email: admin@soilslimited.co.uk

Trial Pit Log

Trial Pit No. **FE3**

Sheet 1 of 1

Project Name: 12 Platt's Lane	Project No.: 15655	Method:	Hole Type: TP
Location: Finchley London NW3 7NR		Plant:	
		Support:	Scale: 1:25
Client: Orly Weinberger	Trial Pit Length: m	Trial Pit Width: m	Logged By
Dates: 10/08/2016	Level:	Co-ords:	

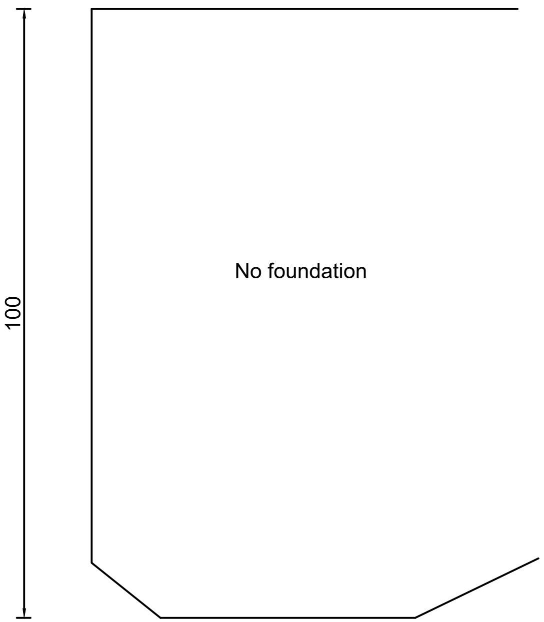
Water Strike	Samples & In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
				0.30			Grey/brown slightly clayey gravelly SAND with frequent fine to medium to coarse brick and concrete fragments. Fine to medium sub-angular to sub-rounded gravel. MADE GROUND
				0.90			Soft orange/brown CLAY.
							End of Pit at 0.90m

Depth scale: 1, 2, 3, 4, 5

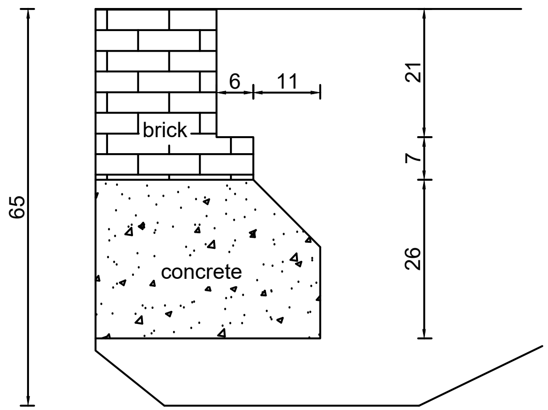
General Remarks:

Groundwater Remarks:

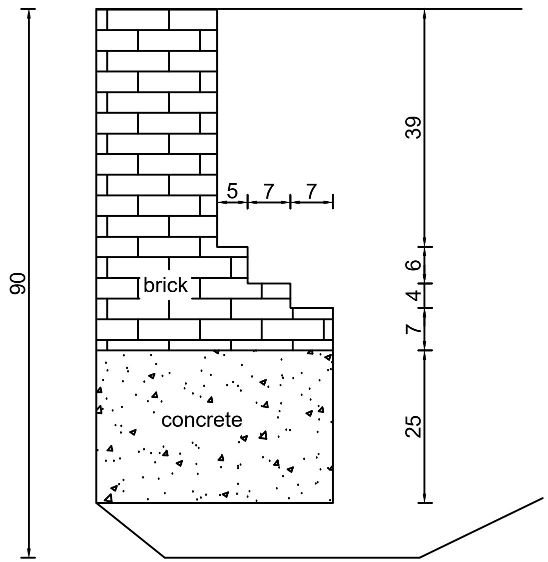
Sample Type
D: Disturbed
B: Bulk
J: Jar
W: Water


100
No foundation

FE1


65
6
11
21
brick
7
concrete
26

FE2


90
39
5
7
7
6
brick
4
7
concrete
25

FE3

Appendix B Geotechnical In-Situ and Laboratory Testing

Appendix B.1 Classification

Classification based on SPT "N" values:

The inferred undrained strength of the cohesive soils was based on the SPT "N" blow counts, derived from the relationship suggested by Stroud (1974) and classified using Table B.1.1. (Ref: Stroud, M. A. 1974, "The Standard Penetration Test – its application and interpretation", Proc. ICE Conf. on Penetration Testing in the UK, Birmingham. Thomas Telford, London.).

Table B.1.1 SPT "N" Blow Count Cohesive Classification

Classification	Undrained Cohesive Strength C_u (kPa)
Extremely low	<10
Very low	10 – 20
Low	20 – 40
Medium	40 – 75
High	75 – 150
Very high	150 – 300
Extremely high	> 300

Note: (Ref: BS EN ISO 14688-2:2004+A1:2013 Clause 5.3.)

The relative density of granular soils was classified based of the relationship given in Table B.1.2.

The *UK National Annex to Eurocode 7: Geotechnical design – Part 2: Ground investigation and testing, NA 3.7 SPT test, BS EN 1997-2:2007, Annex F* states "Relative density descriptions on borehole records should also be based on uncorrected SPT N values, unless significantly disturbed, using the density classification in BS 5930:2015, Table 7.

Table B.1.2 SPT "N" Blow Count Granular Classification

Classification	SPT "N" blow count (blows/300mm)
Very loose	0 to 4
Loose	4 to 10
Medium dense	10 to 30
Dense	30 to 50
Very dense	Greater than 50

Note: (Ref: The Standard Penetration Test (SPT): Methods and Use, CIRIA Report 143, 1995)

Chalk samples recovered are disturbed by the sampling process. Therefore, it is difficult to assess an accurate chalk grade for in accordance with CIRIA C574 'Engineering in Chalk'. In the absence of a standardised correlation between SPT "N" values and chalk grade for the most recent chalk classification (CIRIA C574) a broad indication of the in-situ chalk grade can be assessed using a paper by T.R.M. Wakeling from a site in Mundford, Norfolk, which compares SPT "N" values to the old Spink & Norbury chalk classification. From the Spink & Norbury classification it is possible to infer a basic CIRIA Grade (structureless or structured), as outlined in Table B.1.3.

Table B.1.3 Interpretation of SPT "N" Blow Counts in Chalk

SPT "N" Value Range	Spink & Norbury Grade	Inferred CIRIA Grade
<8	VI	Structureless (Dm)
8 – 15	V	Structureless (Dc)
15 – 20	IV	Structured chalk (C5 – A1)
20 - 25	III	Structured chalk (C5 – A1)
25 - 35	II	Structured chalk (C5 – A1)
>35	I	Structured chalk (C5 – A1)

Appendix B.2 Interpretation

Table B.2.1 Interpretation of DPSH Blow Counts

DP	Strata	Equivalent SPT N Blow Counts	Inferred Cohesive Strength/Granular Density
DP1	CLGB[1] 1.40 – 10.00 Clay	3 – 24	Very low to high (C_u = 15 – 120kPa)
DP2	CLGB 0.50 – 3.00 Clay	3 – 6	Very low to low (C_u = 15 – 30kPa)

Note: [1] Ground conditions inferred past the base of windowless sampler boreholes.

Table B.2.2 Interpretation of Atterberg Limit Tests

Stratum	Moisture Content (%)	Plasticity Index (%)	Passing 425µm Sieve (%)	Modified Plasticity Index (%)	Soil Classification	Volume Change Potential	
						BRE	NHBC
CLGB	32 – 37	27 – 39	92 – 100	27 - 39	CH	Medium	Medium

Note: BRE Volume Change Potential refers to BRE Digest 240 (based on Atterberg results)
NHBC Volume Change Potential refers to NHBC Standards Chapter 4.2
Soils Classification based on British Soil Classification System
The most common use of the term clay is to describe a soil that contains enough clay-sized material or clay minerals to exhibit cohesive properties. The fraction of clay-sized material required varies, but can be as low as 15%. Unless stated otherwise, this is the sense used in Digest 240. The term can be used to denote the clay minerals. These are specific, naturally occurring chemical compounds, predominately silicates. The term is often used as a particle size descriptor. Soil particles that have a nominal diameter of less than 2 µm are normally considered to be of clay size, but they are not necessarily clay minerals. Some clay minerals are larger than 2 µm and some particles, 'rock flour' for example, can be finer than 2 µm but are not clay minerals.
(The Atterberg Limit Tests were undertaken in accordance with BS 1377:Part 2:1990 Clauses 3.2, 4.3 and 5)

Appendix B.3 Geotechnical In-Situ and Laboratory Results

Laboratory Report

UKAS TESTING 2788

GSTL
GEO Site & Testing Services Ltd

Contract Number: 31571

Client's Reference: **15655**

Report Date: **06-07-2016**

Client **Soils Limited**
Newton House
Cross Road
Tadworth
Surrey
KT20 5SR

Contract Title: **12 Platt's Lane, London NW3 7NR**
For the attention of: **Dante Valerio Tedesco**

Date Received: **06-07-2016**
Date Commenced: **06-07-2016**
Date Completed: **06-07-2016**

Test Description	Qty
Moisture Content 1377 : 1990 Part 2 : 3.2 - * UKAS	6
4 Point Liquid & Plastic Limit (LL/PL) 1377 : 1990 Part 2 : 4.3 & 5.3 - * UKAS	6
Disposal of Samples on Project	1

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

Approved Signatories:
Alex Wynn (Associate Director) - Benjamin Sharp (Contracts Manager) - Emma Sharp (Office Manager)
Jon Tatam (Administrative/Quality Assistant) - Paul Evans (Quality/Technical Manager) - Vaughan Edwards (Managing Director)

Client ref: 15655

Location: 12 Platt's Lane, London NW3 7NR

Contract Number: 31571-

Hole Number	Sample Number	Type	Depth (m)	Description of Sample*
WS1	1	D	1.80	Brown gravelly sandy fine to medium silty CLAY.
WS1	2	D	2.80	Brown sandy soft silty CLAY.
WS2	1	D	2.30	Brown sandy soft silty CLAY.
WS2	2	D	3.80	Brown sandy soft to firm silty CLAY.
WS3	1	D	2.00	Brown sandy soft silty CLAY.
WS3	2	D	3.50	Brown sandy soft silty CLAY.

Note: Results on this table are in summary format and may not meet the requirements of the relevant standards, additional information is held by the laboratory

GSTL
GEO SITE & TESTING SERVICES LTD

For and behalf of GEO Site & Testing Services Ltd

Authorised By:
Emma Sharp (Office Manager)

Date: 6.7.16

UKAS TESTING 2788

Test Report: **Method of the Determination of the plastic limit and plasticity index**
BS 1377 : Part 2 : 1990 Method 5

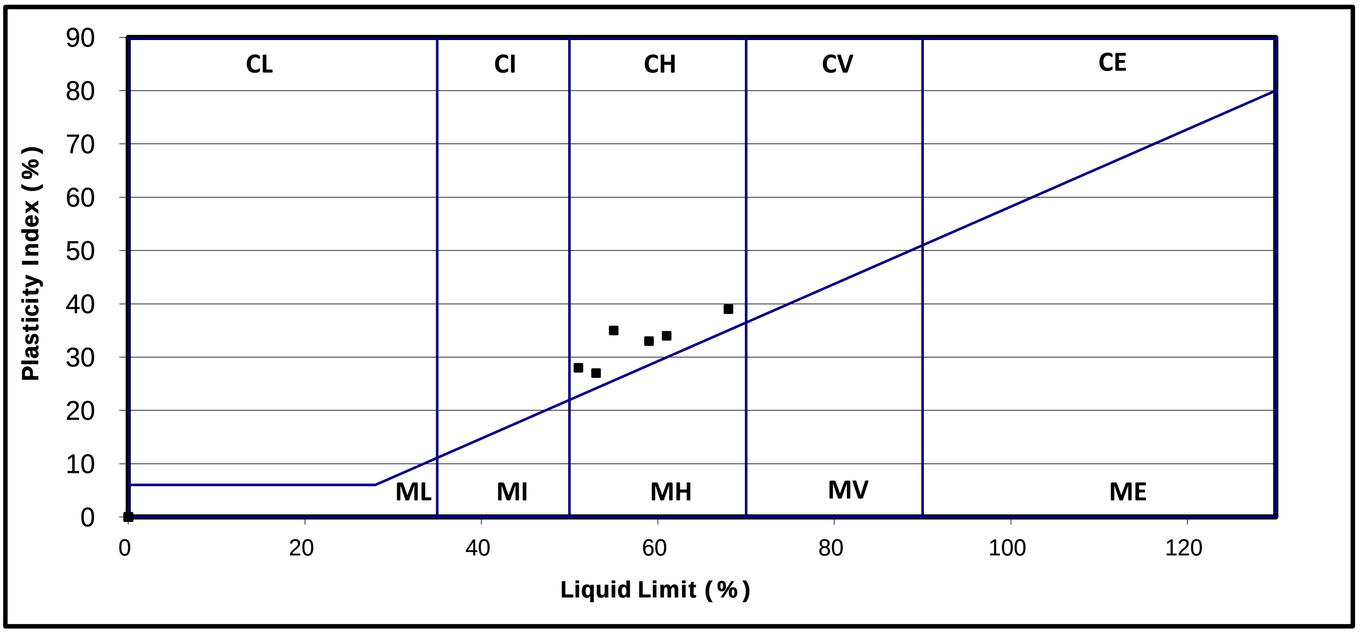
Client ref: **15655**
Location: **12 Platt's Lane, London NW3 7NR**
Contract Number: **31571-**

Hole / Sample Number	Sample Type	Depth m	Moisture Content % Cl. 3.2	Liquid Limit % Cl. 4.3 / 4.4	Plastic Limit % Cl. 5.	Plasticity Index % Cl. 6.	% Passing .425mm	Remarks
WS1 / 1	D	1.80	32	61	27	34	92	CH High Plasticity
WS1 / 2	D	2.80	37	55	20	35	100	CH High Plasticity
WS2 / 1	D	2.30	32	51	23	28	100	CH High Plasticity
WS2 / 2	D	3.80	34	68	29	39	100	CH High Plasticity
WS3 / 1	D	2.00	33	59	26	33	100	CH High Plasticity
WS3 / 2	D	3.50	33	53	26	27	100	CH High Plasticity

Symbols: **NP : Non Plastic** **# : Liquid Limit and Plastic Limit Wet Sieved**

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

BS 5930:1999+A2:2010



For and behalf of GEO Site & Testing Services Ltd

GSTL
GEO SITE & TESTING SERVICES LTD

Authorised By:
Emma Sharp (Office Manager)
Date: 6.7.16

UKAS TESTING 2788

Dante Valerio Tedesco
Soils Ltd
Thomas Telford House - Unit 11
Sun Valley Business Park
Winnall Close
Winchester
SO23 0LB

QTS Environmental Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410
russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 16-46060

Site Reference: 12 Platt's Lane, London NW3 7NR

Project / Job Ref: 15655

Order No: None Supplied

Sample Receipt Date: 29/06/2016

Sample Scheduled Date: 29/06/2016

Report Issue Number: 1

Reporting Date: 05/07/2016

Authorised by:

Russell Jarvis
Associate Director of Client Services
On behalf of QTS Environmental Ltd

Authorised by:

Kevin Old
Associate Director of Laboratory
On behalf of QTS Environmental Ltd

QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate						
QTS Environmental Report No: 16-46060	**Date Sampled**	17/06/16	17/06/16	17/06/16		
Soils Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: 12 Platt's Lane, London NW3 7NR	**TP / BH No**	WS1	WS2	WS3		
Project / Job Ref: 15655	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: None Supplied	**Depth (m)**	2.30	1.70	3.00		
Reporting Date: 05/07/2016	**QTSE Sample No**	214425	214426	214427		

Determinand	**Unit**	**RL**	**Accreditation**					
pH	pH Units	N/a	**MCERTS**	8.0	7.5	7.5		
Total Sulphate as SO_4	mg/kg	< 200	NONE	< 200	548	< 200		
Total Sulphate as SO_4	%	< 0.02	NONE	< 0.02	0.05	< 0.02		
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	23	11	13		
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	0.02	0.01	0.01		
Total Sulphur	%	< 0.02	NONE	< 0.02	< 0.02	< 0.02		
Ammonium as NH_4	mg/kg	< 0.5	NONE	5.9	7.7	6.2		
Ammonium as NH_4	mg/l	< 0.05	NONE	0.59	0.77	0.62		
W/S Chloride (2:1)	mg/kg	< 1	**MCERTS**	7	5	9		
W/S Chloride (2:1)	mg/l	< 0.5	**MCERTS**	3.5	2.5	4.7		
Water Soluble Nitrate (2:1) as NO_3	mg/kg	< 3	**MCERTS**	5	< 3	< 3		
Water Soluble Nitrate (2:1) as NO_3	mg/l	< 1.5	**MCERTS**	2.6	< 1.5	< 1.5		
W/S Magnesium	mg/l	< 0.1	NONE	1.5	0.8	1.5		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Analysis carried out on the dried sample is corrected for the stone content
Subcontracted analysis $^{(S)}$

QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
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Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 16-46060	
Soils Ltd	
Site Reference: 12 Platt's Lane, London NW3 7NR	
Project / Job Ref: 15655	
Order No: None Supplied	
Reporting Date: 05/07/2016	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
$ 214425	WS1	None Supplied	2.30	18.6	Light brown sandy clay
$ 214426	WS2	None Supplied	1.70	19.8	Light brown sandy clay
$ 214427	WS3	None Supplied	3.00	19.8	Light brown sandy clay

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S

$ samples exceeded recommended holding times

QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Methodology & Miscellaneous Information
QTS Environmental Report No: 16-46060
Soils Ltd
Site Reference: 12 Platt's Lane, London NW3 7NR
Project / Job Ref: 15655
Order No: None Supplied
Reporting Date: 05/07/2016

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

Appendix C References

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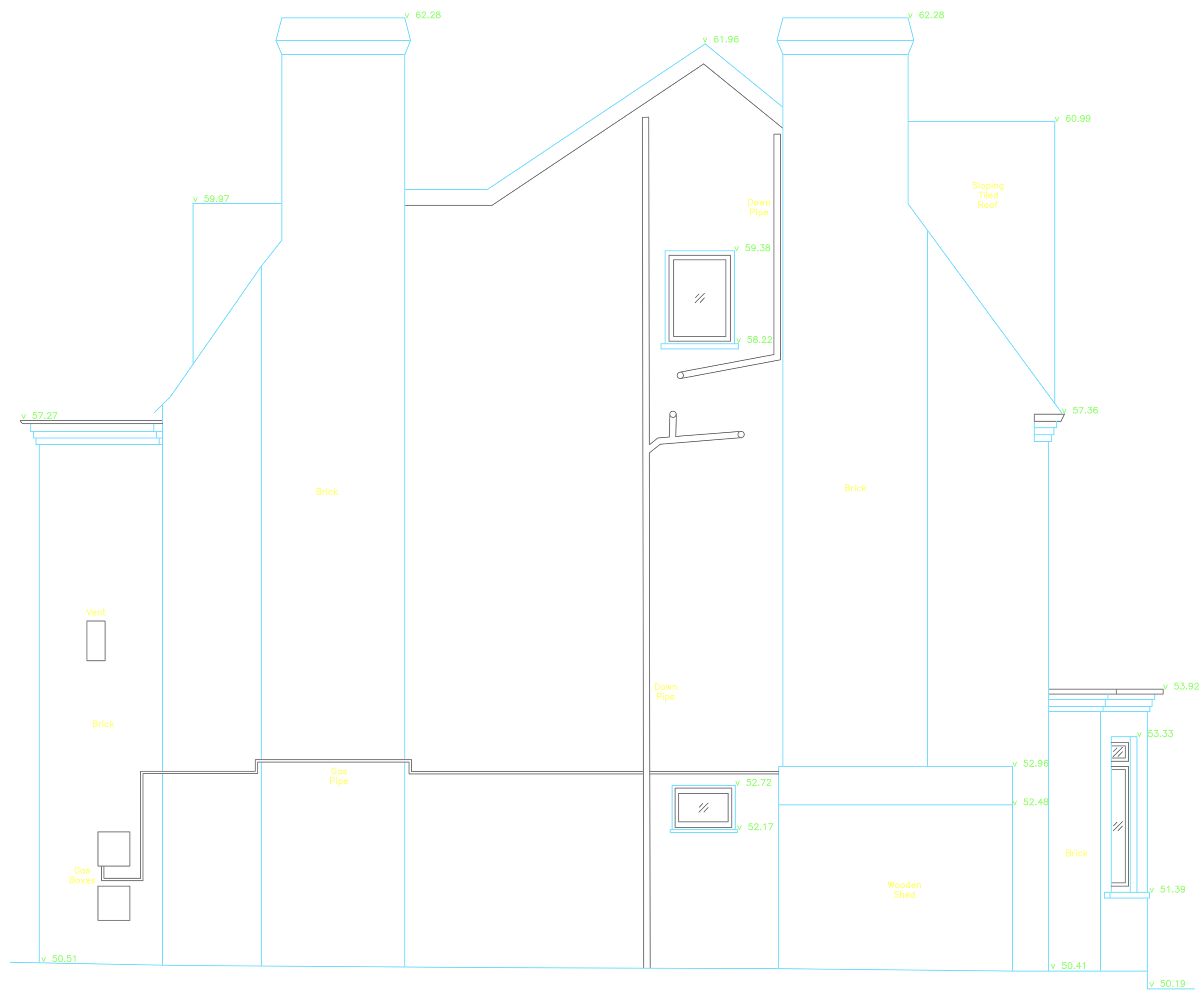
Serota, S. and Jennings, R.A.J. (1959). The elastic heave of the bottom of excavations. Geotechnique, 9 (2): 62-70

Simons,N. and Menzies, B. (2000). A short Course in Foundation Engineering – Second Edition. Thomas Telford Publishing, London.

Appendix D Information Provided by the Client

Elevation 1
Datum 45.00m



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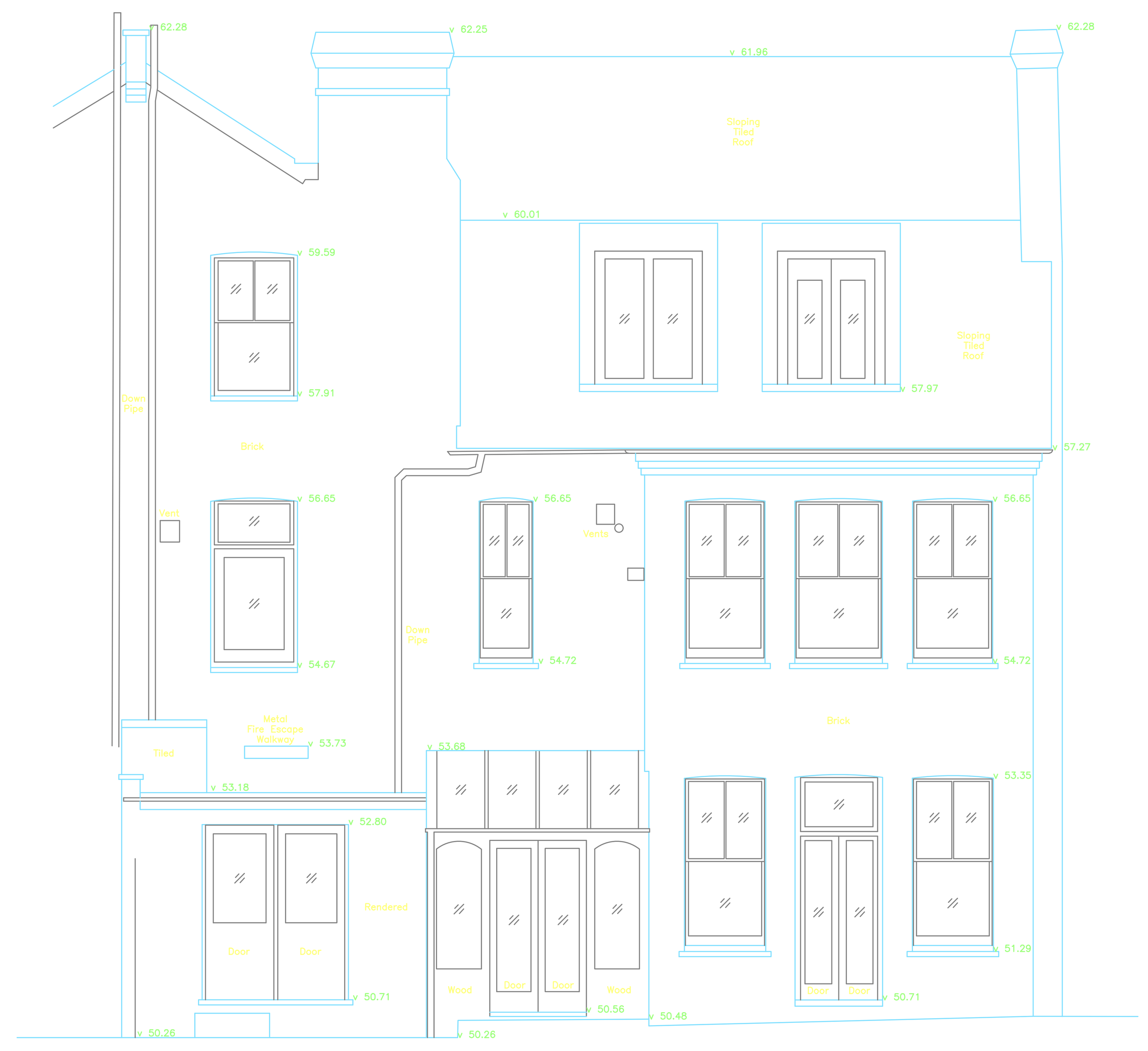
Datum 45.00m



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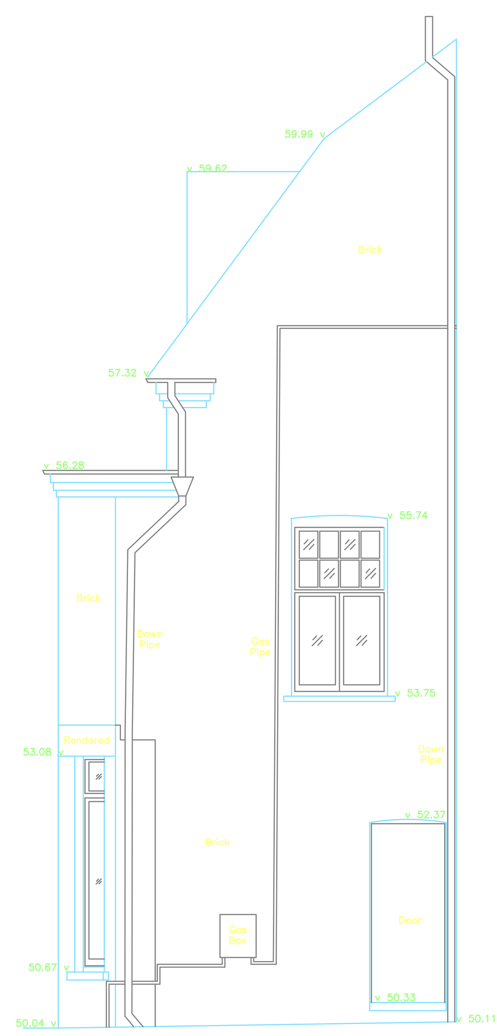
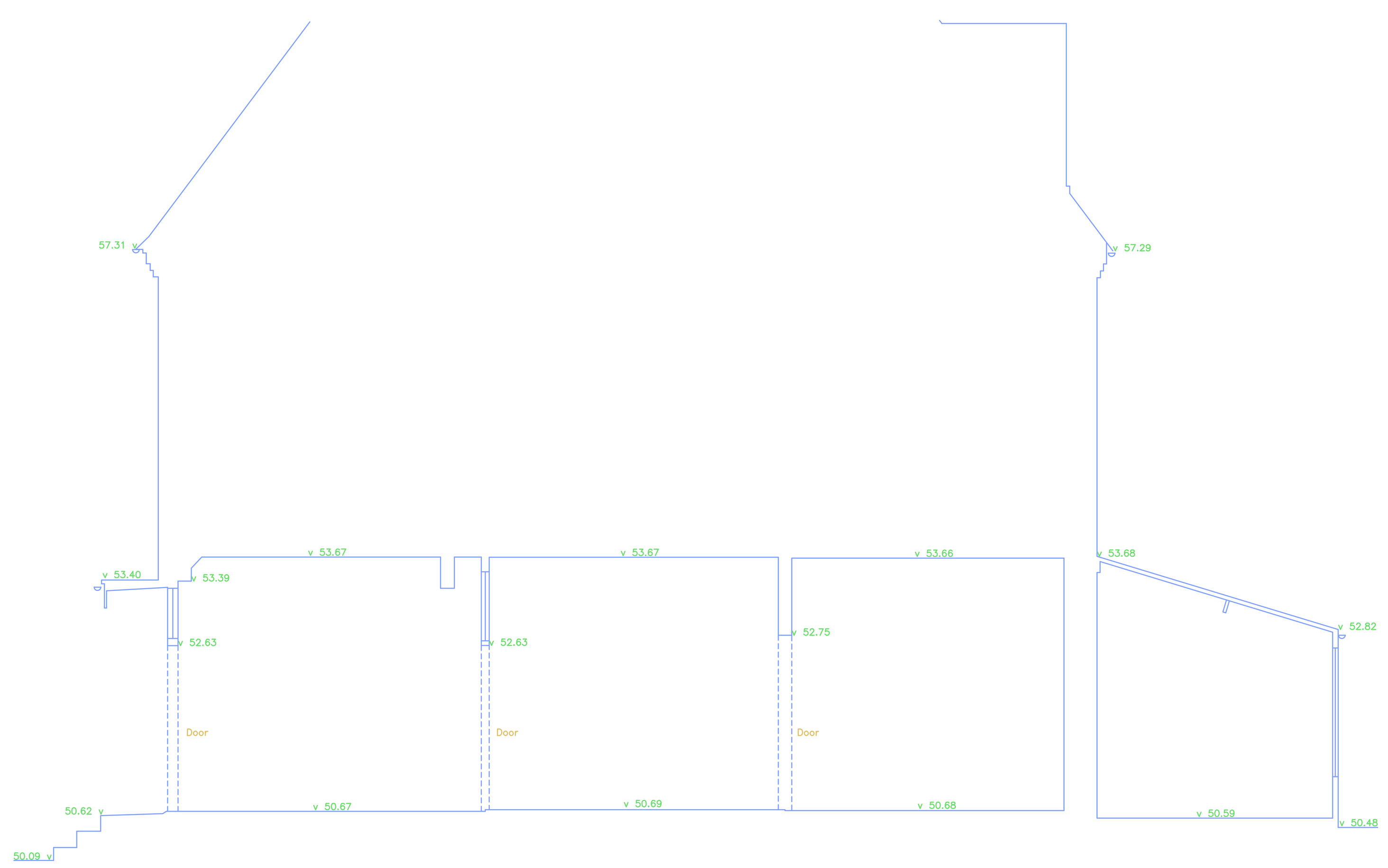
Datum 45.00m



Elevation 4
Datum 45.00m



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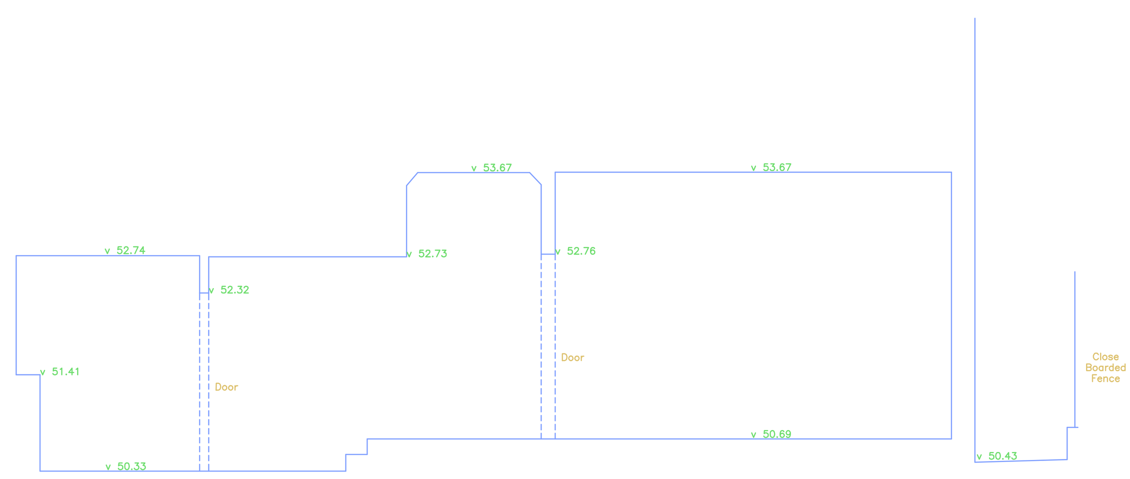
Datum 45.00m



Section 2
Datum 45.00m

LASER SURVEYS

LAND AND BUILDING SURVEYS, UNDERGROUND SERVICES LOCATION, CCTV DRAINAGE SURVEYS.

Established 1975. Member of The Survey Association.

OPEN SPACE, UPPER INTERFIELDS, MALVERN. WR14 1UT
TEL 01886 833173 FAX 01886 833485 email: worcester@lasersurveys.com

142-144 HILLVIEW AVENUE, HORNCHURCH, ESSEX. RM11 2DL
TEL 01708 438408 FAX 01708 438405 email: london@lasersurveys.com

DATUM NOTES

GRID IS BASED ON ARBITRARY COORDINATES BUT IS ORIENTATED APPROXIMATELY NORTH.

LEVELS ARE RELATED TO :– ARBITRARY DATUM.
BENCH MARK USED IS LOCATED AT :–
CONTROL STATION No.1

VALUE GIVEN AS 50.00m (ARBITRARY DATUM)

SURVEY CONTROL STATIONS SHOWN △

ABBREVIATIONS (where applicable)

AV	Air Valve	MK	Marker
BK	Brick	MS	Milestone
BL	Bollard	MT	Meter
BS	Bus Stop	MY	Mercury
BT	British Telecom	OH	Overhead
C/B	Close Boarded	PAV	Paving
CL	Cover Level	PB	Post Box
CLK	Chainlink	PE	Pipe
CO	Column	PM	Parking Meter
Conc	Concrete	P/R	Post and Rail
CP	Catch Pit	PT	Post
CPS	Concrete Paving Slabs	P/W	Post and Wire
CTV	Cable Television	RE	Rodding Eye
DC	Drainage Channel	RET	Retaining
DP	Down Pipe	RS	Road Sign
EP	Electricity Pole	RSJ	Rolled Steel Joist
ER	Earthing Rod	SC	Stop Cock
FB	Flower Bed	SK	Soakaway
FE	Fence	SPT	Septic Tank
FH	Fire Hydrant	ST	Silt Trap
FL	Floor Level	SV	Stop Valve
FP	Flag Pole	SVC	Security Video Camera
GP	Gate Post	TCB	Telephone Call Box
GV	Gas Valve	THL	Threshold Level
GY,G	Gully	TL	Traffic Light
HT	Height	TK	Tank
IC	Inspection Cover	TP	Telegraph Pole
IL	Invert Level	UG	Underground
IN	Interceptor	UTF	Unable to trace Further
I/R	Iron Railings	UTL	Unable To Lift
JB	Junction Box	VP	Vent Pipe
KO	Kerb Outlet	WL	Water Level
LB	Litter Bin	WM	Water Meter
LP	Lamp Post	WO	Wash Out
MH	Manhole Cover		
Ar	Arch Height		
B	Beam Height		
C	Ceiling Height		
D	Door Height		
H	Head Height		
S	Sill Height		
Sp	Spring height		

NOTES

* Drainage pipe sizes (where shown) have been gauged from the surface for safety reasons and should be regarded as approximate only.
* Tree species (where shown) should be treated with caution and expert identification is advised.
* Although this is a digital survey the accuracy and amount of detail shown is only commensurate with the graphical scale of mapping as specified. Care should be exercised when working to larger scales.
* Visible features in the vicinity of the boundaries as shown above, may not represent the extent of legally conveyed ownership.
* Whilst every effort has been made to achieve accuracy on this plan, CRUCIAL clearance dimensions, levels and invert levels should be checked prior to design and construction.
* Kerb levels have been taken in the bottom of the channel.

SHEET LAYOUT
NOT TO SCALE

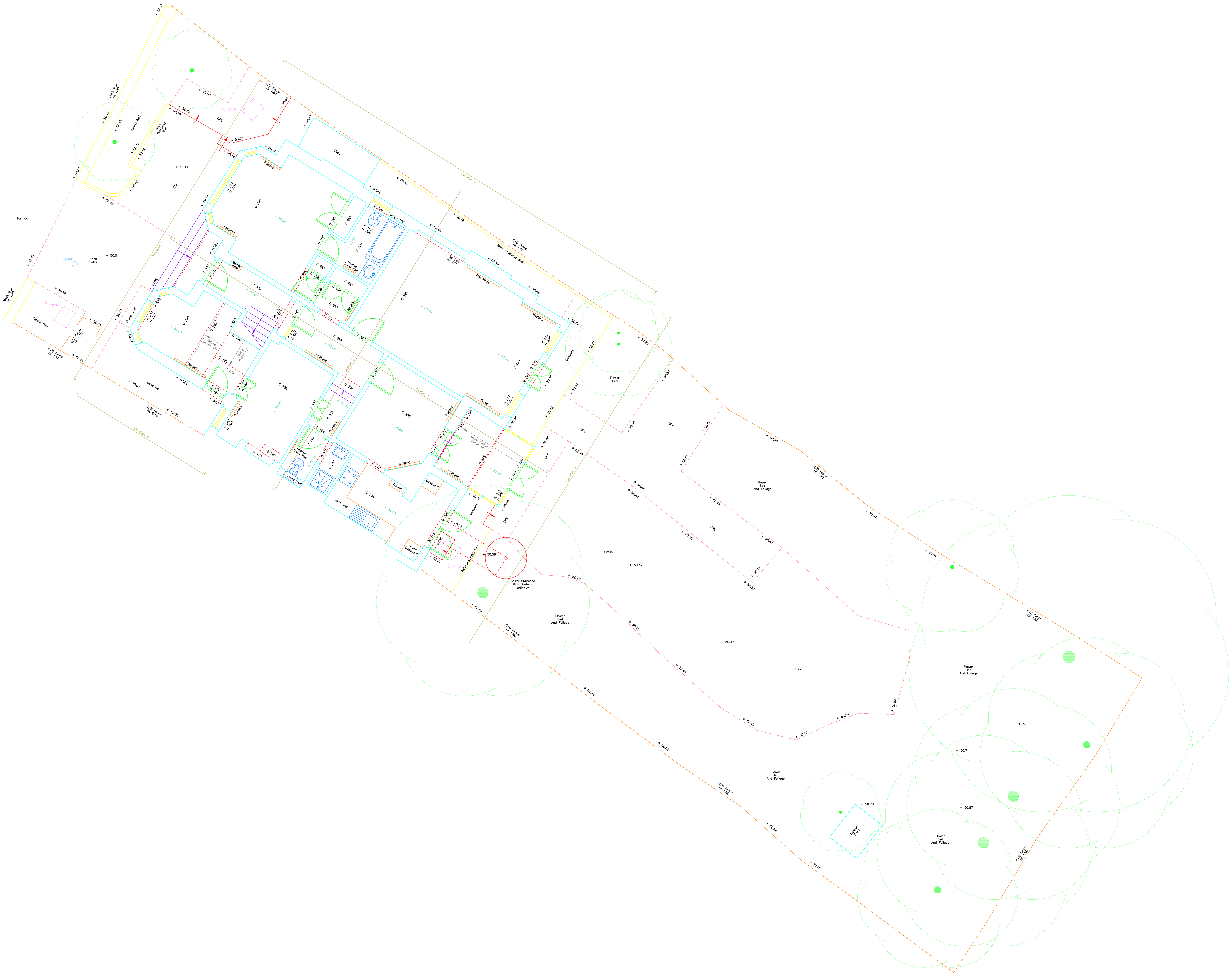
12 PLATTS LANE, HAMPSTEAD, LONDON. NW3 7NR

ELEVATIONS

SURVEYED FOR	XUL ARCHITECTS 33 BELSIZE LANE LONDON NW3 5AS	SURVEYOR	DAVID BUSH
		DATE	MAY 2016

NO	DATE	REVISION

DRAWING NO	C 8415/1	REV	0
DRAWING TITLE	ELEVATIONS		
SCALE	1 : 50 (A0)		
SEE ALSO DWG NOS			
SHEET	2 OF 2		
REF NO	G 8415		



LASER SURVEYS

[illegible] 1975 [illegible]

DATUM NOTES

GRID IS BASED ON ARBITRARY COORDINATES BUT IS ORIENTATED APPROXIMATELY NORTH.

LEVELS ARE RELATED TO :– ARBITRARY DATUM.
BENCH MARK USED IS LOCATED AT :–
CONTROL STATION No.1

VALUE GIVEN AS 50.00m (ARBITRARY DATUM)

SURVEY CONTROL STATIONS SHOWN

[illegible]

AV	Air Valve	MK	Marker
BK	Brick	MS	Milestone
BL	Bollard	MT	Meter
BS	Bus Stop	MY	Mercury
BT	British Telecom	OH	Overhead
C/B	Close Boarded	PAV	Paving
CL	Cover Level	PB	Post Box
CLK	Chainlink	PE	Pipe
CO	Column	PM	Parking Meter
Conc	Concrete	P/R	Post and Rail
CP	Catch Pit	PT	Post
CPS	Concrete Paving Slabs	P/W	Post and Wire
CTV	Cable Television	RE	Rodding Eye
DC	Drainage Channel	RET	Retaining
DP	Down Pipe	RS	Road Sign
EP	Electricity Pole	RSJ	Rolled Steel Joist
ER	Earthing Rod	SC	Stop Cock
FB	Flower Bed	SK	Soakaway
FE	Fence	SPT	Septic Tank
FH	Fire Hydrant	ST	Silt Trap
FL	Floor Level	SV	Stop Valve
FP	Flag Pole	SVC	Security Video Camera
GP	Gate Post	TCB	Telephone Call Box
GV	Gas Valve	THL	Threshold Level
GY,G	Gully	TL	Traffic Light
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LB	Litter Bin	WM	Water Meter
LP	Lamp Post	WO	Wash Out
MH	Manhole Cover		
Ar	Arch Height		
B	Beam Height		
C	Ceiling Height		
D	Door Height		
H	Head Height		
S	Sill Height		
Sp	Spring height		

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* Kerb levels have been taken in the bottom of the channel.

NOT TO [illegible]

12 PLATTS LANE, HAMPSTEAD, LONDON. NW3 7NR

[illegible]

DATE: [illegible] 2016

NO	DATE	REVISION

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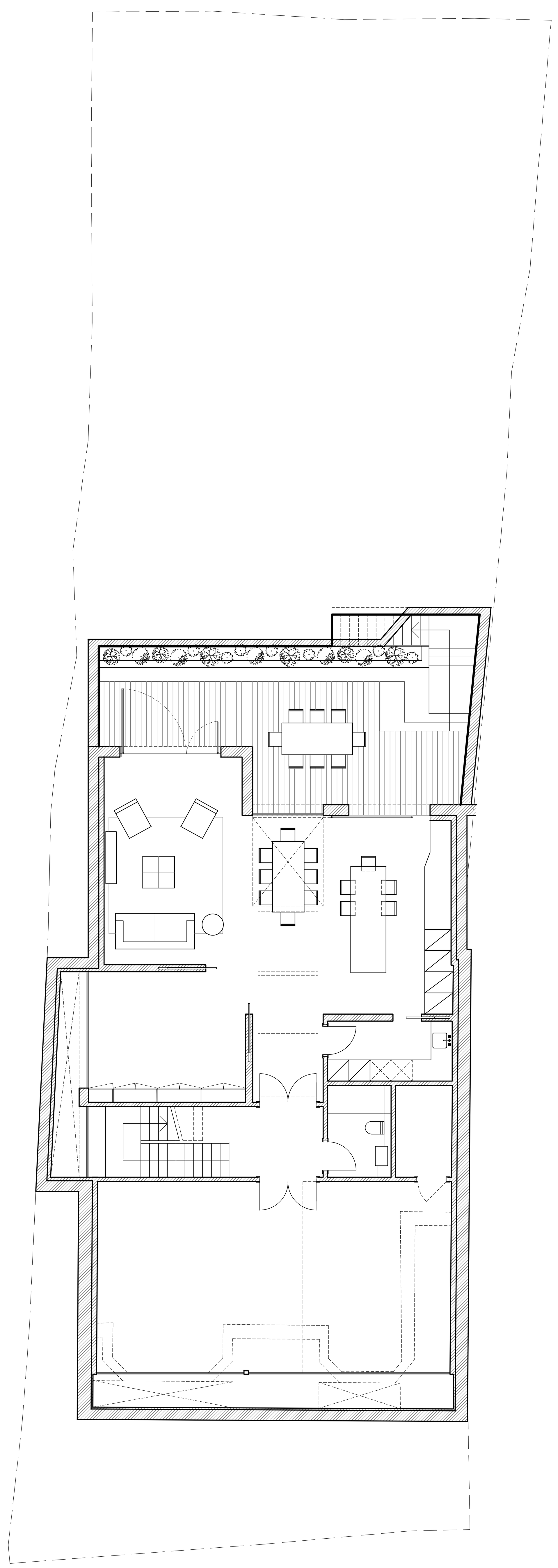
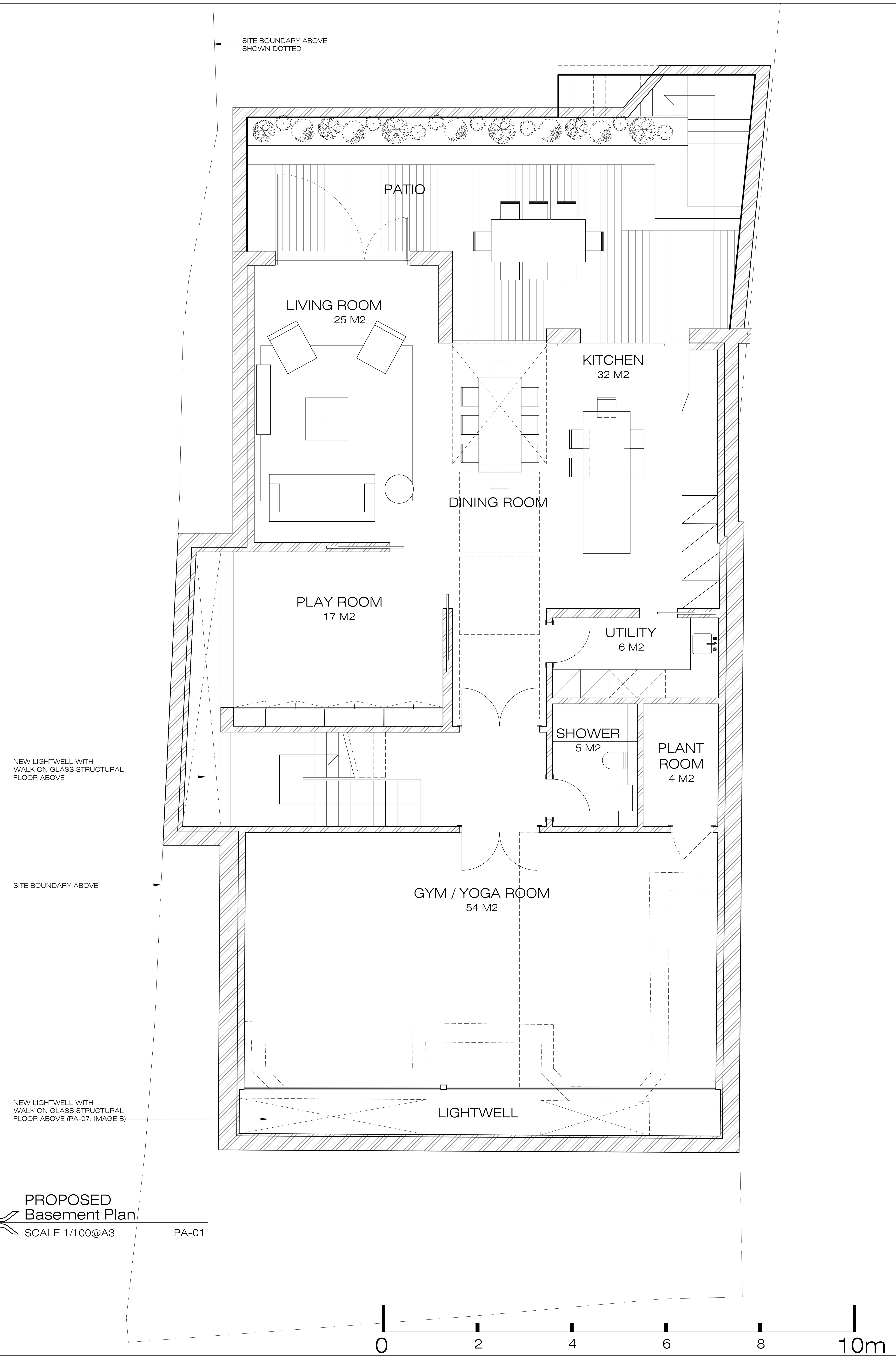
REF NO	[illegible]415		



PROPOSED
Basement Plan
SCALE 1/200@A3 PA-01



PROPOSED
Basement Plan
SCALE 1/100@A3 PA-01

XUL ARCHITECTURE

Ground Floor Office
33 Belsize Lane
London NW3 5AS

Office: +44 (0) 207 431 9014
s.sandler@xularchitecture.co.uk
www.xularchitecture.co.uk

PLEASE NOTE:

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2. CONTRACTOR TO REFER TO ENGINEER'S DRAWINGS BEFORE PROCEEDING WITH WORKS.
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6. SAMPLES TO BE PROVIDED BY CONTRACTOR FOR XUL ARCHITECTURE APPROVAL.
7. ALL FINISHES TO XUL ARCHITECTURE SATISFACTION.
8. ALL DRAWINGS TO BE APPROVED BY XUL ARCHITECTURE BEFORE CONSTRUCTION.

ADDITIONAL NOTES:

REVISIONS

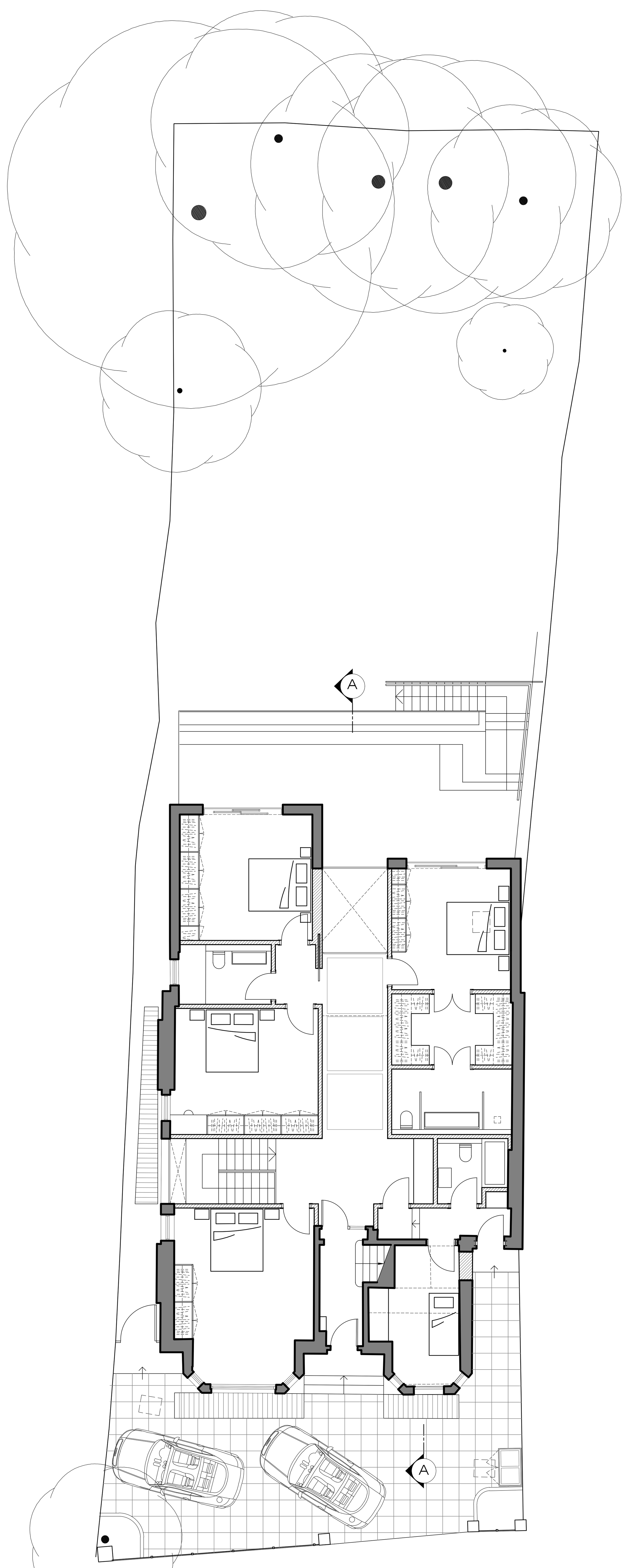
No	Date	Description Issue For	issue By
00	25/05/16	INFORMATION	JH
01	26/05/16	INFORMATION	JH
02	27/05/16	INFORMATION	JH
03	01/06/16	INFORMATION	JH
04	03/06/16	PLANNING	JH
05	18/07/16	PLANNING	AMG
06	25/07/16	PLANNING	AMG

Client
PRIVATE CLIENT

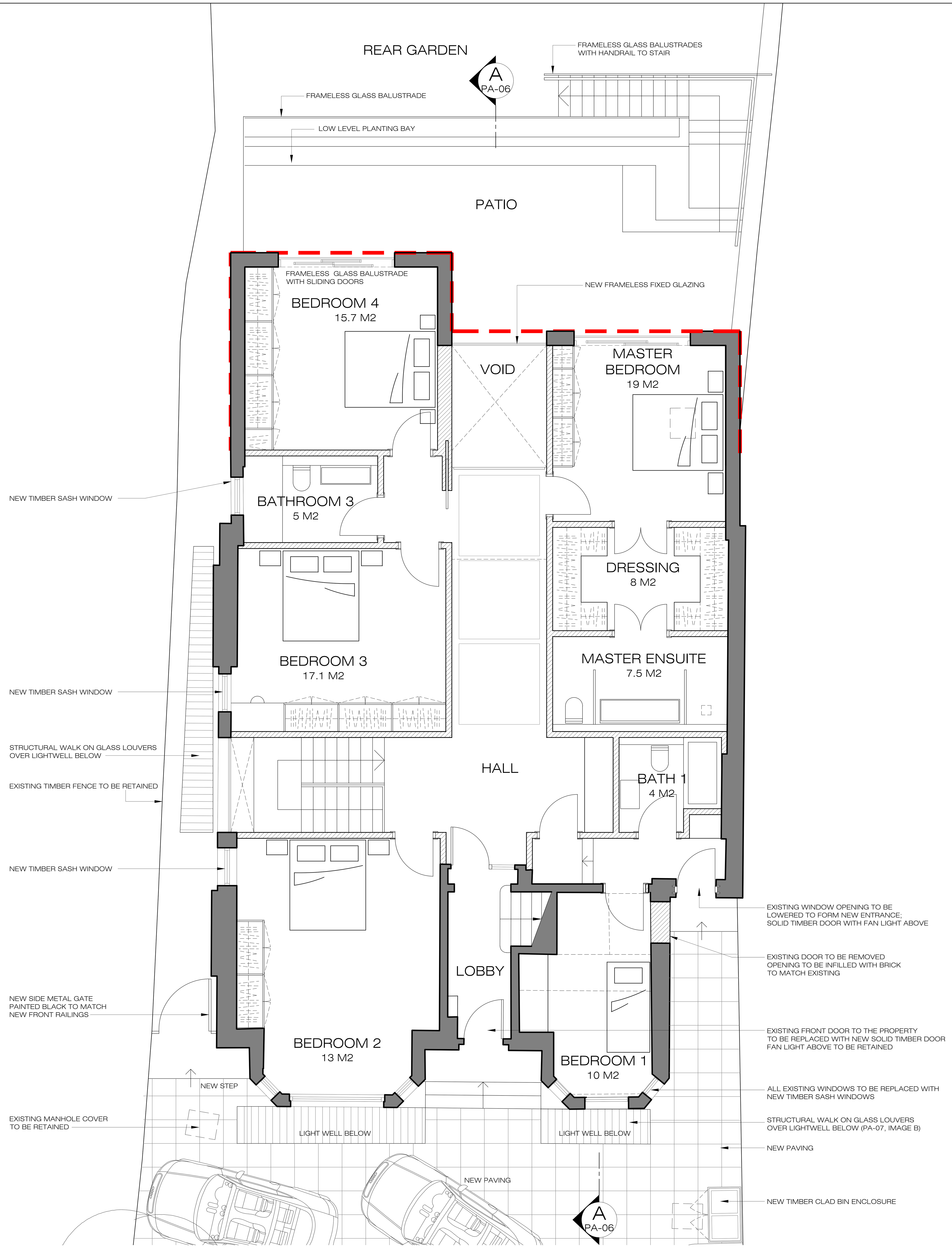
Project
12 Platt's Lane
NW3 7NR

Title
PROPOSED
Basement Plan

Scale	Dwg. No.	Rev.
1/100@A3	PA-01	06
Date 25/05/16		
Drawn JH	Project Number 1610	
Checked CC		



PROPOSED
Ground Plan
SCALE 1/200@A3 PA-02



PROPOSED
Ground Plan
SCALE 1/100@A3 PA-02

XUL ARCHITECTURE

Ground Floor Office
33 Belsize Lane
London NW3 5AS

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ADDITIONAL NOTES:

REVISIONS

No	Date	Description Issue For	issue By
00	25/05/16	INFORMATION	JH
01	26/05/16	INFORMATION	JH
02	27/05/16	INFORMATION	JH
03	01/06/16	INFORMATION	JH
04	03/06/16	PLANNING	JH
05	28/06/16	PLANNING	AM
06	18/07/16	PLANNING	AMG
07	25/07/16	PLANNING	AMG

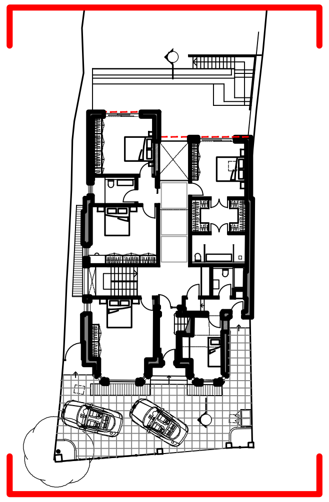
Client
PRIVATE CLIENT

Project
12 Platt's Lane
NW3 7NR

Title
PROPOSED
Ground Floor Plan

Scale	Dwg. No.	Rev.
1/100@A3	PA-02	07
Date 25/06/16		
Drawn AM	Project Number 1610	
Checked CC		

Rear Elevation

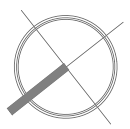


Front Elevation

Key Plan
SCALE 1:500@A3

PROPOSED
Front Elevation
SCALE 1/100@A3 PA-03

PROPOSED
Rear Elevation
SCALE 1/100@A3 PA-03



0 2 4 6 8 10m

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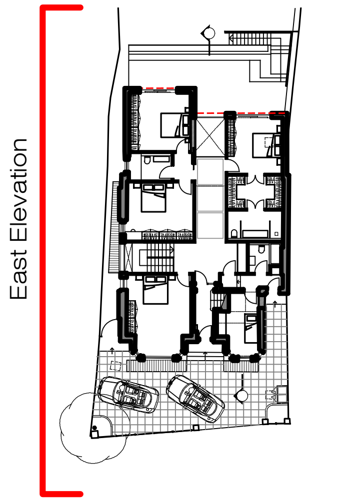
03	18/07/16	PLANNING	AMG
04	20/07/16	PLANNING	AMG

Client
PRIVATE CLIENT

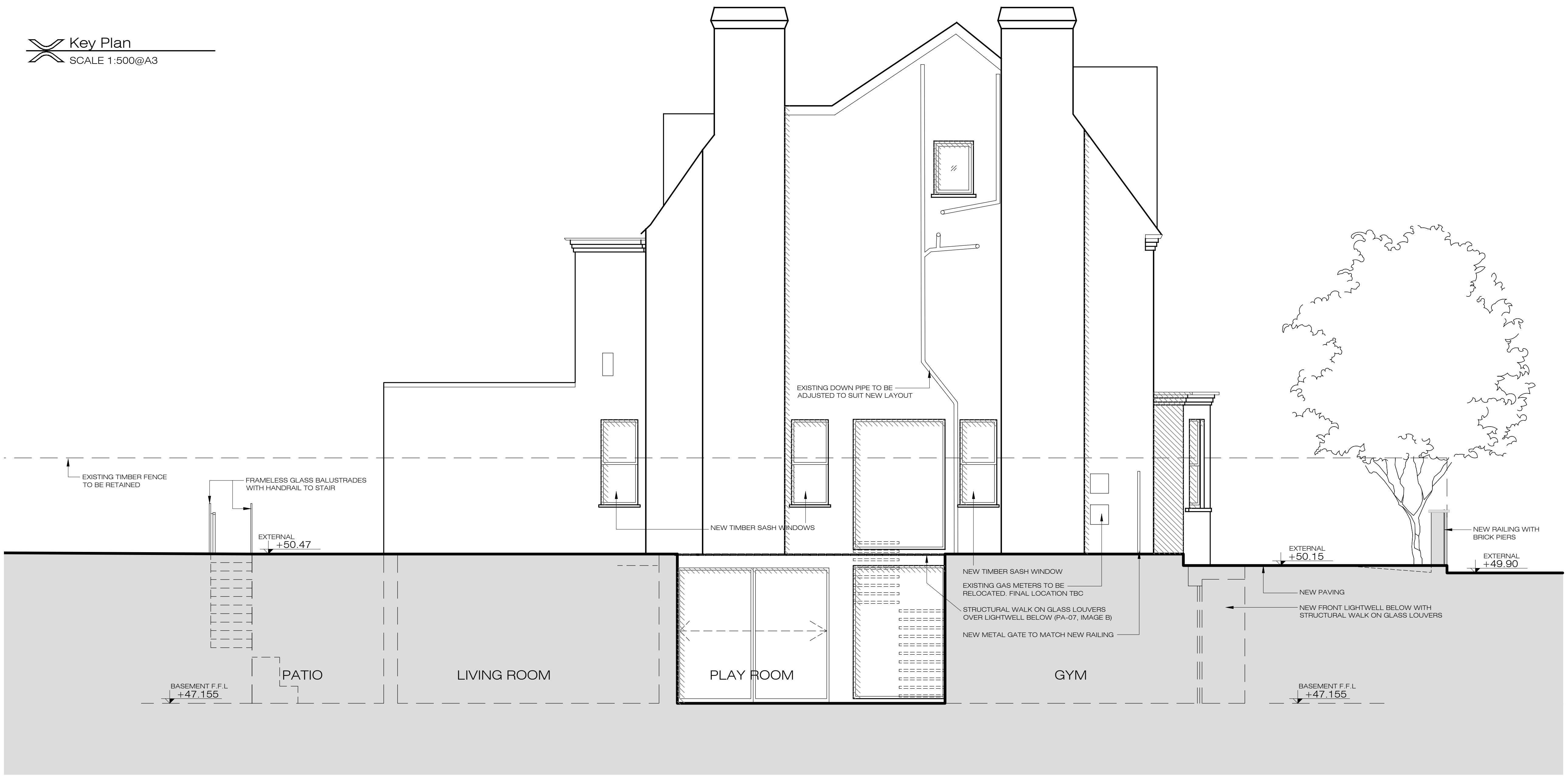
Project
12 Platt's Lane
NW3 7NR

Title
PROPOSED
Front and Rear Elevations

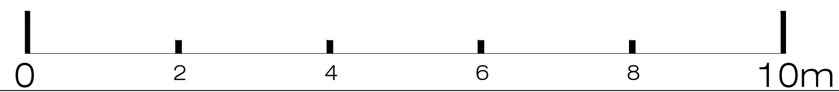
Scale	Dwg. No.	Rev.
1/100@A3	PA-03	04
Date 18/07/16		
Drawn JH	Project Number 1610	
Checked CC		



Key Plan
SCALE 1:500@A3



PROPOSED
Flank Elevation (East)
SCALE 1/100@A3 PA-04



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03	28/06/16	PLANNING	AM
04	18/07/16	PLANNING	AMG

Client
PRIVATE CLIENT

Project
12 Platt's Lane
NW3 7NR

Title
PROPOSED
Flank Elevation (East)

Scale	Dwg. No.	Rev.
1/100@A3	PA-04	04
Date 18/07/16		
Drawn AM	Project Number 1610	
Checked CC		

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