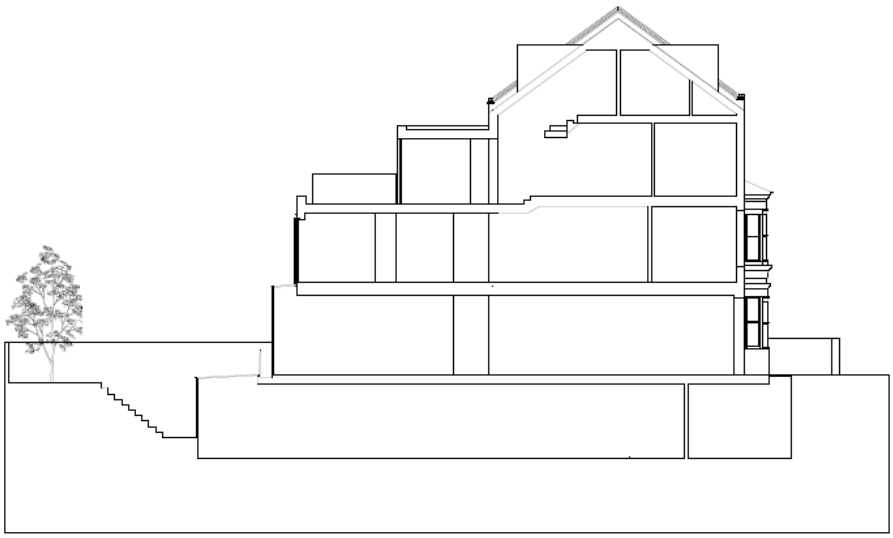

Basement Impact Assessment: 19 Rona Road, London NW3 2HY

(Surface Water and Groundwater)

Basement Impact Assessment: 19 Rona Road, London NW3 2HY

Prepared for

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Report reference: 63108R1Rev2, December 2015
Report status: Final

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Basement Impact Assessment: 19 Rona Road, London NW3 2HY

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63108R1Rev2. Final

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Revision record:

Issue	Report ref	Comment	Author	Checker	Reviewer	Issue date	Issued to
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2	63658R1	SW & GW	MXJ	TKT	HCV / JWG	31 July 2015	Brendan Massam, c/o SubStructural Ltd, 51% Studios
3	63658R1Rev 1	SW & GW	MXJ	TKT	HCV / JWG	31 July 2015	Brendan Massam, c/o SubStructural Ltd, 51% Studios
4	63658R1Rev 2	Expanded hydrology section	TKT	TKT	HCV	02 Dec 2015	51% Studios

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REPORT SUMMARY

The assessment findings are summarised as follows:

1. Impacts to surface water flows and related flooding	High	
	Med	
	Low	
2. Impacts to ground water flows and related flooding	High	
	Med	
	Low	
3. Overall risk posed by the Site	High	
	Med	
	Low	

Key:

High		*There is a high potential risk*
Med		*There is medium potential risk*
Low		*There is a low potential risk*

RECOMMENDATIONS and SUMMARIES

Screening Stage

There is unlikely to be an impact on flood risk in the local area and the site investigation suggests that the proposed basement will not extend below the water table.

The proposed change in hard surfaced area means the assessment progressed to the Scoping Stage for both surface water and groundwater.

Scoping Stage

- Surface water

The new development will decrease the amount of surface area that allows water to enter the ground; therefore there may be a decrease in the amount of water that might impact neighbouring properties. There may also be an increase in the amount of water passing through the drainage system; however the increase in amount of water passing through the drainage system will be mitigated by rainwater harvesting, this need to be confirmed by a site drainage plan.

In summary there is unlikely to be any impact on flood risk in the local area which is considered to be 1 in 1000 years.

- Ground water

The maximum completed depth of the proposed basement is more than a metre higher than groundwater levels observed on site and therefore is unlikely to have any impact on groundwater flows and levels.

The change in permeable surfaces area is likely to reduce the amount of water entering the ground; however this will have little, if any, impact as the ground is London Clay.

Impact Assessment

The new development will have a low impact on the surface water and groundwater levels and flows at the site.

Recommendations

It is recommended that groundwater level monitoring at the Site is carried out during the

construction phase in order to confirm the rest water level beneath the basement.

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APPENDICES

Appendix A Proposed Development Plans
Appendix B Geological data
Appendix C Observation borehole log

1 INTRODUCTION

1.1 Background

ESI Ltd (ESI) was commissioned by Brendan Massam, c/o SubStructural Ltd to undertake a Basement Impact Assessment (BIA) for a proposed development at 19 Rona Road, London NW3 2HY (the Site) in the London Borough of Camden. The Site has a total area of 173.4 m^2, and includes a four-storey dwelling with associated two-storey rear extension. It is proposed that the existing building shall be refurbished and the rear extension block will be rebuilt in addition to excavate a new basement (Appendix A).

The Site is located at an elevation of approximately 43 mAOD and the approximate National Grid Reference of 528062, 185624 (Figure 1.1).

Figure 1.1 Site Location

1.2 Scope of Works

This Basement Impact Assessment (BIA) follows the Camden Council guidance, CPG4 (Camden Council, draft 2015) supported by the Camden geological, hydrogeological and hydrological study (ARUP, 2010) and considers the groundwater and surface water conditions; the land stability conditions are assessed in a separate report. This report will be used for submission to the Planning Authority in support of the planning application for the proposed development. The work undertaken follows the procedure outlined below:

1) **Screening** – this process aims to identify any matters of concern and determine whether or not a full BIA is required.
2) **Scoping** – this process identifies the potential impacts of the proposed scheme.
3) **Site investigation and study** – this is undertaken to develop an understanding of the site and its immediate surroundings; the level of detail will depend on the matters of concern identified during the screening and scoping stages.

4) **Impact assessment** – this involves evaluating the direct and indirect impacts of the scheme by comparing the current situation (the baseline) with the situation as it would be with the basement in place.

Recommendations – recommendations are made based on the outcome of the assessment.

1.3 Description of proposed development

The proposed development comprises extending the existing single-storey basement beneath the building and the rear extension. The two-storey rear extension will be rebuilt and the four-storey building will be refurbished. The completed basement, according to the proposed development plan in Appendix A, will have a maximum depth of 3.1 mbgl and a total area of 147.1 m^2. It is understood that during construction the excavation for the basement will extend to approximately 3.5 mbgl.

2 SCREENING

The screening stage for Impact Assessment has been considered as set out in CPG4 (Camden Council, 2013) as follows.

2.1 SURFACE WATER (Surface flow and flooding screening flowchart (Figure 3, CPG4 (Camden Council, 2013))			
Impact question	**Answer**	**Justification**	**Reference**
1) Is the site within the catchment of the pond chains on Hampstead Heath?	**No**	The site is not within the catchment of the ponds on Hampstead Heath.	Arup, 2010. Ordnance Survey Mapping
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?	**Yes**	The proposed development will reduce the permeable area by 50% and therefore the volume of runoff onsite will increase.	Site Plans
3) Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	**Yes**	The total site area is 173.4 m^2 and the current garden area is 60.9 m^2, the proposed development will reduce 50% of permeable surfaces and therefore it will increase the hard surfaced external area.	Site Plans
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 watercourses?	**Yes**	Due to the change in the proportion of hard surfaced areas, there may be a change in the profile of surface water received by adjacent properties or downstream watercourses. Pending confirmation from a detailed site drainage plan it is probable that any change will be a decrease in surface water	Site plans
5) Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	**No**	The site is proposed to be surfaced with impermeable material and will not change the quality of surface water being received by adjacent properties or downstream watercourses	Site plans
6) Is the Site in an area known to be at risk from surface water flooding or is it at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature?	**Maybe**	The site is at low risk from surface water flooding (Figure 2.1) identified as 1 in 1000 years (URS, 2014). . Comments from neighbouring residents attest to flooding issues in the local area particularly associated with basements	Arup, 2010 URS, 2014 Campbell Reith , 2015

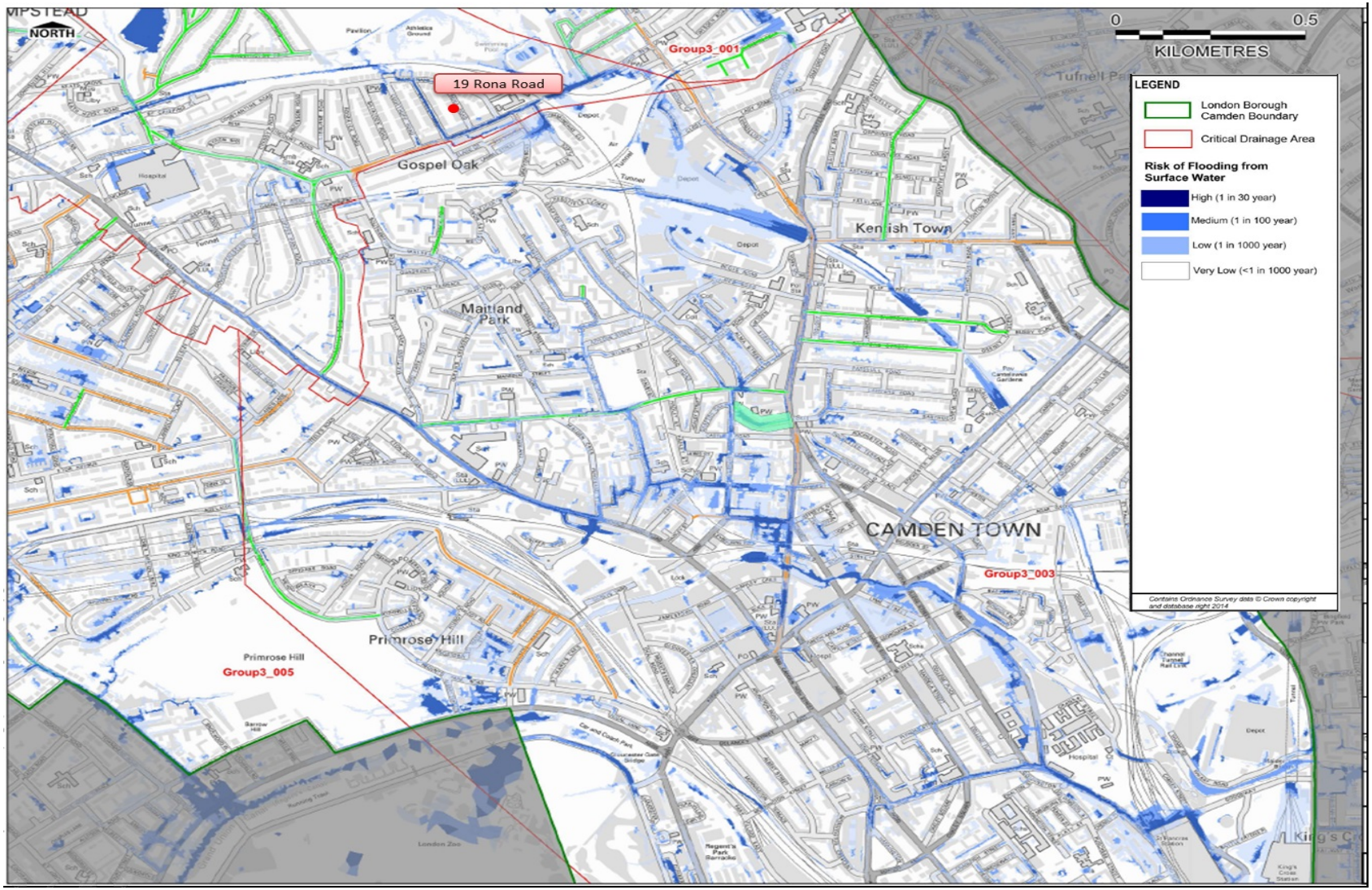

Figure 2.1 Flood maps for surface water flooding (adapted from URS, 2014)

2.2 GROUND WATER (Subterranean (groundwater) flow screening chart (Figure 1, CPG4 (Camden Council, 2013)))			
Impact question	**Answer**	**Justification**	**Reference**
1a) Is the Site located directly above an aquifer?	**No**	The Site is located on the London Clay Formation, according to the observation borehole log onsite (5.7 m deep). There are also four BGS boreholes located approximately 50 to 60 m to the east of the site and their logs indicate that the London Clay Formation is the uppermost geological strata. The London Clay is not classified as an aquifer, according to the Environment Agency or the BGS.	Arup (2010) BGS (1993) Environment Agency website and BGS website
1b) Will the proposed basement extend beneath the water table surface?	**No**	The proposed basement will extend to 3.1 mbgl (3.5 mbgl during construction). On 24th June 2015, one shallow borehole (5.7 m deep) was installed and was dry on completion. Subsequent monitoring established a rest water level at 4.2 mbgl.	Site plans Observation borehole water levels
2) Is the Site within 100 m of a watercourse, well (used/disused) or potential spring line?	**No**	There is no mapped watercourse or water well within 100 m from the site (Figure 2.2)	BGS (2015) ARUP (2010) URS, 2014
3) Is the site within the catchment of the pond chains on Hampstead Heath?	**No**	The site is not within the catchment of the pond chains on Hampstead Heath	ARUP (2010)
4) Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	**Yes**	The total site area is 173.4 m^2 and the current garden area is 60.9 m^2. The proposed development will reduce 50% of permeable surfaces and therefore it will increase the hard surfaced external area.	Site plans
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**	The 50% smaller permeable area suggests a reduction in the rainfall discharged to the ground, pending confirmation from a detailed site drainage plan.	Site plans
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**	There are no nearby ponds and the site is located outside the catchment of Hampstead Heath pond chains. The nearest pond is the Highgate No.1 pond and it is located 750 m to the north east of the site. The Hampstead No.1 pond is located approximately 800 m to the north west of the site.	ARUP (2010)

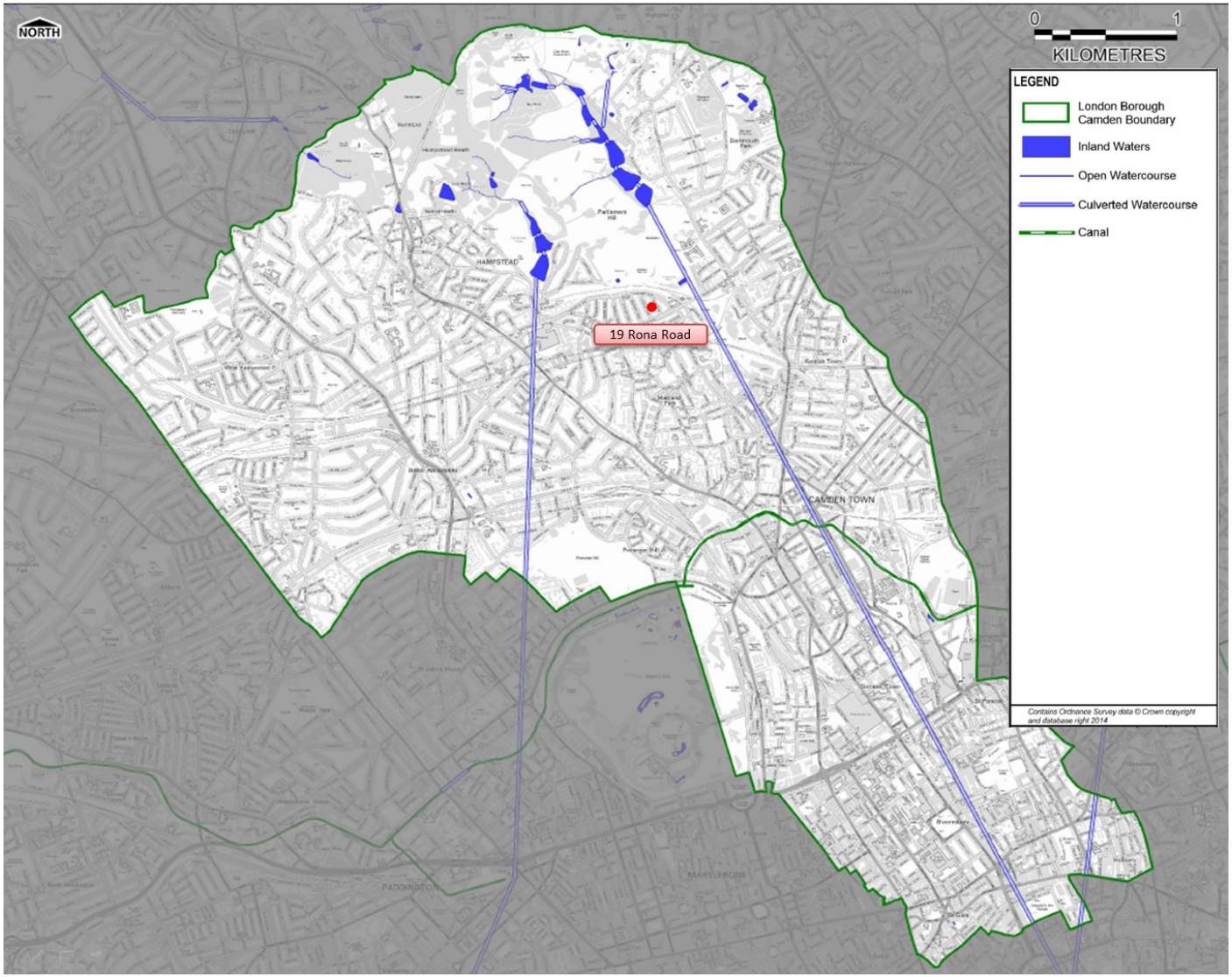

Figure 2.2 Camden surface waterbodies (adapted from URS, 2014)

3 SCOPING

3.1 SURFACE WATER (Surface flow and flooding screening flowchart (Figure 3, CPG4 (Camden Council, 2013))			
Impact question	**Answer**	**Justification**	**Reference**
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?	**Yes**	The proposed development will reduce the permeable area by 50% and the increase in amount of water passing through the drainage system will be mitigated by rainwater harvesting. It is anticipated that, in the event of an extra amount of rainfall, it will be diverted through the drainage system. This would need to be confirmed by a detailed site drainage plan.	Site Plans
3) Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	**Yes**	The total site area is 173.4 m^2 and the current garden area is 60.9 m^2. The proposed development will reduce 50% of permeable surfaces and therefore it will increase the hard surfaced external area. The proposed rainwater harvesting system will help mitigate the change in the impermeable paved area. The change is the permeable area is limited to 30 m^2 and, beads on the mitigation process, this is anticipated to have very limited impact on the surface water, runoff and drainage system.	Site Plans
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 watercourses?	**Yes**	The CCTV survey carried out on July 2015 suggested that no shared drainage exists with the neighbouring properties. This need to be confirmed by a site drainage plan There will be a decrease in the surface water being received by adjacent properties or downstream watercourses due to the reduction in area of permeable surface at the site.	Site plans

6) Is the Site in an area known to be at risk from surface water flooding or is it at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature?	**Maybe**	The Strategic Flood Risk map for Camden (URS, 2014) identifies a low risk (1 in 1000 years) of flooding from surface water for Rona Road. The extent of the flood risk does not extend to the properties along the street and the risk of flooding is much greater (1 in 30 years) along Estelle Road to the west and Mansfield Road to the south, reflecting the local topography. The Environment Agency determines there is a risk of flooding at the Site from reservoirs although it states that this would be extremely unlikely. The indicated source of a reservoir flood is from the Lea Valley to the east of the Site and Rona Road is located almost at the furthest edge of the potential flood extent. The nearest surface water feature is the course of the Fleet Brook to the south of the property which runs along the northern side of Mansfield Road, approximately 100m to the south of the Site (Arup, 2010). According to the BGS 50m Digital Terrain Model (DTM) the Site is approximately 1.5 m higher elevation that the course of the Brook, therefore the proposed development would lie 2m below the the historical course of the Brook. However, it is highly probable that the Fleet Brook was culverted many years ago and, with no superficial deposits in the area (BGS, 2015) it is very unlikely that there is any hydrological connection between the course of the Brook and the Site. The proposed development will be constructed according to BS 8102:2009; the code of practice for protection of below ground structures against water from the ground as mitigation against any potential flooding	Arup, 2010 URS, 2014 Campbell Reith , 2015 EA, 2015 BGS, 2015

3.1 GROUNDWATER (Subterranean (groundwater) flow flowchart (Figure 1, CPG4 (Camden Council, 2013)))			
Impact question	**Answer**	**Justification**	**Reference**
4) Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	**Yes**	The total site area is 173.4 m^2 and the current garden area is 60.9 m^2. The proposed development will remove 50% of permeable surfaces and therefore it will increase the paved external area. The proposed development is situated on the London Clay Formation. As the London Clay is not an aquifer, the change in hard surfaced area will not significantly affect the effective groundwater storage of the ground beneath.	Site plans

4 SITE INVESTIGATION

4.1 Site Investigation

In June 2015, Point Drilling Services drilled a trial-hole to the front of the property and a six-inch monitoring borehole to a depth of 5.7 m below ground level in the middle of the garden. The drilling logs are provided in Appendix C. Table 4.1 summarises the sequence of strata encountered in these boreholes; the full logs are provided in Appendix C.

Table 4.1 Summary of Shallow Ground Profile at 19 Rona Road

Stratum	Depth (mbgl)	Description
Topsoil	0.3	Soft, dark brown, very slightly clayey silty topsoil
Made Ground / fill	0.6	Stiff orange/brown silty clay
Made Ground / fill	0.7	Soft orange brown slightly silty clay
London Clay	1.8	Stiff, orange/brown silty sandy gravelly clay
London Clay	2.3	Stiff, mid brown grey, very slightly silty clay with occasionally orange silt particles
London Clay	5.7	Same as above

On 24th June 2015 the monitoring borehole was dry on completion. The borehole was monitored until rest water levels were established, the recorded levels are shown in Table 4.2. There was occasional rainfall during the monitoring period.

Table 4.2 Water level dip in the observation borehole

Date	Water level (mbgl)
24th June 2015	5.7
6th July 2015	4.5
18th July 2015	4.2
20th July 2015	4.2

4.2 Geological and Hydrogeological Context

Mapping by the British Geological Survey (BGS, 1993; BGS website) indicates that the Site is underlain by the London Clay Formation. The London Clay consists mainly of blue-grey or grey-brown silty to very silty clay and clayey silt with locally-developed silt, sandy clay, sand partings/pockets and thin beds of rounded flint gravel (BGS website).

No superficial deposits are mapped at the Site and in its immediate surroundings, but the onsite borehole data indicate 0.3 m of Top Soil underlined approximately by 0.4 m of Made Ground overlying the London Clay Table 4.1. Four BGS boreholes located 50 to 60 m east of the Site indicate a thickness of a Made Ground layer between 0.2 to 0.8 metres (Appendix B).

The London Clay is not classified as an aquifer and is considered to be an unproductive stratum with essentially no groundwater (ARUP, 2010; Environment Agency website; BGS 1:625,000 hydrogeological mapping on BGS website).

5 IMPACT ASSESSMENT

5.1 GROUNDWATER (Subterranean (groundwater) flow (Section 6.5.1, ARUP, 2010)				
Attribute	**Baseline**	**Post-development**	**Assessment of impact**	**Mitigation**
Groundwater levels	The shallow ground profile is dominated by low permeability clay, with clay-rich Made Ground overlying London Clay bedrock. In general these clay-rich materials will permit only slow groundwater seepage, but enhanced seepage rates may occur in certain parts of the London Clay (e.g. along fissures and sandy/silty horizons).	Construction of the basement will involve the excavation of ground materials and their replacement by an impermeable structure. The maximum proposed depth of the basement (3.1 mbgl) is more than a metre above the groundwater level according to the dips available from the observation borehole (Table 4.2) observed in June/July 2015. However, it is possible that higher groundwater levels may sometimes occur following periods of prolonged heavy rainfall, although this is extremely unlikely as water levels in the London Clay typically do not respond to rainfall events. It is also possible that the water levels in the boreholes have not fully equilibrated and that there may be some seasonal variation. The initial excavation will be deeper than the finished basement (c.3.5 mbgl rather than 3.1 mbgl). Although this is still above the rest groundwater level at the site it is possible that this deeper temporary excavation may intersect the water table and that some dewatering might be required during the construction work. After the new development is completed the area of impermeable surfaces at the Site will have increased by 30 m^2, potentially reducing the rate of infiltration of rainwater into the soil, and therefore potentially slightly lowering local groundwater levels.	**Low** Sealed basements that extend below the water table present a barrier to groundwater flow and may "dam" groundwater, altering flow patterns and potentially changing groundwater levels. They also reduce the volume of connected porosity available to store water in the ground, and this may cause local groundwater levels to rise. As the proposed basement does not extend below the observed rest water table and the flow rates in London Clay are negligible, it is not expected to have a damming effect on groundwater, at least under normal conditions. At times of exceptionally high groundwater level there may be some interaction between the basement and flowing groundwater. However, this is likely to be almost undetectable given the low permeability of the ground profile and consequent low rates of lateral groundwater flow. Any dewatering undertaken during the construction phase will be temporary and is unlikely to be large in scale (given the observed depth to groundwater).	Use of appropriate SuDS

Range of seasonal fluctuation in groundwater levels	In ground materials with a low effective storage capacity for water (such as fissured London Clay) the seasonal fluctuation in observed groundwater level may be large.	See row above.	**Low** It is unlikely that the proposed basement will have a significant damming effect on groundwater – see row above.	
Spring hydrographs	No springs have been identified in the vicinity of the proposed development.		**Low** No Springs have been identified in the vicinity of the proposed development.	
Cumulative impact	There are a number of basements in the area that may have cumulative impact	The proposed basement might add a cumulative impact on the overall basement in the area	**Low** According to Arup (2010), two basement planning applications have been granted for two locations within 100 m of the site. The impact of the current development is low and it is within the London Clay Formation that is classified as a non-aquifer. It is anticipated that the overall impact for the basements in the area will still be low. As the direction of any flow at the Site would follow the local topographic gradient which runs from north to south, the addition of multiple basements along Rona Road would be in line with the direction of flow and would not increase any resistance to the direction of flow.	

6 CONCLUSIONS

Potential impacts of the proposed basement development at 19 Rona Road have been considered. The following summary conclusions are made.

6.1 Screening Stage

- Surface water

The available evidence indicates a low risk (1 in 1000 years) of surface water flooding at the site as defined by the flood maps prepared by Arup, 2010 and URS, 2010. There is also no change to the quality of surface waters. However, the proposed development will reduce the permeable surfaces by 50% (30 m^2 instead of 60.9 m^2). This is unlikely to impact flood risk in the local area.

- Ground water

The site is not located above an aquifer and there is no watercourse, well or spring within 100 m of the site. The initial investigation suggests that the site will not extend below the water table on site. Having less permeable surfaces area will result in less rainfall discharging to the ground.

6.2 Scoping Stage

- Surface water

The new development will increase the runoff due to the increase in the external paved area. However, it is understood that any increase in amount of water passing through the drainage system will be mitigated by rainwater harvesting. An additional extra runoff is assumed to be drained to an appropriate drainage system that will have a minimal effect on adjacent properties and drainage systems. There is unlikely to be any impact to flood risk in the local area.

There is an extremely unlikely risk of reservoir flooding at the Site, otherwise the risk of surface water flooding is defined as 1 in 1000 years.

There is a historical tributary of the River Fleet to the South of the site however there is unlikely to be any hydrological connection with the proposed development

- Ground water

The proposed basement will be constructed to a maximum depth of approximately 3.1 m below ground level (3.5 m during construction) into the London Clay. The London Clay is not classified as an aquifer and is unlikely to permit significant lateral groundwater flow. The overlying Made Ground is dominated by clay and is likely to be of low permeability.

The maximum completed depth of the proposed basement is more than 1 m above the groundwater levels observed on Site. Given the very low permeability of the London Clay it is possible that the observed water levels had not equilibrated within the boreholes and that groundwater levels are actually nearer to the ground surface. However, the low permeability of the London Clay (which is classified as a non-aquifer) means that there is unlikely to be significant groundwater flow to be interrupted or diverted by a basement structure.

It is unlikely that the proposed basement would have a significant impact on groundwater levels and flows, or on local surface water features.

The reduction of the permeable area might reduce the recharge into the groundwater. However, the site is located within non-aquifer deposits of London Clay Formation and, therefore, there will be negligible impacts on the water level beneath the site. There is unlikely to be of major impact to surface water flows in the surrounding area.

6.3 Impact Assessment

The new development will have a low impact on surface water and groundwater levels and flows.

6.4 Recommendations

It is recommended that groundwater level monitoring at the Site be continued within 1 m of the basement floor during construction in order to confirm the hydrogeological interpretations on which this assessment is based and whether there is any fluctuation of water levels beneath the site.

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Ordnance survey mapping, 1:10,000. © Crown copyright. All rights reserved. Licence number AL 100015683

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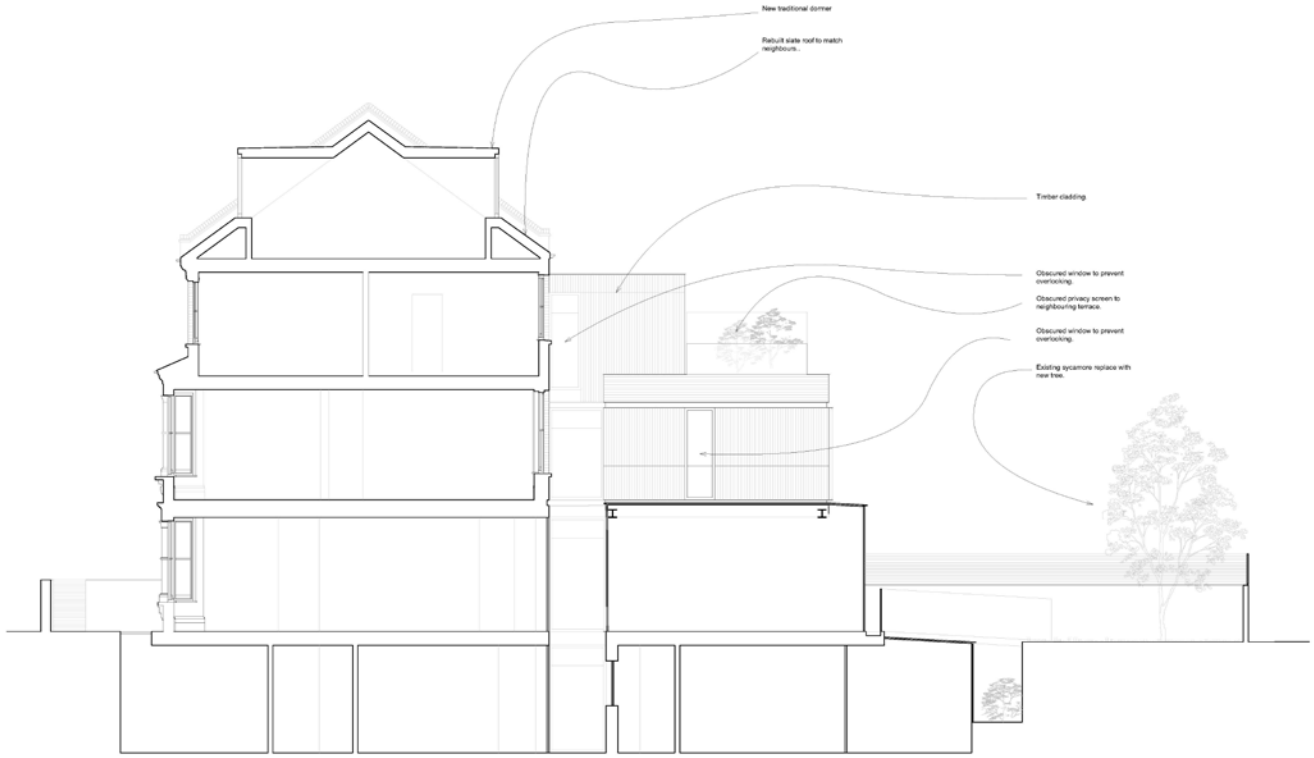
APPENDICES

APPENDIX A

Proposed Development Plans



1 Proposed Section AA

0 1 2 3 4 5M

NOTES

No.	Date	Issue Notes
A	31/7/15	Issued for Planning

51%
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Project
19 Rona Road

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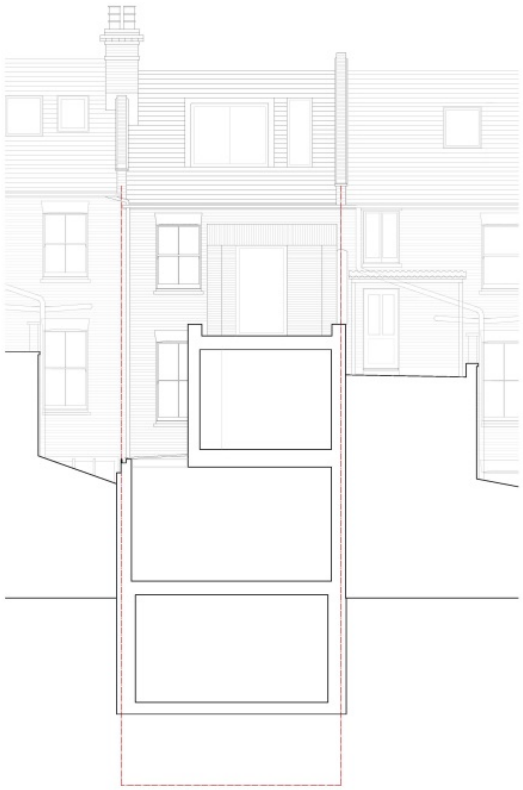
Status
Planning

Drawing
Proposed Section AA

Project Architect: PT	Project ID: 1135
Drawn By: MS	Scale: 1:50 @ A1
Checked By: 51%	Drawing No. 1201 Revision A
Date: April 2015	
File Name:	



1 Proposed Section BB

0 1 2 3 4 5 M

All Dimensions are to be checked on site before any work proceeds. Do not scale this drawing but use only figured dimensions. Any errors or omissions are to be reported to 51%.

The contractor shall submit full size drawings and specifications to 51% for approval, without which, manufacture shall not commence.

This drawing is to be read in conjunction with all the relevant consultants' and / or specialists' drawings/documents, and any discrepancies or variations are to be notified to 51% before work commences.

For further information please see other drawings and documents enclosed with this drawing.

For information on structure use engineer's drawings.

For further information on services use engineer's and/or contractor's drawings.

NOTES

No.	Date	Issue Notes
A	31/7/15	Issued for Planning

51%

1A Cobham Mews, Agar Grove, London NW1 9SB
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Project
19 Rona Road

Client
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Flat 3, 1 Netherall Gardens,
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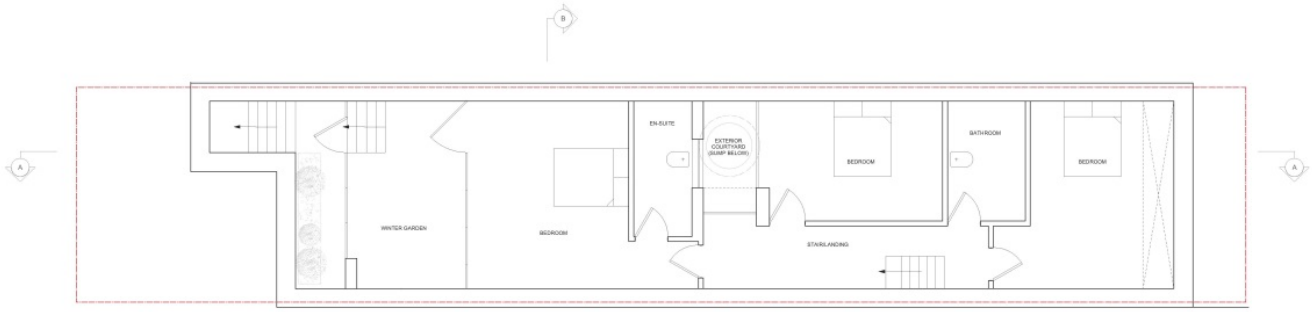
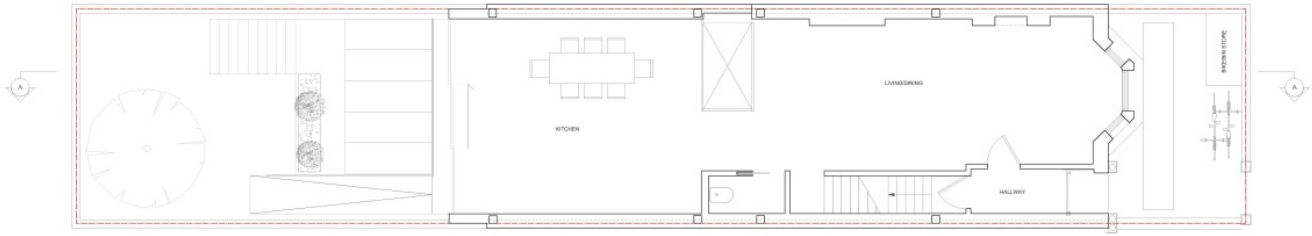
Status
Planning

Drawing
Proposed Section BB

Project Architect: PT	Project no: 1135
Drawn By: MS	Scale: 1:50 @ A1
Checked By: 51%	Drawing No: 1202 Revision: A
Date: May 2015	
File Name:	



1 Proposed Basement Plan



2 Proposed Ground Floor Plan

0 1 2 3 4 5 M

NOTES

No.	Date	Issue Notes
B	31/7/15	Issued for Information
A	15/7/15	Issued for Information

51%
1A Cobham Mews, Agar Grove, London NW1 9SB
t. 44 (0)8456 123 991 www.51pct.com

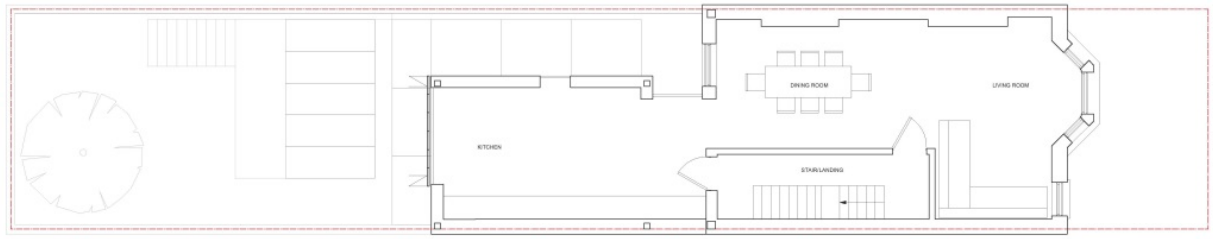
Project: 19 Rona Road

Client: Brendan Massam
Flat 3, 1 Netherall Gardens,
London, NW3 5RN

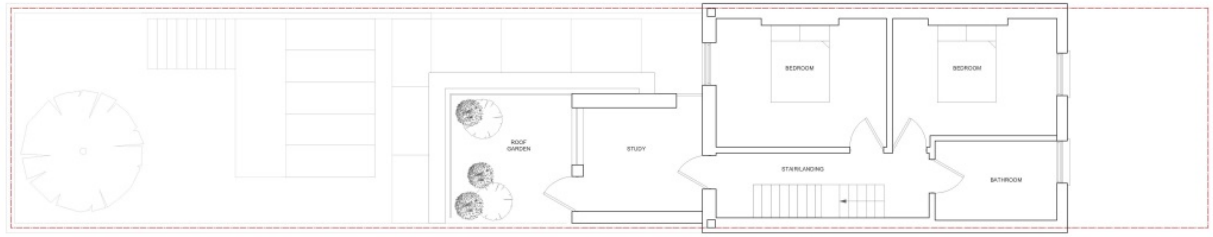
Status: Planning

Drawing: Proposed Ground & Basement Plan

Project Architect: PT	Project ID: 1135
Drawn By: MS	Scale: 1:50 @ A1
Checked By: 51%	Drawing No.: 1001 Revision: B
Date: May 2015	
File Name:	



1 Proposed First Floor Plan



2 Proposed Second Floor Plan

0 1 2 3 4 5 M

N

NOTES

No.	Date	Issue Notes
B	31/7/15	Issued for Planning
A	15/7/15	Issued for Information

51%

1A Cobham Mews, Agar Grove, London NW1 9SB
t: 44 [0] 0456 123 091 · www.51pct.com

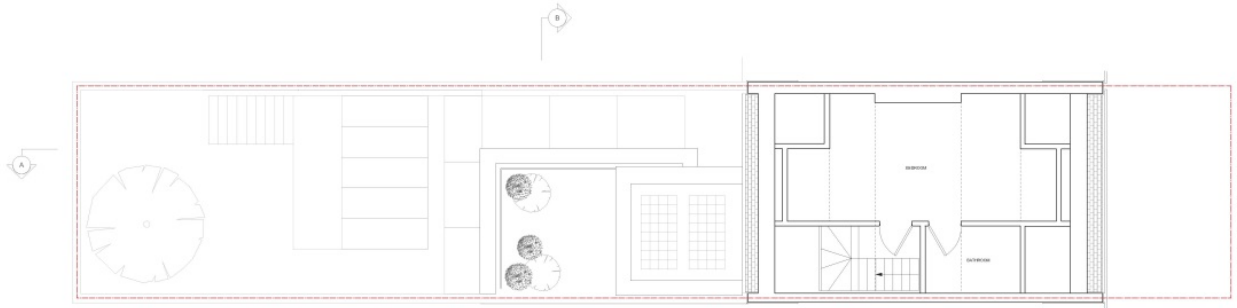
Project
19 Rona Road

Client
Brendan Massam
Flat 3, 1 Netherall Gardens,
London, NW3 5RN

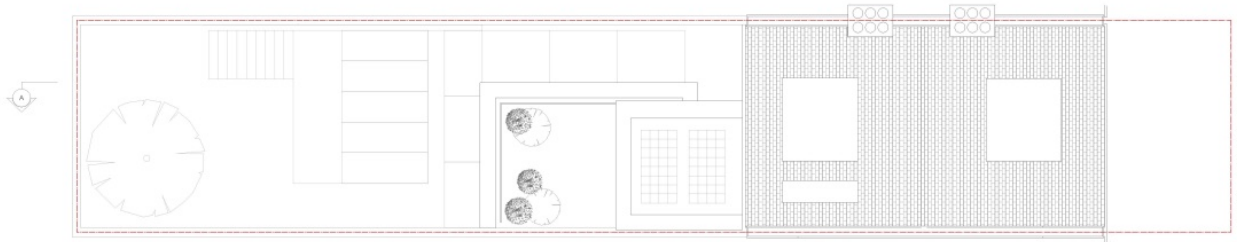
Status
Planning

Drawing
Proposed First & Second Plan

Project Architect: PT	Project ID: 1135
Drawn By: MS	Scale: 1:50 @ A1
Checked By: 51%	Sheet (A1): 1002
Date: May 2015	Revision: B
File Name:	



1 Proposed Third Floor Plan



2 Proposed Roof Plan

0 1 2 3 4 5 M

NOTES

No.	Date	Issue Notes
B	31/7/15	Issued for Planning
A	15/7/15	Issued for Information

51%
1A Cobham Mews, Agar Grove, London NW1 9SB
t. 44 [0] 8456 123 991 www.51pct.com

Project: 19 Rona Road

Client: Brendan Massam
Flat 3, 1 Netherall Gardens,
London, NW3 5RN

Status: Planning

Drawing: Proposed Third Floor & Roof Plan

Project Architect: PT	Project ID: 1135		
Drawn By: MS	Scale: 1:50 @ A1		
Checked By: 51%	Drawing No: 1003	Revision: B	
Date: May 2015			
File Name:			

1 Proposed Front Elevation
1:50

2 Proposed Rear Elevation
1:50

0 1 2 3 4 5 M

NOTES

No.	Date	Issue Notes
A	31/7/15	Issued for Planning

51%
1A Coldharn Mews, Agar Grove, London NW1 9SB
t. 44 [0] 8456 123 991 www.51pct.com

Project
19 Rona Road

Client
Brendan Massam
Flat 3, 1 Nethersll Gardens,
London, NW3 5RN

Status
Planning

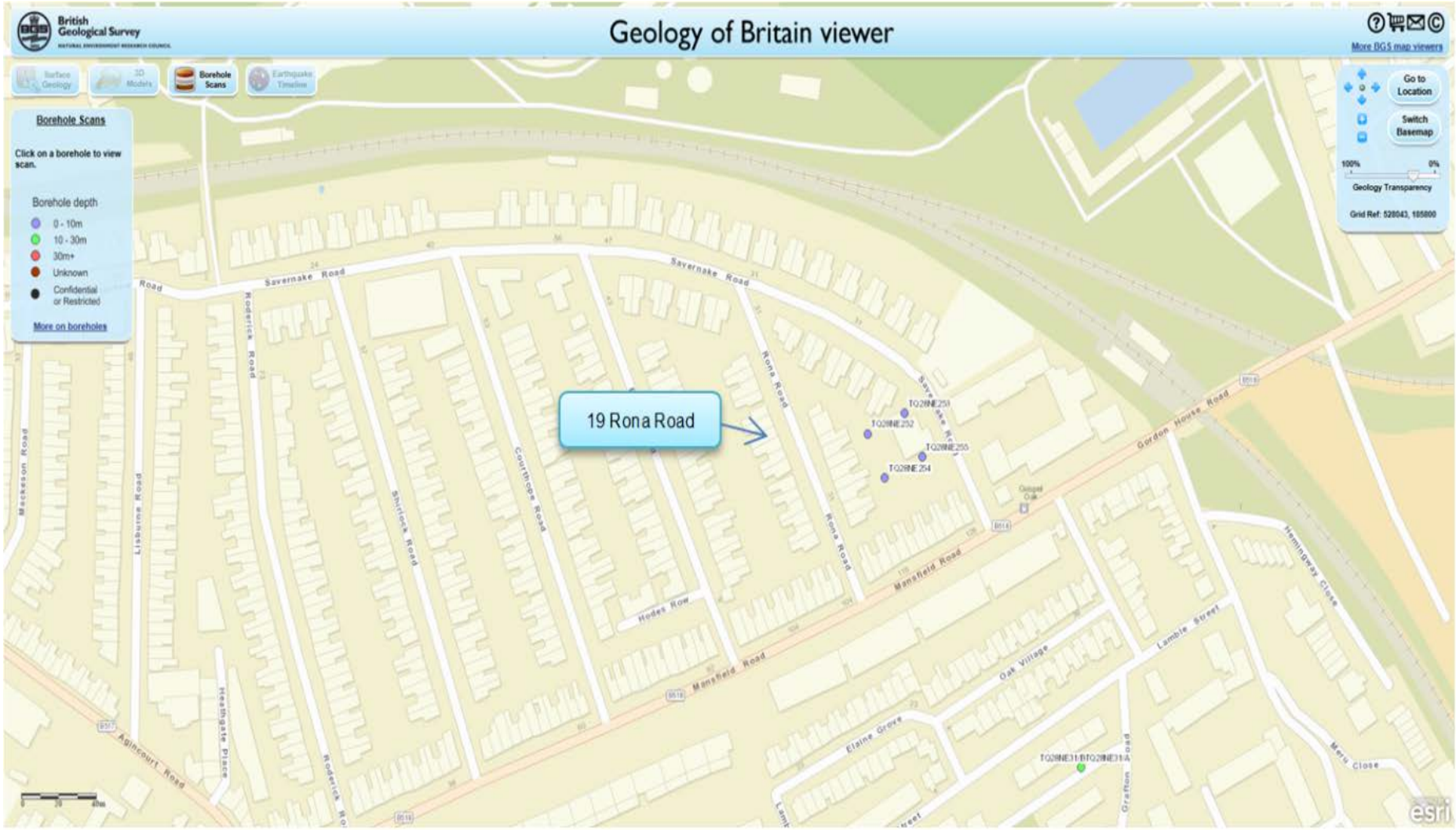
Drawing
Proposed Front and Rear Elevation

Project Architect: PT	Project ID: 1135
Drawn By: MS	Scale: 1:50 @ A1
Checked By: 51%	Drawing No. / Revision: 1101 A
Date: April 2015	
File Name:	

APPENDIX B

Geological Data

Location of BGS boreholes



CR 8/98 TQ 28 NE 255

Contract Name GOSPEL OAK NURSERY SCHOOL CAMDEN

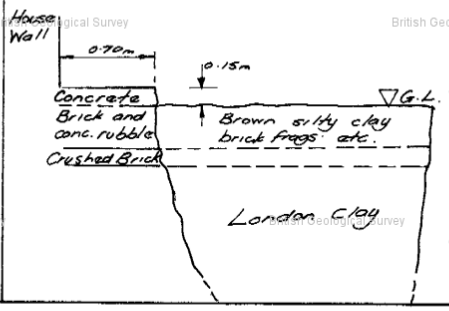
Trial Pit No. D
Sheet 1 **of** 1

Method of Excavation Hand Dug

Ground Level 44.28 m O.D.
Start 22.3.84.
Finish 22.3.84.
2815 8562

Water Levels	In-situ Tests	Samples	Depth (m)	Reduced Level (m.O.D.)	Thickness (m)	Description of Strata	Legend
		J	0.40	43.88	0.40	Made Ground (Brown silty sandy clay with bricks, concrete fragments and gravel)	
			0.65	43.63	0.25	Made Ground (Crushed bricks)	
		JJ	1.90		1.25	Firm to stiff brown fissured silty CLAY (London Clay)	
						BOTTOM OF TRIAL PIT	

SKETCH SECTION OF PIT



Notes Pit dry and stable to full depth

Terresearch Limited | **Report No.** S.34/716 | **Appendix** 1 **Sheet** 4

CH 8/98

TQ28NE 254

Contract Name GOSPEL OAK NURSERY SCHOOL CAMDEN

Trial Pit No. C

Sheet 1 **of** 1

Method of Excavation Hand Dug

Ground Level 44.50 m O.D.

Start 21.3.84.

Finish 22.3.84.

2813 8561

Water Levels	In-situ Tests	Samples	Depth (m)	Reduced Level (m.O.D.)	Thickness (m)	Description of Strata	Legend
		J			0.70	Made Ground (Brown silty sandy clay with bricks, concrete fragments and gravel)	
		J	0.70	43.80			
			0.80	43.70	0.10	Made Ground (Crushed bricks)	
		JJ			1.20	Firm to stiff brown fissured silty CLAY (London Clay)	
22/3 ▽		W					
			2.00	42.50			
						BOTTOM OF TRIAL PIT	

Notes Pit stable to full depth

CR 8/98

TQ 28 NE 253

Contract Name GOSPEL OAK NURSERY SCHOOL CAMDEN

Trial Pit No. B

Sheet 1 **of** 1

Method of Excavation Hand Dug

Ground Level 44.85 m O.D.

Start 22.3.84.

Finish 22.3.84.

2814 8564

Water Levels	In-situ Tests	Samples	Depth (m)	Reduced Level (m.O.D.)	Thickness (m)	Description of Strata	Legend
					0.30	Made Ground (Brown silty sandy clay with bricks, concrete, ash and gravel)	
			0.30	44.55			
		JJ			1.00	Firm to stiff brown fissured silty CLAY with occasional roots and rootlets (London Clay)	
			1.30	43.55			
						BOTTOM OF TRIAL PIT	

Notes Pit dry and stable to full depth

CR 8/98 TQ 28 NE 252

Contract Name	GOSPEL OAK NURSERY SCHOOL CAMDEN	Trial Pit No. A
		Sheet 1 of 1

Method of Excavation Hand Dug

Ground Level 44.50 m O.D.
Start 21.3.84.
Finish 22.3.84.
2812 8563

Water Levels	In-situ Tests	Samples	Depth (m)	Reduced Level (m.O.D.)	Thickness (m)	Description of Strata	Legend
					0.20	Made Ground (Brown silty sandy clay with bricks, concrete fragments and gravel)	
			0.20	44.30			
		JJ			1.80	Firm to stiff brown fissured silty CLAY (London Clay)	
22/3 ▽		JJ					
			2.00	42.50		BOTTOM OF TRIAL PIT	

Notes Pit stable to full depth

Terresearch Limited	Report No. S.34/731	Appendix 1 Sheet 1

APPENDIX C

Observation Borehole Log

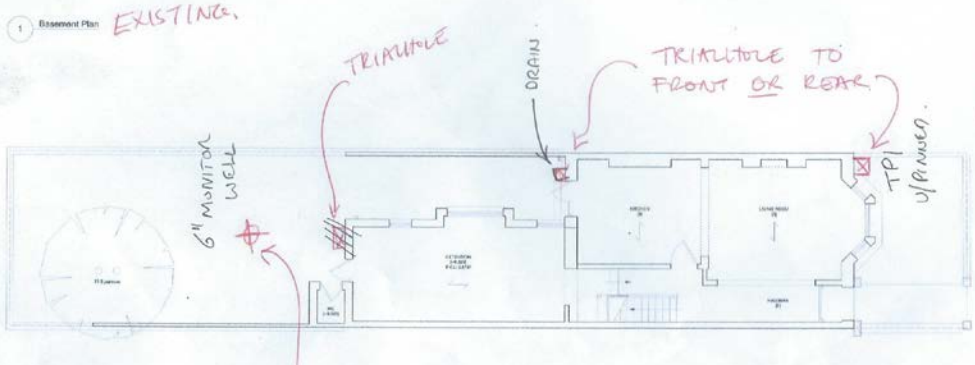
19 RONA RD. NW3

24.6.15

1 Basement Plan EXISTING.

REAR.

FRONT.



2 Ground Floor Plan EXISTING.

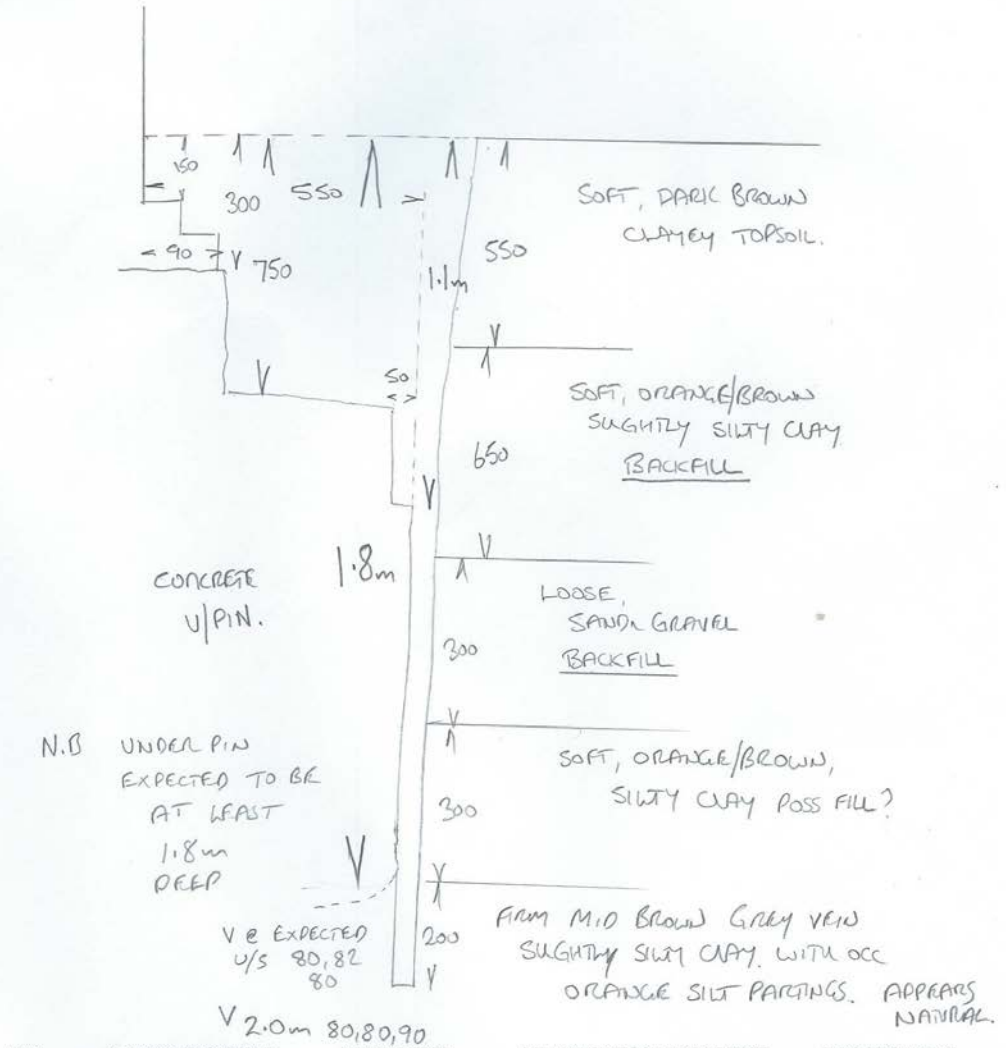
PLAN.

POINT DRILLING SERVICES
Birdsnest, Oakmead Road, St Osyth, Essex. CO16 8NL. Email: ylowther@aolcom
Telephone: 01255 821004 Mobile 07771533402

SITE INVESTIGATION TRIAL PIT LOG DATE: 24.6.15

SITE ADDRESS: 19 RONA RD. NW3

TRIALPIT LOG REF: 1 DESCRIPTION:



KEY. DISTURBED SAMPLE. V.VANE TEST. MP. MACINTOSH PROBE TEST. R.ROOT SAMPLE.

POINT DRILLING SERVICES

BIRDSNEST, OAKMEAD ROAD ST OSYTH ESSEX CO16 8NL EMAIL: YLOWTHER@AOL.COM

TELEPHONE : 01255 821004 MOBILE : 07771 533 402

SITE INVESTIGATION BOREHOLE LOG **DATE:** 24.6.15

SITE ADDRESS: 19 RONA RD. NW3

BOREHOLE LOG REF:

DEPTH	DESCRIPTION 6" MONITOR WELL.	SOIL/ROOT SAMPLE	TEST RESULT	DEPTH OF TEST
0	COMPACT BLACK, (DRY) SILTY TOPSOIL			
300	COMPACT, DRY DARK BROWN, VERY SLIGHTLY CLAYEY SILTY TOPSOIL FILL WITH FLINT & BRICK FRAGMENTS.			
600	STIFF, (DRY) ORANGE/BROWN SILTY CLAY			
700	SOFT, ORANGE/BROWN SLIGHTLY SILTY CLAY.	•	V 54,48,50	1.0
	(HAIR RD ROOT SEEN to 1.7m O.L.A.)	•	V 60,64,60	1.5
1.8	DENSE, (STIFF) ORANGE/BROWN, SLIGHTLY SANDY GRAVELLY CLAY (HOGGIN)	•	MP 50+	2.0
2.3	STIFF, MID BROWN GREY VERY SLIGHTLY SILTY CLAY WITH OCC ORANGE SILT PARTICLES	•	V 120,100,114	2.5
2.7	AS ABOVE (FIRM TO STIFF)	•	V 88,90,96	3.0
3.3	(CLAY STONE) (VERY SLIGHT WARM SEEPAGE)			
3.4	STIFF, MID BROWN GREY VERY SLIGHTLY SILTY CLAY WITH OCC ORANGE SILT PARTICLES	•	V 130+	4.0
4.0	AS ABOVE (VERY STIFF)	•	V 130+	5.0
6.0	BH END DRY & OPEN	•	V 130+	6.0

KEY : DISTURBED SAMPLE V: VANE TEST. MP : MACINTOSH PROBE TEST R:ROOT SAMPLE