Basement Impact Assessment: 59 Redington Road, London NW3 7RP

(Surface Water and Groundwater)

Basement Impact Assessment: 59 Redington Road, London NW3 7RP

Prepared for

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Report reference: 64538R1, April 2016
Report status: Final

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Basement Impact Assessment: 59 Redington Road, London NW3 7RP

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64538R1. Final

Surface Water

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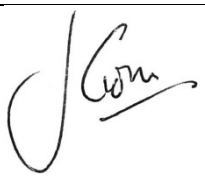
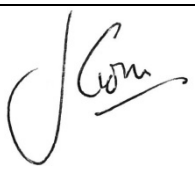
Author	TKT	
Checked by	HCV	
Reviewed by	HCV	

Groundwater

	Name	Signature
Author	TKT	
Checked by	JWG	
Reviewed by	JWG	

Revision record:

Issue	Report ref	Comment	Author	Checker	Reviewer	Issue date	Issued to
1	64538 R1D1	SW & GW	TKT	HCV / JWG	HCV / JWG	21/03/16	S.Ilan Architectural Workshop Ltd
2	64538 R1	Final	TKT	HCV / JWG	HCV / JWG	08/04/16	S.Ilan Architectural Workshop Ltd

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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

The available evidence indicates no risk of surface water flooding at the site. There is also no change to the quality of surface waters. However, the proposed development will reduce the permeable surfaces by 12.6%. This is unlikely to impact flood risk in the local area.

The site is located above an aquifer and there is a historical watercourse approximately 25m to the west of the site. Having less permeable surfaces will result in less rainfall discharging to the ground.

Scoping Stage

- Surface water

Surface water runoff will increase due to the increase in the external paved area. However, the proposed design incorporates an attenuation tank and soakaway system and the Site is not in an area considered to be at risk of any form of surface water flooding therefore there is unlikely to be any significant impact to flood risk in the local area.

- Ground water

It is not certain that groundwater is present at the Site, or that the proposed excavation will extend below any water table. It is unlikely that the proposed scheme, because it is very shallow, would have a significant impact on groundwater levels and flows, or on local surface water features.

The proposed design incorporates a soakaway system to mitigate possible reduction of recharge into the groundwater as a result of the decrease of permeable area. There is unlikely to be a major impact to surface water flows in the surrounding area.

Recommendations

It is recommended that groundwater level monitoring at the Site be carried out within 1 m of the base of the excavation during construction in order to confirm whether groundwater is present at the Site.

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FIGURES

APPENDICES

1 INTRODUCTION

1.1 Background

ESI Ltd (ESI) was commissioned by S.Ilan Architectural Workshop Ltd to undertake a Basement Impact Assessment (BIA) for a proposed development at 59 Redington Road, London NW3 7RP (the Site) in the Frognal and Fitzjohns Ward of the London Borough of Camden. The Site has a total area of 1583 m^2, and the proposal is to create a covered swimming pool in the rear garden (Appendix A).

The Site is located on a slope with an elevation of approximately 95 mAOD at the location of the proposed swimming pool and the approximate National Grid Reference of 525085, 185806 (Figure 1.1).

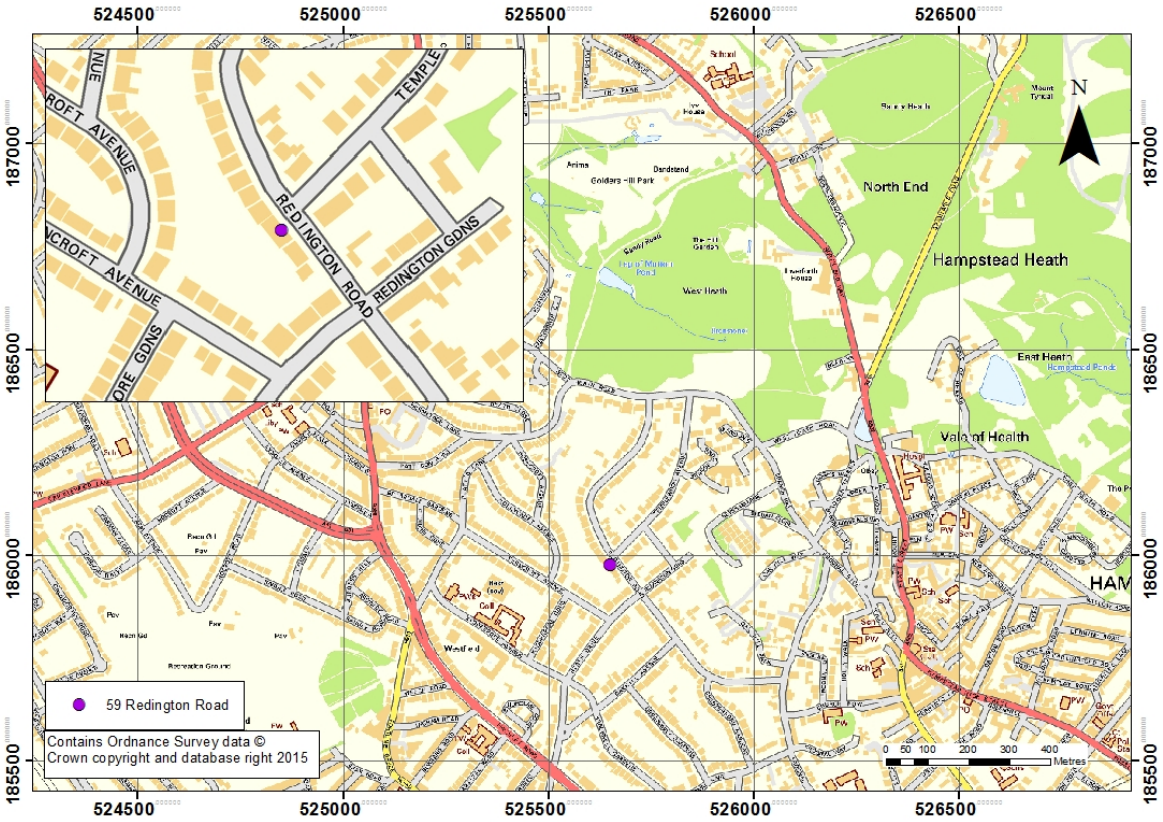

Figure 1.1 Site Location

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 constructing a swimming pool in the rear garden with an access pathway leading from the main property on the Site. The completed excavation, according to the proposed development plan in Appendix A, will have an average depth of 1.65 mbgl and a total area of 70 m^2. It is understood that the maximum depth below ground level will be 2.15 mbgl where the current ground level is highest.

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 increase the impermeable area of the Site by 12.6% and therefore the volume of runoff will be increased.	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 1583 m^2 and the current garden / permeable area is 1323 m^2. The proposed development will have an impermeable footprint of 200 m^2, increasing the total proportion of impermeable surface from 16.4% to 29% of the Site	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.	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 proposed development at the Site 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?	**No**	The site is not in an area identified at risk from surface water flooding (URS, 2014), or from river, sea or reservoir flooding (EA, 2016)m however it is opposite a street that suffered surface water flooding in 2002 (Templewood Avenue	Arup, 2010 URS, 2014 EA, 2015

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?	**Yes**	The Site is located on the Claygate Beds, according to the BGS GeoIndex (last accessed 2016). The Claygate Beds are classified as a secondary aquifer; "permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers" according to the Environment Agency.	Arup (2010) BGS GeoIndex (2016) Environment Agency website (2016)
1b) Will the proposed basement extend beneath the water table surface?	**Uncertain**	The proposed basement will extend to 1.65 mbgl. There is limited publicly available data; however a search of the Camden planning portal identified a BIA completed at a property approximately 90m to the south east of the Site. At that location, which is at a similar elevation, the Claygate Beds extended to 5 mbgl and groundwater was present at approximately 1 mbgl.	Site plans Camden (2016)
2) Is the Site within 100 m of a watercourse, well (used/disused) or potential spring line?	**Yes**	There is a tributary of the "Lost" River Westbourne that once flowed past the end of the rear garden (ARUP, 2010) (Figure 2.1), where the swimming pool is to be installed; however this is not recorded on contemporary maps	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 1583 m^2 and the current garden area is 1323 m^2. The proposed development will have an impermeable footprint of 200 m^2.	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 12.6% reduction in permeable area suggests a small 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 Leg of Mutton pond which is located 650 m to the north east of the site.	ARUP (2010)

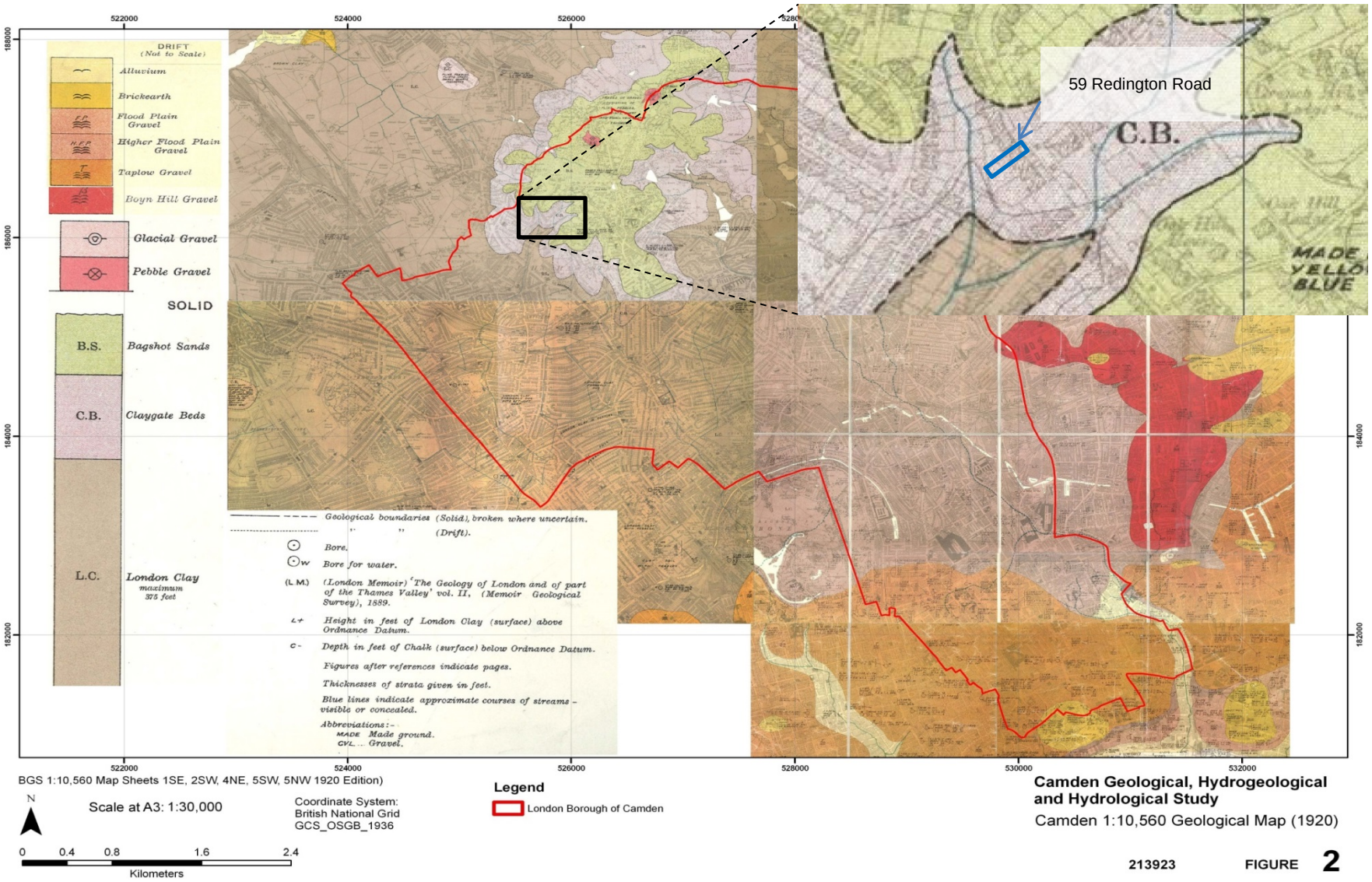

Figure 2.1 Site proximity to "Lost" River Westbourne (taken from ARUP, 2010)

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 increase the impermeable area of the Site by 12.6% and therefore the volume of runoff will be increased. The proposed development incorporates an attenuation tank and soakaway system to address this.	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 1583 m^2 and the current garden area is 1323 m^2. The proposed development will have an impermeable footprint of 200 m^2, increasing the total proportion of impermeable surface from 16.4% to 29%. The area of the excavation is 70m^2 so that much of the increase in impermeable surface will be a narrow pathway leading from the rear of the main building to the proposed development. Therefore the impact from the change will be distributed over a larger area. Pending confirmation of the surface materials to be used in the pathway, the proportion of impermeable surface may be reduced.	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. 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

3.1 GROUNDWATER (Subterranean (groundwater) flow flowchart (Figure 1, CPG4 (Camden Council, 2013)))			
Impact question	**Answer**	**Justification**	**Reference**
1a) Is the Site located directly above an aquifer?	**Yes**	The Site is located on the Claygate Beds, according to the BGS GeoIndex (last accessed 2016). The Claygate Beds are classified as a secondary aquifer, "permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers" according to the Environment Agency. There are no publicly available borehole logs within 400m of the Site, however a search of the Camden planning portal identified a BIA completed at a property approximately 90m to the south east of the Site. At that location, which is at a similar elevation, the Claygate Beds extended to 5 mbgl. The London Clay, which is considered an impermeable formation, lies beneath the Claygate Beds in this area. The proximity of a tributary of the "Lost" River Westbourne (see response to question 2 below) increases the likelihood of the presence of a shallow water table at the Site.	Arup (2010) BGS GeoIndex (2016) Environment Agency website (2016)
1b) Will the proposed basement extend beneath the water table surface?	**Un-certain**	The proposed basement will extend to 1.65 mbgl. There is limited publicly available data; however a search of the Camden planning portal identified a BIA completed at a property approximately 90m to the south east of the Site. At that location, which is at a similar elevation, groundwater was present at approximately 1 mbgl. There are no superficial deposits in this area; therefore any groundwater close to the surface at the Site would be within the Claygate Beds, perched above the London Clay. The local information suggests that the thickness of the Claygate Beds at the Site would be significantly greater than the depth of the proposed development, so that any groundwater would be able to flow beneath the Site with minimal impact to local flows and levels.	Site plans Camden (2016)
2) Is the Site within 100 m of a watercourse, well (used/disused) or potential spring line?	**Yes**	There is a tributary of the "Lost" River Westbourne that once flowed past the end of the rear garden (ARUP, 2010), approximately 25 metres to the west of the proposed excavation; however this is not recorded on contemporary maps. The local topography indicates a shallow valley running from north to south to the west of the Site. There are no superficial deposits expected at the Site, which would normally be associated with a river valley.	BGS (2015) ARUP (2010) URS, 2014 EA (2016)
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 1583 m^2 and the current garden area is 1323 m^2. The proposed development will have an impermeable footprint of 200 m^2. The area of the excavation is 70 m^2 so that much of the increase in impermeable surface will be a narrow pathway leading from the rear of the main building to the proposed development. Therefore the impact from the change will be distributed over a larger area. Pending confirmation of the surface materials to be used in the pathway, the proportion of impermeable surface may be reduced.	Site plans

4 CONCLUSIONS

Potential impacts of the proposed basement development at 59 Redington Road have been considered. The following summary conclusions are drawn.

4.1 Screening Stage

- Surface water

The available evidence indicates no risk 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. The proposed development will increase the impermeable surfaces by 12.6% (16.4% to 29%). This is unlikely to impact flood risk in the local area.

- Ground water

The site is located above an aquifer and there is a historical watercourse approximately 25m to the west of the site. Having less permeable surfaces will result in less rainfall discharging to the ground.

4.2 Scoping Stage

- Surface water

The new development will mitigate the changes in runoff due to the increase in the external paved area by incorporating an attenuation tank and soakaway system. However, the Site is not in an area considered to be at risk of any form of surface water flooding therefore there is unlikely to be any significant impact to flood risk in the local area.

- Ground water

It is not certain that groundwater is present at the Site, or that the proposed excavation will extend below any water table. The proximity of a tributary of the “Lost” River Westbourne increases the likelihood of the presence of a shallow water table at the Site. Should there be a water table it is probable that the very shallow proposed development would leave a significant aquifer thickness below it so that any impacts to groundwater flows and or levels would be minimal.

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

Reduction of the recharge into the groundwater as a result of changes to the permeable area will be mitigated by the installation of an attenuation tank and soakaway system. However, the distribution of impermeable surface through the rear garden will likely cause negligible impacts on any water level beneath the site. There is unlikely to be a major impact to surface water flows in the surrounding area.

4.3 Recommendations

It is recommended that groundwater level monitoring at the Site be continued within 1 m of the base of the excavation during construction in order to confirm whether groundwater is present at the Site so that, if necessary, an appropriate design for the development foundations may be implemented

REFERENCES

Arup, 2010. Camden Geological, Hydrogeological and Hydrological Study.

Barton, N., 1992. The Lost Rivers of London, revised edition. Historical Publications Ltd. London.

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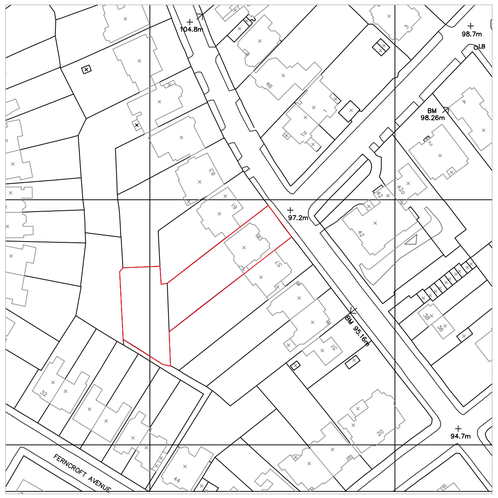
URS, 2014. London Borough of Camden Strategic Flood Risk assessment. Ref 47070547

APPENDICES

APPENDIX A

Proposed Development Plans



LOCATION PLAN

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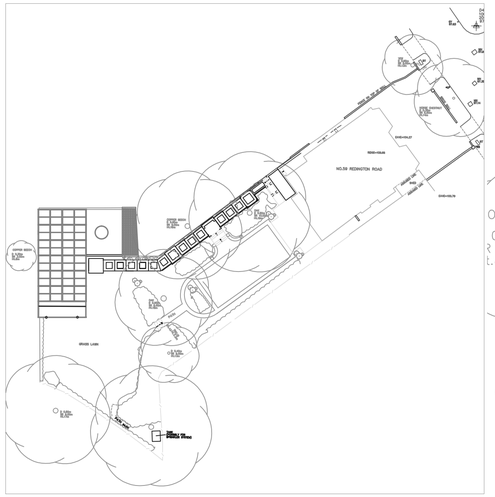

SITE PLAN

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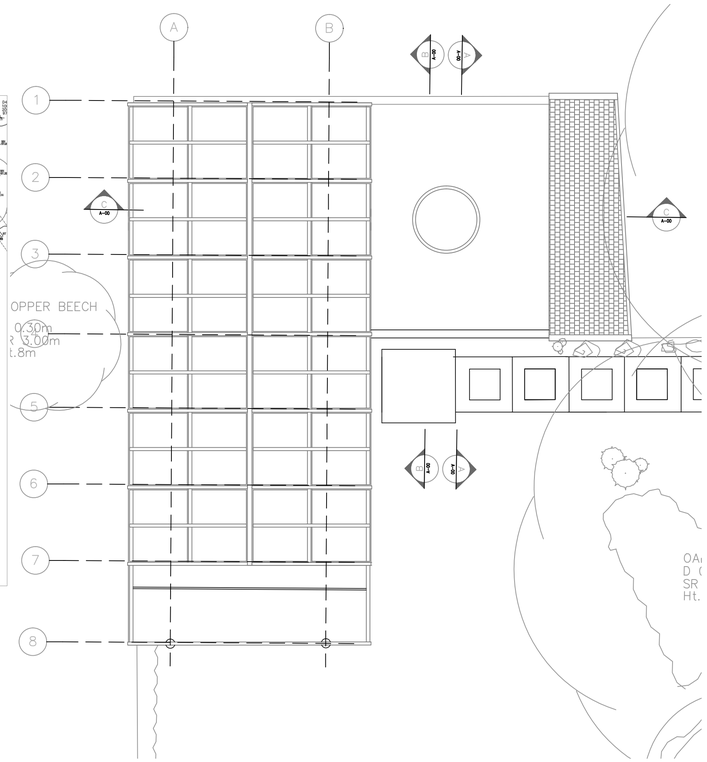

PROPOSED ROOF PLAN

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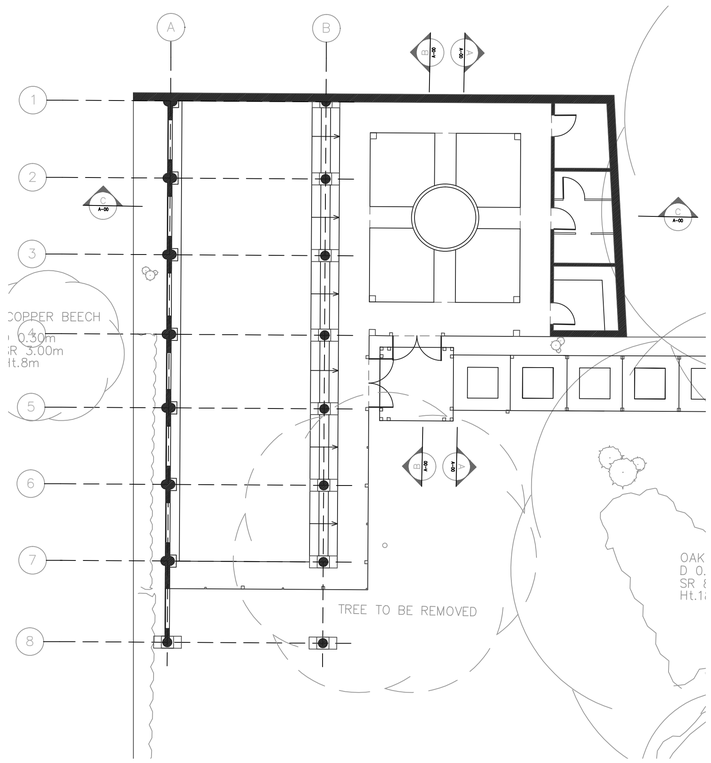

PROPOSED POOL PLAN

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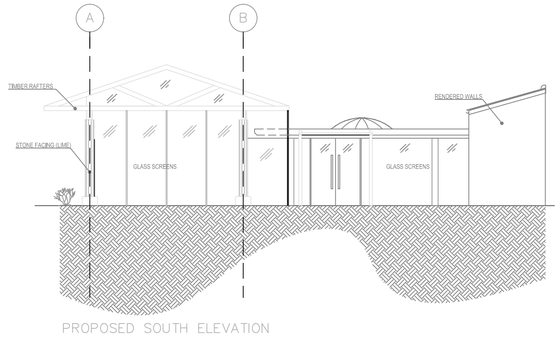

PROPOSED SOUTH ELEVATION

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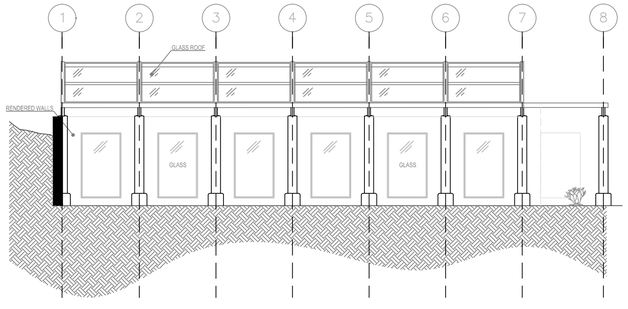

PROPOSED WEST ELEVATION

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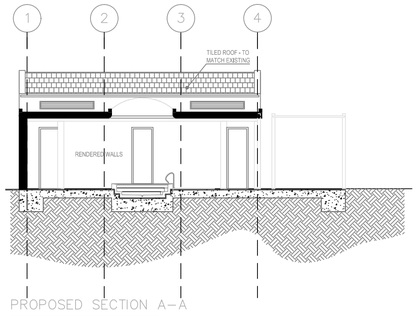

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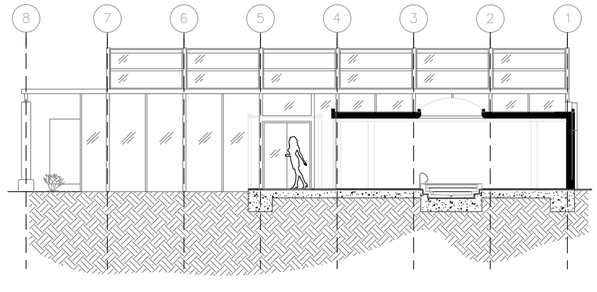

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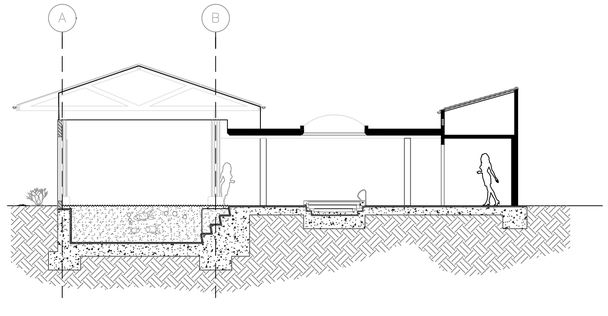

PROPOSED SECTION C–C

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General Notes:

Report all errors, ommission and descrepancies.

Verify all dimensions on site before commencing any work on site or preparing any shop drawings.

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NOTES

METRES 0 1 2 3 4 5

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Rv	Date	Initials	REVISION
A	Jan09	HB	RESUBMISSION FOR AN EXTENSION OF TIME

PROJECT

SWIMMING POOL & ANCILLARIES
59 REDINGTON ROAD
HAMPSTEAD, LONDON NW3

CLIENT

MR SHELEG
59 REDINGTON ROAD
HAMPSTEAD, LONDON NW3 7RP

A1 SHEET

ZONE	DISCIPLINE	STATUS
A	ARCHITECTURE	Planning
LEVEL	DRAWING NUMBER	REVISION
	A-00	
CAD FILE	XREF FILE	
JOB NO.	CI/SfB	
DRAWING TITLE	LOCATION & EXISTING SITE PLANS PROPOSED POOL PLANS, ELEVATIONS & SECTIONS	
SCALE 1:1250, 1:500, 1:50	DATE 19 10 2015	DRAWN HB / CHECKED

S. ILAN ARCHITECTURAL WORKSHOP

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PROJECT TITLE: RR23 - 59 REDINGTON ROAD