9 TEMPLEWOOD AVENUE

LONDON BOROUGH OF CAMDEN

FLOOD RISK ASSESSMENT

Xul Architecture

FINAL

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WATER | ENVIRONMENT

Water Environment Limited
Highland House
165 The Broadway
Wimbledon
London
SW19 1NE

Tel: 020 8544 8067
Fax: 020 8544 8068

www.WaterEnvironment.co.uk

This Flood Risk Assessment was commissioned by Xul Architecture in December 2012 to investigate the risks and assess the consequences of flooding of the proposed development at 9 Templewood Avenue in West Hampstead, Camden.

Prepared by:	**Niall Greenan** MSc BSc(Hons) BEng(Civil) MIEI MCIWEM	
Reviewed by:	**Guy Laister** MScEng BScEng (Civil)	
Approved by:	**Guy Laister** MScEng BScEng (Civil) (Director)	 for and on behalf of Water Environment Limited

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GLOSSARY

AOD	Above Ordnance Datum
CEH	Centre for Ecology and Hydrology
CLG	Department for Communities and Local Government
DEFRA	Department for Environment Food and Rural Affairs
DTM	Digital Terrain Model
EA	Environment Agency
FEH	Flood Estimation Handbook
FRA	Flood Risk Assessment
FSR	Flood Studies Report
FZM's	Environment Agency Flood Zone Maps
GI	Ground Investigation
HEC-RAS	US Army Corps of Engineers Hydrologic Engineering Centers River Analysis System (1-D hydraulic model)
IDB	Internal Drainage Board
IFM's	Environment Agency Indicative Floodplain Maps
LDF	Local Development Framework
LiDAR	Light Detection And Ranging
LPA	Local Planning Authority
NERC	Natural Environment Research Council
NPPF	National Planning Policy Framework
ODPM	Office of the Deputy Prime Minister
PPG25	Planning Policy Guidance 25
PPS25	Planning Policy Statement 25
ReFH	Revitalised FSR/FEH Rainfall-Runoff method
SFRA	Strategic Flood Risk Assessment
SUDS	Sustainable Urban Drainage Systems
UDP	Unitary Development Plan
WINFAP-FEH	Statistical rainfall and runoff analysis software program

EXECUTIVE SUMMARY

The site is located at 9 Templewood Avenue in Camden and is occupied by a 3 storey residential building split into flats. The building includes a basement containing two bedrooms and other ancillary uses. Proposals are to extend the basement currently under the front area of the main house to the whole area of the house footprint. This will allow for a single bedroom, playroom, cinema, gym and study/library.

The site is located in Flood Zone 1 and is less than a hectare, however Camden's local policy guidance for basements and lightwells (CPG4) notes that a Flood Risk Assessment (FRA) is required of any proposed basement development located in an area known to be at risk of surface water flooding. Templewood Avenue is recorded to have been affected during the 2002 surface water/sewer flooding in Camden and a FRA has therefore been prepared to accompany the planning application.

The risk of flooding from all sources has been assessed and is considered to be acceptably low. The site is located at the headwaters of a catchment, near the top of Templewood Avenue and is unlikely to be affected by significant overland flows. The nationwide pluvial flood risk maps for the 1 in 200 year rainfall event note that the site is at a negligible risk of surface water flooding. Also, Thames Water has confirmed that the site is not recorded as being at risk of flooding from overloaded sewers.

The proposals will result in a net reduction impermeable areas draining to the public sewer. In addition it is proposed to use a retention tank and a hydrobrake to limit flows to below the existing discharge rate. The details of the proposed discharge rate will be resolved in consultation with the Local Authority.

It can be concluded that the proposed basement development is at a low risk of flooding from all sources, and is considered acceptable in the context of flood risk. Furthermore, surface water runoff from the site will not increase following development, and there will be no increase in flood risk elsewhere in the borough as a result of the development.

1 INTRODUCTION

General Information

1.1 The site is located at 9 Templewood Avenue in Camden and is occupied by a 3 storey residential building split into flats. Proposals are to extend the basement currently under the front area of the main house to the whole area of the house footprint.

1.2 The site is located in Flood Zone 1 according to the Environment Agency's latest flood zone maps and is therefore at an acceptably low risk of flooding from tidal and fluvial sources for the proposed development. The site is also less than a hectare in area and typically would not require a flood risk assessment as specified in Table 1 of the National Planning Policy Framework1 (NPPF).

1.3 The London Borough of Camden (LBC) has produced Supplementary Planning Guidance document CPG42 which deals specifically with the Council's policies on new basement developments. In relation to flood risk, CPG4 notes that a FRA is required of any proposed basement development located in an area known to be at risk of surface water flooding. Templewood Avenue has previously been affected by surface water flooding and a FRA has therefore been prepared to accompany the planning application.

Scope of Study

1.4 The main objectives of this study are to:

- Provide a flood risk assessment of the site, compliant with the guidelines set out in the NPPF and CPG4 to accompany any application for planning permission.
- Provide advice on the site layout and design that will ensure safe operation of the site in an extreme flood event.
- Provide advice and guidance on the management of surface water runoff at the site to ensure the risk of surface water flooding on the site and on nearby sites does not increase following development.
- Consider climate change over the lifetime of the proposed development.

[1] National Planning Policy Framework (March 2012), Department for Communities and Local Government.

[2] Camden Planning Guidance 4, Basements and Lightwells, London Borough of Camden.

2 SITE DESCRIPTION

Location

2.1 The site is located at 9 Templewood Avenue in Camden, London. It is accessible from the north via West Heath Road and from the south via Redington Road. The location of the site relative to surrounding water and geographical features is presented in Figure 1.

Figure 1 – Location of proposed development site *

Existing Development

2.2 The site is currently occupied by a 3-storey house fronting Templewood Avenue with a garden to the rear (Photograph 1 and Photograph 2). The house is approximately 20m by 20m and has a single level basement under most of its front area. The layout of the existing basement level is shown in Drawing 1, and includes two bedrooms.

* Print Acknowledgement: "Multimap.com, Digital Map Data © Bartholomew 2003, ©eMapSite.com Ltd. All rights reserved."

2.3 The site is formally drained by downpipes and gulleys and Thames Water has confirmed that the site discharges surface water to the combined sewer located in Templewood Avenue.

Topographic Survey

2.4 A topographic survey (shown in Drawing 2) was undertaken in June 2012 by Greenhatch Group and is referenced to Ordnance Datum (AOD). The survey shows that ground levels fall from north to south across the entrance of the site, from approximately 104m AOD to 103m AOD. Ground levels in the rear garden are at a general level of 106.5m AOD.

Proposed Development

2.5 Proposals are to extend the basement currently under the front area of the main house to the whole area of the house footprint. This will allow for a single bedroom, playroom, cinema, gym and study/library.

2.6 Plans and elevations of the proposed development are shown in Drawing 3 to Drawing 5.

3 POTENTIAL FLOODING ON SITE

Historic Information

3.1 The north of Camden (including West Hampstead) has historically been affected by sewer flooding with the most significant flooding events occurring in 1975 and 2002. Anecdotal evidence and aerial photography from these two events was collected by the London Borough of Camden and used to determine which roads were affected by flooding. Roads that were affected during both flood events are referred to as "Primary Locations" whereas roads affected by either of the two events are referred to as "Secondary Locations". As Templewood Avenue was only affected during the 2002 flood event, it is considered a secondary flood risk location. No other historic records of the site flooding have been found.

3.2 Sewer Flooding is therefore considered to be the most significant form of flood risk to the site and forms the basis of this assessment. However, for completeness and to ensure compliance with NPPF, flood risk from all sources has been considered.

Flood Sources

Flooding from Rivers and the Sea

3.3 The Environment Agency Flood Zone Map local to the area is shown in Figure 2. The floodplain indicated in dark blue is the area that may be affected by the 1 in 200 year tidal or 1 in 100 year fluvial flooding event, neglecting the influence of any flood defences in the area. This is categorised by the Environment Agency as Flood Zone 3. The light blue colour shows the additional extent of an extreme flood (1 in 1000 year return period or greater than 0.1% probability in any year), and is categorised as Flood Zone 2.

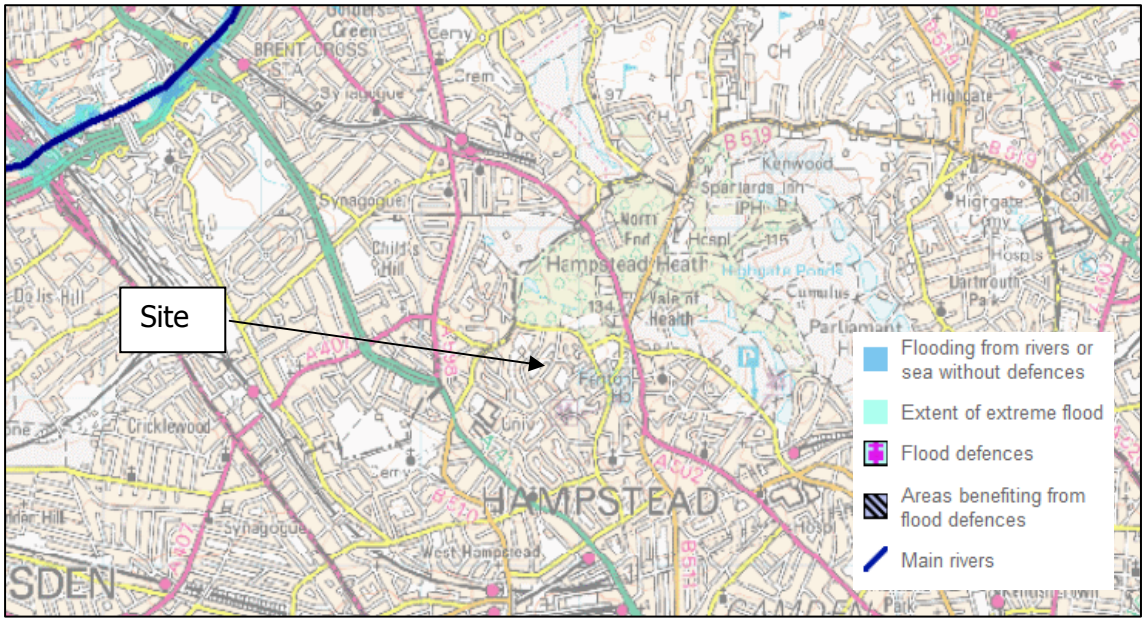


Figure 2 – Environment Agency flood zone map

3.4 The Environment Agency Flood Zone maps indicate that the site, and in fact the whole of the borough of Camden, is located entirely within Flood Zone 1. The annual risk of flooding from either tidal or fluvial events is therefore less than 0.1%.

Flooding from Groundwater

3.5 A geology map obtained from the Camden Geological, Hydrogeological and Hydrological Study[3] shows that the site lies below the interface of the Bagshot Beds formation and the Claygate member of the London Clay formation, as illustrated in Figure 3 below.

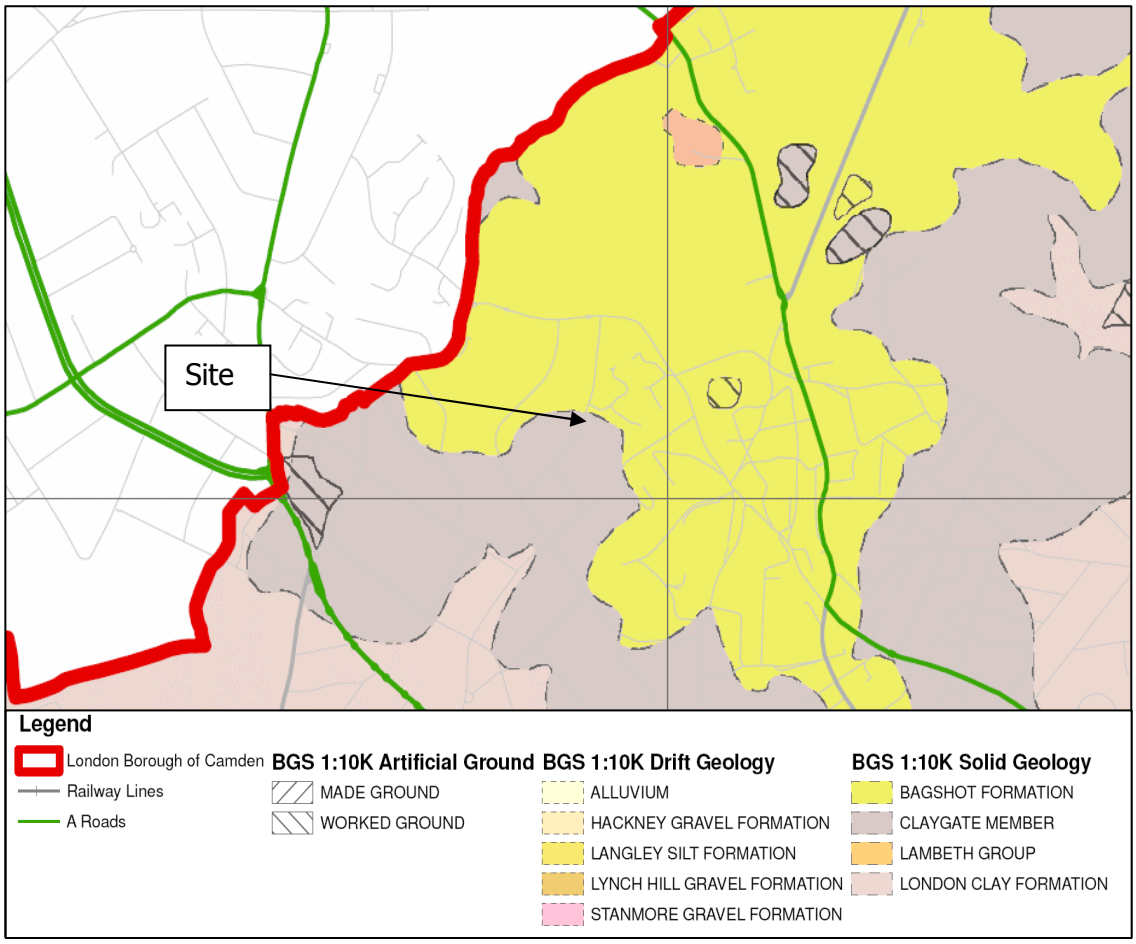


Figure 3 – Site location in the context of Camden Geology

3.6 A site investigation[4] was conducted which included two boreholes to a depth of 6m. The boreholes were sunk in the rear garden at the back of the main house. There was a presence of silty clay with sand partings up to their full depths. Sand lenses were identified between about 2.5m and 4m deep. These soils are most likely associated with the Claygate Member which is situated above London Clay. During the site investigation a slow seepage was observed at about a 3m depth in both boreholes.

[3] London Borough of Camden – Camden Geological, Hydrogeological and Hydrological Study, (Guidance for Subterranean Development), November 2010.

[4] Xul Architecture, Hydrogeological Review – 9 Templewood Avenue NW3, September 2012.

3.7 The Camden Geological, Hydrogeological and Hydrological Study notes that there is potential for spring lines to occur at the interface between the geological strata shown in Figure 3, however the North London Strategic Flood Risk Assessment[5] notes that the Environment Agency hold no record of groundwater flooding incidents for the whole borough.

3.8 The 1920 BGS map shown in Figure 5 shows that numerous spring lines exist in the area of the site and are attributable to the lost River Westbourne[6].

Flooding from Sewers and Pluvial Sources

3.9 Surface water flooding is typically the result of high intensity rainfall that is unable to infiltrate into the ground or enter the drainage system, ultimately following overland flow paths. In an urban environment such as Camden, surface water runoff is disposed of almost entirely via formal drainage systems, and consequently sewer flooding and surface water flooding (overland flow) need to be considered in tandem in this instance. Given the history of surface water and sewer flooding in this region of Camden, this source of flooding is considered to be the most significant source of flood risk to the site and will be considered separately in the subsequent chapter.

Flooding from Artificial Water Bodies

3.10 The site is located in the headwaters of a catchment with no significant water bodies located further upstream. While there are nearby reservoirs (such the Hampstead Heath Ponds) these are all located in separate catchments. The risk of the site being affected by flooding from artificial water bodies is therefore considered to be very low.

Climate Change

3.11 The projected impacts of climate change are likely to cause long term variations in the probability and risk of flooding. Risk of flooding from groundwater is likely to be reduced, but risks from other sources are likely to increase. This will affect the site in terms of the likelihood of flooding from overland flow and sewers. The impact of climate change is considered in more detail in relevant sections of this report.

Sequential Test

3.12 The principle of the Sequential Test, as outlined in the NPPF, is to illustrate that there are no reasonably available sites in areas of a lower probability of flooding that would be appropriate for the proposed development or land use.

3.13 The site is shown to lie within Flood Zone 1 and is therefore not required to satisfy the Sequential Test. Similarly the Exception Test does not apply.

[5] North London, Strategic Flood Risk Assessment, August 2008.

[6] Barton (1962), 'The Lost Rivers of London'.

4 ASSESSMENT OF SEWER AND SURFACE WATER FLOOD RISK

Catchment Description

4.1 The site is located at the headwaters of the River Westbourne catchment, which flows in a southerly direction and ultimately discharges into the River Thames as shown in Figure 4 below.

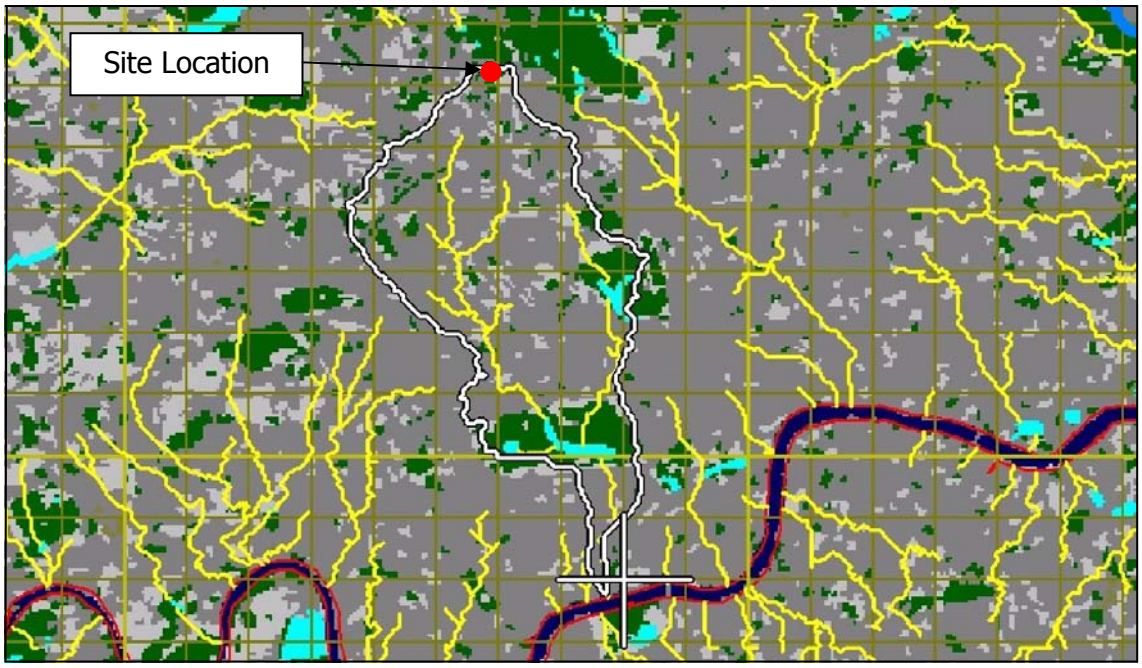


Figure 4 – Site's position in the context of Westbourne catchment as defined FEH CD-ROM

4.2 The FEH CD-ROM describes the catchment as "extremely heavily urbanised" and the Westbourne watercourse is almost entirely built over, flowing in a mixture of man-made culverts and the public sewerage system.

4.3 The original flow routes were included in a British Geological Survey (BGS) map from 1920, obtained from the Camden Geological, Hydrogeological and Hydrological Study, and shown in Figure 5 over the page.

4.4 Figure 5 shows that a tributary of the River Westbourne originated in the vicinity of Templewood Avenue to the east of the site. Thames Water sewer plans (included in Drawing 6) show a 305mm combined sewer flowing past the site at this location and it is likely that any flows that would have originated from tributary now make their way into this sewer via road gulleys and private drainage systems.

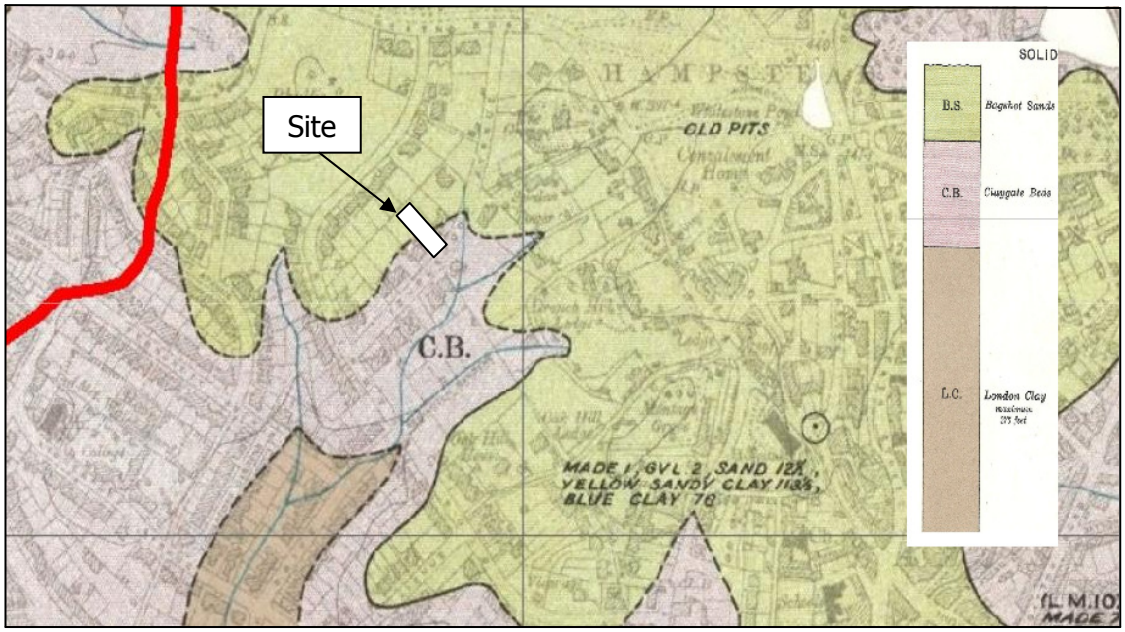


Figure 5 – 1920 BGS Geological map illustrating historic routes of watercourse

Historic Sewer Flooding

4.5 Templewood Avenue is one of several streets in Camden understood to have been affected by either one or both of the surface water flooding events that occurred in 1975 and 2002. Templewood Avenue is only recorded as having flooded during the 2002 event. The extent of the historic flooding in the borough is shown in Figure 6.

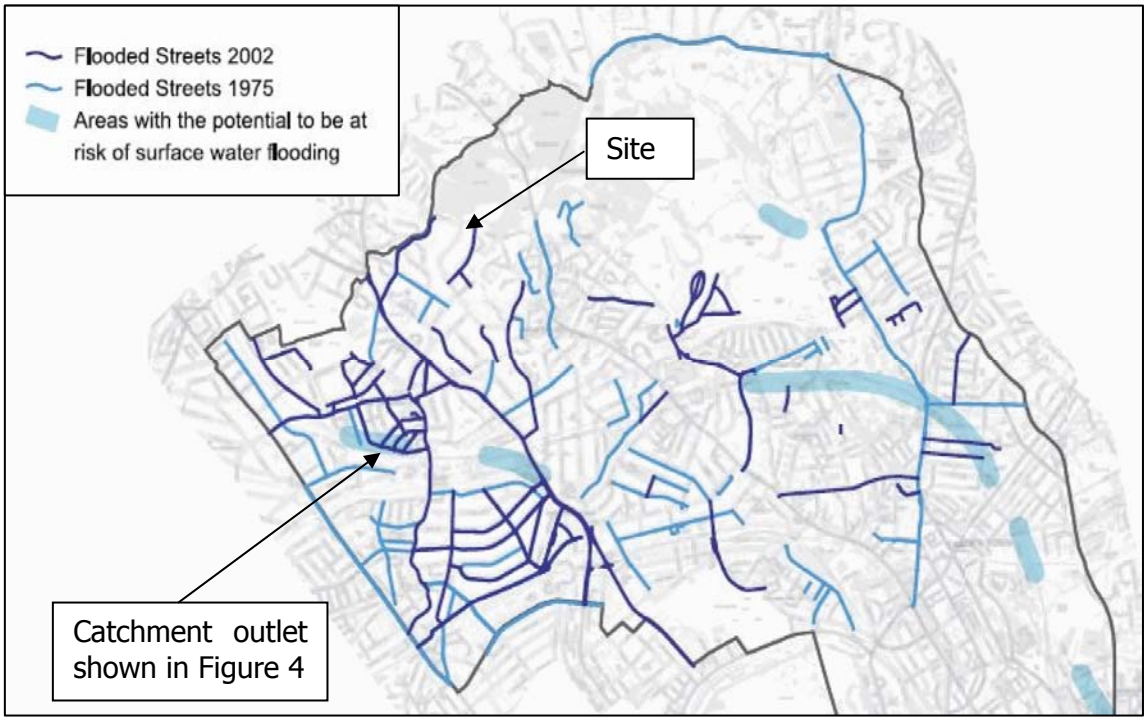


Figure 6 – Overview of historic sewer flooding in Camden

Mechanisms of Flooding

4.6 Flooding during the 2002 event is understood to have been the result of a high intensity rainfall event exceeding the capacity of the drainage infrastructure. Flooding was particularly severe near West Hampstead/Sumatra Road where the public sewer system passes below the Thameslink Railway Line.

4.7 The catchment of this tributary of the River Westbourne was extracted from CatchmentsUK[7] and is shown in Figure 7 below with overland flow route included.

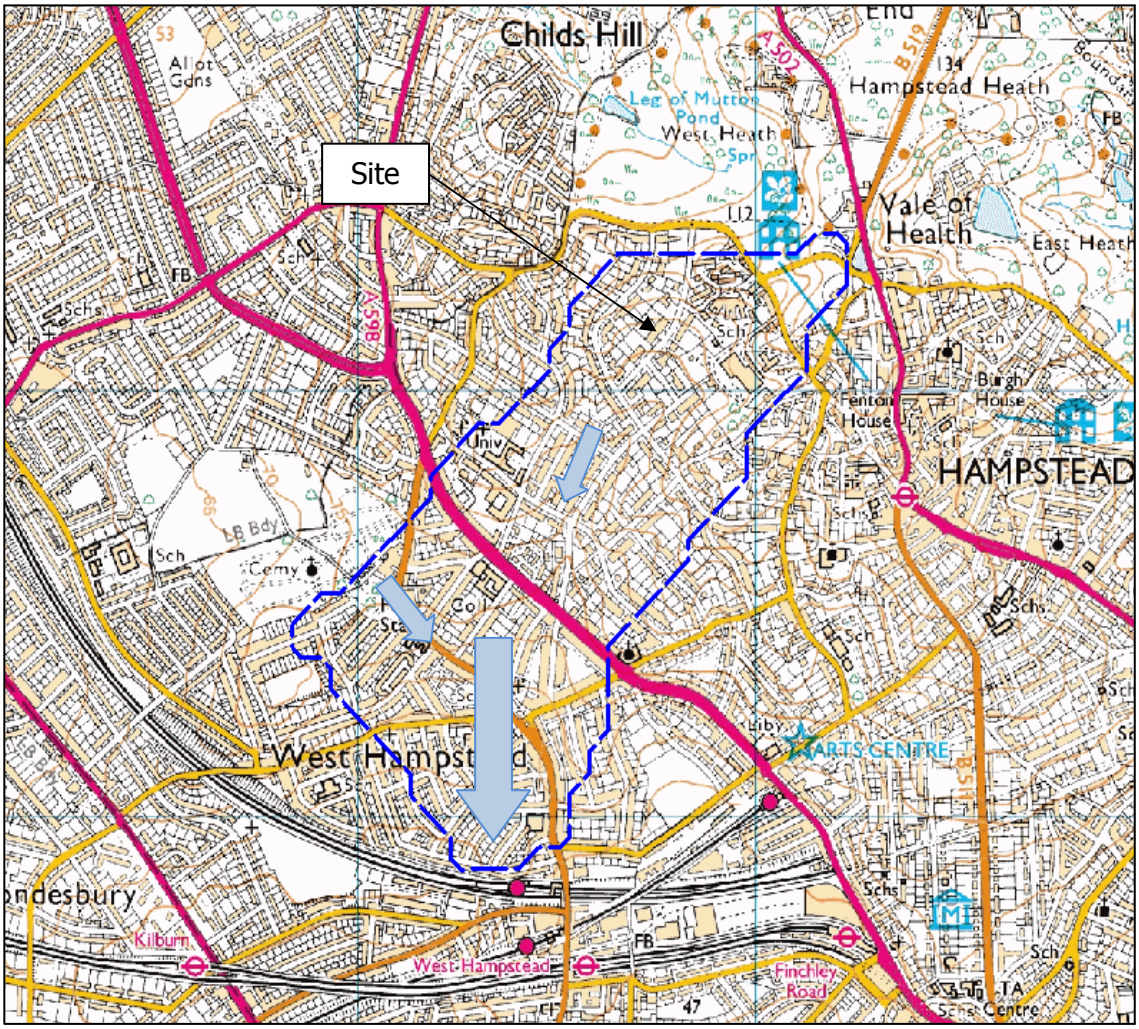


Figure 7 – Site location in context of Westbourne tributary catchment

4.8 Discussions with the drainage engineer at the London borough of Camden indicate that the connection below this railway line was a single 10inch (250mm) pipe. During the 2002 event the capacity of this pipe was exceeded, putting the public sewer system under surcharge pressure. As a result, many of the manholes in this region of the borough began to surcharge, resulting in flooding immediately upstream of this point.

[7] CatchmentsUK, Wallingford Hydrosolutions Ltd.

4.9 It is understood that significant infrastructure improvements have been undertaken in this region by Thames Water as part of the Sumatra Road Flood Alleviation Scheme which has resulted in an increase in capacity of the sewer network.

4.10 Camden Council's drainage engineer noted that anecdotal evidence was supplemented with aerial photographs as a means of estimating the extent of flooding and in some instances surface water ponding was incorrectly identified as sewer flooding. Templewood Avenue is steeply sloping and if the sewers were to surcharge, one would expect surface water flooding to have also affected the roads immediately "downstream" of Templewood Avenue, such as Redington Road. Given the isolated nature of the flooding on this road and its location at the upstream end of the catchment, incorrectly assigned surface water ponding may be valid for the site.

4.11 Conversely, Thames Water sewer plans show two 229mm diameter combined sewers merging at Templewood Avenue adjacent to No.15 and there is the possibility that the capacity of the subsequent 305mm sewer was inadequate to receive the flows from the two upstream sewers. This would have resulted in the surcharging of these sewers with water flowing down the artificial flow route created by Templewood Avenue.

4.12 Without detailed anecdotal evidence or a hydraulic model of the area it is difficult to determine the exact mechanisms of flooding on Templewood Avenue.

Assessment of Flood Risk on Site

4.13 Templewood Avenue falls steeply in a southern direction, at a gradient of approximately 1:10 adjacent to the site. Conversely entrances to the site tend to remain level with the adjacent road. If the capacity of the sewage system in Templewood Road was exceeded the predominant direction of overland flow would be down the road, and not laterally into the adjacent properties. Flooding of this nature would be shallow and fast-flowing and significant lateral flow onto the site is not considered likely. Despite this, if water levels were to exceed ground levels at the southern entrance to Templewood Avenue, then floodwater could flow into the basement via the garage.

4.14 The basement currently includes a garage, 2 bedrooms, a bathroom, sauna, plant room and 3 storage areas. The proposals will result in an expansion of the basement for recreational use, however the larger of the two existing bedrooms will be converted into a utility room. The proposals would not change the mechanisms of flooding on site and the reduction in basement sleeping accommodation represents a reduction in flood risk relative to the existing development.

4.15 In the event of flooding residents would have internal access to higher floors and the risk to life is considered to be acceptably low.

5 SITE DRAINAGE

Existing Site Drainage

5.1 Impermeable areas of the existing development are formally drained with runoff collected from roofs and hardstanding areas in downpipes and gulleys respectively. Surface runoff then collects in a below-ground pipe network and drains to a 305mm public combined sewer in Templewood Avenue.

5.2 Including the existing roof area, driveway and adjacent hardstandings, it is estimated that approximately 580m^2 of the site's impermeable surfaces drain to the combined sewer in Templewood Avenue, via a 150mm combined connection.

5.3 Using the Wallingford Procedure, a hypothetical 100-year return period, 10 minute duration storm for this region of the United Kingdom would have an intensity of approximately 155mm/hr, which includes a 30% increase for climate change. This would result in a potential discharge rate from the site of approximately 30l/s. However the actual discharge rate from the site would ultimately be limited by the capacity of the existing 150mm connection, which is estimated at 17l/s.

Proposed Site Surface-Water Drainage System

5.4 Following development, all rainwater pipes will be directed from the roof to gulleys at ground floor level. All roof gutters, outlets and rainwater pipes will be sized to take a rainfall intensity of 108mm/hr.

5.5 An underground rainwater retention tank will be provided within the surface water drainage system to enable water to be collected from the main roof areas for non-potable use. A surface water retention tank will be provided as part of the harvesting tank to reduce outflow to the sewer[8]. This is discussed in more detail in Chapter 6.

[8] ME7 Ltd, M&E Services and Sustainability Report, JB/526, September 2012.

6 SURFACE FLOW AND FLOODING IMPACT ASSESSMENT

Stage 1: Screening

6.1 CPG4 includes a Surface flow and flooding screening flowchart for assessing the impact of potential sources of flooding, as well as the impact of the development on flood risk elsewhere.

6.2 The flow chart is set out with six questions, which are addressed with reference to the site and proposed development at 9 Templewood Avenue as follows:

- **Question 1**: Is the site within the catchment of the pond chains on Hampstead Heath?

  Answer: No. An analysis of the catchment using the FEH CD-ROM indicates that the catchment lies outside of the catchment of the pond chains on Hampstead Heath, as defined in Figure 14 of the Camden Geological, Hydrogeological and Hydrological Study

- **Question 2**: As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak runoff) be materially changed from the existing route?

  Answer: Yes, the runoff rates and volumes will decrease post-development due to the introduction of SUDS and permeable resin bound gravel.

- **Question 3**: Will the proposed basement development result in a change in the proportion of hard surfaced/paved external areas?

  Answer: Yes, there will be a reduction in impermeable surfaces post-development.

- **Question 4**: Will the proposed basement result in changes to the profile of the inflows (instantaneous and long-term) of surface water being received by adjacent properties or downstream watercourse.

  Answer: Yes, the introduction of a hydrobrake and surface water attenuation tank will reduce the runoff rate and volume to the watercourse.

- **Question 5**: Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses.

  Answer: No, the quality of surface water will remain as it was for the existing development.

6.3 According to CPG4, it is necessary to carry forward to the scoping stage of the Basement Impact Assessment those matters of concern where the response is 'Yes'. Therefore, it is necessary to consider Question 2, 3 and 4 in more detail.

6.4 In addition:

- **Question 6**: Is the site in an area known to be at risk from surface water flooding, such as South Hampstead, West Hampstead, Gospel Oak and King's Cross, 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?

  Answer: Yes. The site is located on a road defined as a secondary flood risk location. An assessment of flood risk was carried out in Chapter 3 and Chapter 4. The risk of flooding from all sources is considered to be acceptably low.

Stage 2: Scoping

6.5 Following development, all rainwater pipes will be directed from the roof to gulleys at ground floor level. All roof gutters, outlets and rainwater pipes will be sized to take a rainfall intensity of 108mm/hr.

6.6 An underground rainwater retention tank will be provided within the surface water drainage system to enable water to be collected from the main roof areas for non-potable use. A surface water retention tank will be provided as part of the harvesting tank to reduce outflow to the sewer. A hydro-brake will be utilised to limit outflow. It is intended to drain the rear half of the house to the $10m^3$ retention tank, to reduce peak outflows to 50% below existing rates with an allowance for climate change based on a 1 in 100 year storm.

6.7 It is worth noting that for short duration rainfall events, even without the use of a hydrobrake, runoff rates and volumes from the site will be lower than the existing runoff rate. As a result of the permeable resin bound gravel and SUDS employed, there will be a net reduction in impermeable area draining to the public sewers from $580m^2$ to $350m^2$. Considering the same 100-year, 10-minute duration storm, the potential runoff from the site would be 17l/s, lower than the existing 30l/s.

6.8 For longer duration rainfall events, runoff from the land which drains in the rear garden will begin to contribute to runoff from the site. However the hydrobrake and retention tank will ensure that, regardless of the runoff from the rear garden, discharge rates will be reduced following development and additional runoff volumes will be re-used for irrigation where possible.

Stage 3: Site Investigation and Study

6.9 The preceding Chapters of this report contain information on the background of the project, the various organisations and studies which have been consulted for data, as well as the site investigations which have been undertaken. Surface water runoff is the only issue which requires further consideration past the screening stage. The scoping stage of the assessment identified the need for mitigation to minimise the impact of the development on surface water flows.

6.10 Thames Water asset plans show a 305mm combined public sewer in Templewood Avenue. It is proposed to re-use the existing connection to the public sewer and therefore the mechanism of drainage of surface water from the site will remain unchanged following development. However flow rates from the site will be limited to below existing rates through the use of a hydrobrake.

6.11 The site investigation revealed that the underlying geology consists primarily of the Claygate Group with limited infiltration capacity. However SUDS have been used wherever practical in the form of permeable resin bound gravel and a rainwater retention tank and will be provided in the rear of the site to attenuate flows and to facilitate rainwater re-use.

Stage 4: Impact Assessment

6.12 A hydrobrake and retention tank will ensure that the peak rate of runoff from the site, for events up to an including the 100 year rainfall event (plus climate change), will be reduced following redevelopment of the site. The net impact of this will be a reduction in flood risk to properties downstream of the site.

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 The site is located at 9 Templewood Avenue in Camden. The site is occupied by a 3-storey residential building including two bedrooms in the basement, and proposals are to extend the basement currently under the front area of the main house to the whole area of the house footprint. This will allow for a single bedroom, playroom, cinema, gym and study/library.

7.2 The site is located in Flood Zone 1 and is less than a hectare, however Camden's local policy guidance for basements and lightwells (CPG4) notes that a FRA is required of any proposed basement development located in an area known to be at risk of surface water flooding. Templewood Avenue has previously been affected by surface water flooding and a FRA has therefore been prepared to accompany the planning application.

7.3 The risk of flooding from all sources has been assessed and is considered to be acceptably low. The site is located at the headwaters of a catchment, near the top of Templewood Avenue and is unlikely to be affected by overland flow. The Nationwide pluvial flood risk maps for the 1 in 200 year rainfall event note that the site is at a negligible risk of surface water flooding, and Thames Water has confirmed that the site is not recorded as being at risk of flooding from overloaded sewers.

7.4 The proposals will result in a net reduction of impermeable areas draining to the public sewer. In addition it is proposed to use a retention tank and a hydrobrake to limit flows to below the existing discharge rate. The details of the proposed discharge rate will be resolved in consultation with the Local Authority.

7.5 It can be concluded that the proposed basement development is at a low risk of flooding from all sources, and is considered acceptable in the context of flood risk. Furthermore, surface water runoff rates from the site will not increase following development, and there will be no increase in flood risk elsewhere in the borough as a result of the development.

APPENDIX A – PHOTOGRAPHS

Photograph 1 – View of exiting property at 9 Templewood Avenue

Photograph 2 – View of rear garden at 9 Templewood Avenue

APPENDIX B – DRAWINGS

Drawing 1 – Existing Basement Floor Plan

(XUL Architecture, Drawing No. EX-01 Rev 03)
This drawing shows the layout of the existing basement level.

Drawing 2 – Topographic Survey

(Greenhatch Group, Drawing No. 17228_OGL)
Topographic survey, with levels referenced to Ordnance Survey datum.

Drawing 3 – Proposed Basement Floor Plan

(XUL Architecture, Drawing No. PA-01 Rev 07)
This drawing shows the basement plan of the proposed development.

Drawing 4 – Proposed Ground Floor Plan

(XUL Architecture, Drawing No. PA-02 Rev 08)
This drawing shows the ground floor plan of the proposed development.

Drawing 5 – Proposed North-West Section (AA)

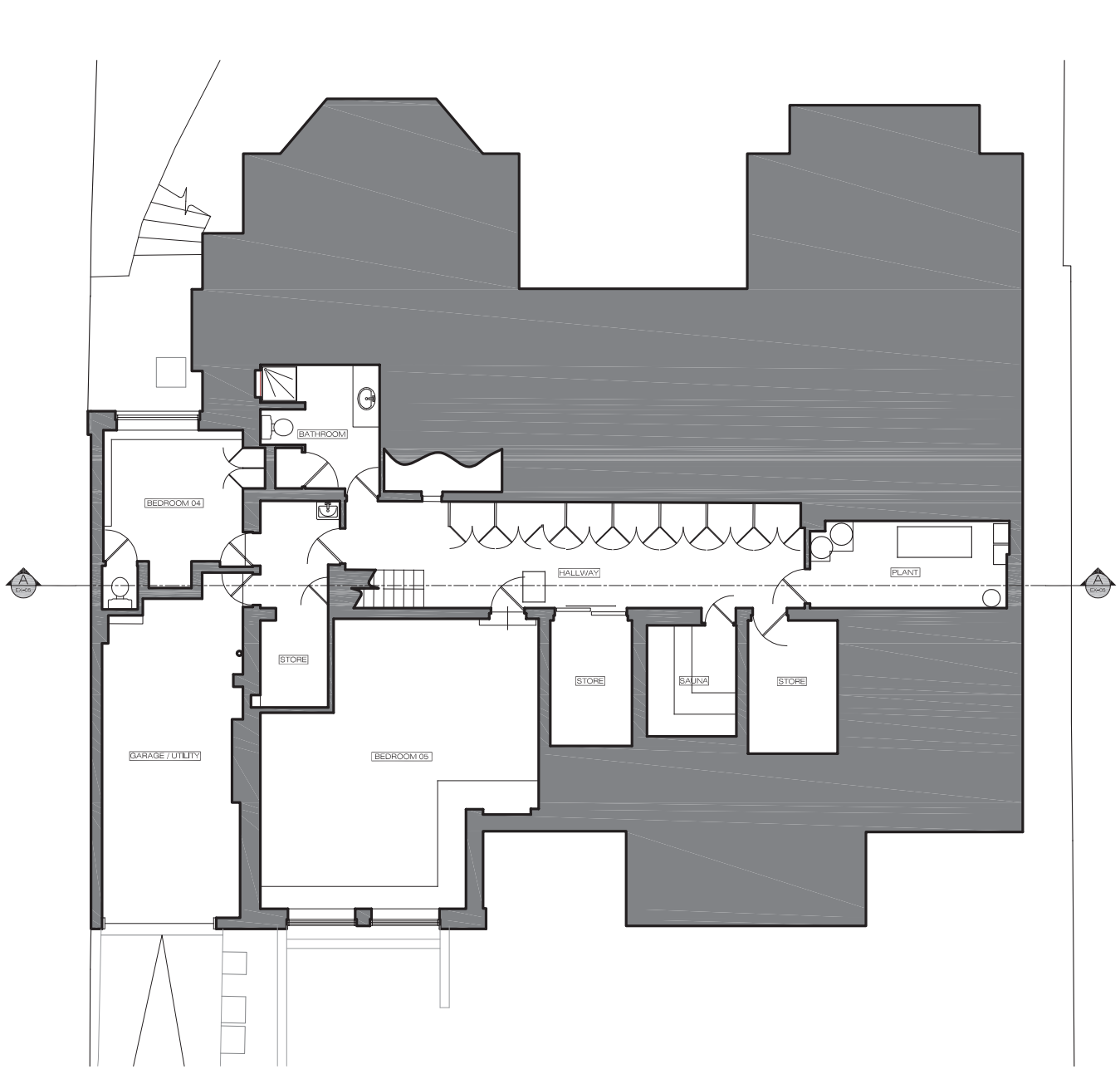
(XUL Architecture, Drawing No. PA-05 Rev 04)
This drawing shows an elevation of the proposed development.

Drawing 6 – Sewer Plans

Thames Water Sewer Plan
This drawing shows the location and dimensions of the existing sewer network in the area.

Drawing 7 – Proposed Drainage Layout

ME7 Ltd - Drawing No. 526 P 1 P
This drawing shows the layout of the drainage infrastructure on site.



EXISTING BASEMENT FLOOR PLAN

0 1 2 3 4 5m

XUL ARCHITECTURE

Ground Floor Office
102 Belsize Lane
London NW3 5BB

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

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ADDITIONAL NOTES:

REVISIONS

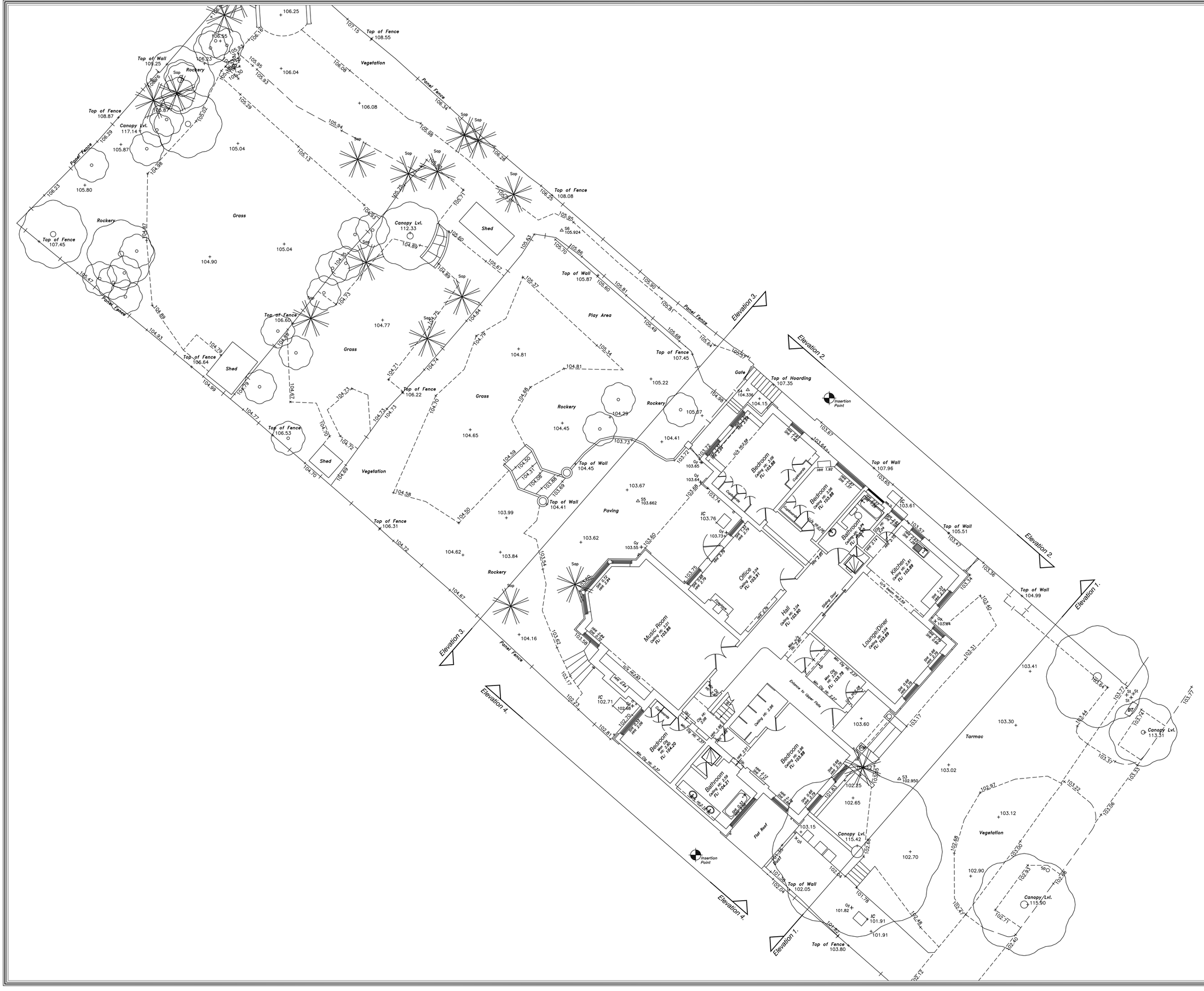
No	Date	Description Issue For	Issue By
00	13/08/12	ISSUE	OJ
01	17/08/12	INFORMATION	OJ
02	24/08/12	PRE-PLANNING	AS
03	19/10/12	PLANNING	AS

Client
PRIVATE CLIENT

Project
09 Templewood Avenue
London NW3 7UY

Title
EXISTING
Basement floor plan

Scale	Dwg. No.	Rev.
1:50@A1	EX-01	03
Date		
19/10/12		
Drawn	Project Number	
AS	12_11	
Checked		
SS		



N

Building Survey Legend:

SHt 1.00 *HHt 2.12*	Sill Height from FFL. Head Height from FFL.
SL 51.03m *HL 52.82m*	Sill Level from defined datum. Head Level from defined datum.
Susp CHt: 2.00 *Struct CHt: 3.00*	Suspended Ceiling Height from FFL. Structural Ceiling Height from FFL.
Susp Ceil: 30.00m *Struct Ceil: 31.00m*	Suspended Ceiling Level from datum. Structural Ceiling Level from datum.
IFL: 100.00m *+100.00m*	Internal Floor Level (General). Internal Floor Level (Specific).
Insertion Point	Insertion Point for overlay drawings of other floors or details.

Topographical Legend:

Note:
Although O.S. Coordinates may be shown on this plan the grid is to be treated as arbitrary.
No scale factor has been applied to the survey therefore the any coordinates shown are not true O.S. Coordinates.
Please refer to Survey Station Coordinate Table above to enable correct establishment of the on-site grid used.

OS Buildings *Surveyed Buildings*

Buildings / walls
Kerb line
Edge of surface
Canopy / Overhang
Line Marking
Centre Line
Barrier
Hedge
Railway Fence
Panel Fence
Open Fence
Overhead Powerline
Chamber
Woodland
Station and Name
Station Level
Benchmark
Borehole
Trial Hole
Tree / Bush / Sapling
Area of Undergrowth
Gate
Inspection chamber
Cover level
Invert level
Pipe invert (diameter)
Gully
Back Gully
Manhole

Elec Electric
BT British Telecom
Fh Fire Hydrant
St Stop tap
Sv Stop valve
Wo Wash Out
Wm Water Meter
Mkr Service Marker
Re Rodding eye
Av Air Valve
Cmp Cable Marker
Lp Lamp Post
Sp Sign Post
Ep Electricity Post
Tp Telegraph Post
TL Traffic light
Bs Bus Stop
Fl Floodlight
Flp Flagpole
Pb Post box
Lb Litter Bin
Bo Bollard
TCB Telephone call box
Fs Flagstaff
WL Water level
Ht Height
IFL Internal floor level
THL Threshold level
Re Rodding Eye
Ds Drop kerb
Gas Gas
Er Earth rod

Rev	Date	Description	Drawn	Q. Ref.

greenhatch group
Topographical Surveys
Site Engineering
Measured Building Surveys
3D Laser Scanning
Rowan House
Duffield Road
Little Eaton
Derby
DE21 5DR
Tel (01332) 830044 Fax (01332) 830055
admin@greenhatch-group.co.uk

CLIENT
Xul Architecture

PROJECT
9 Templewood Avenue London NW3 7UY

TITLE
Topographical Survey

SCALE	DATE	DRAWN	QUALITY REF
1: 100	6.7.12	PG	B0412

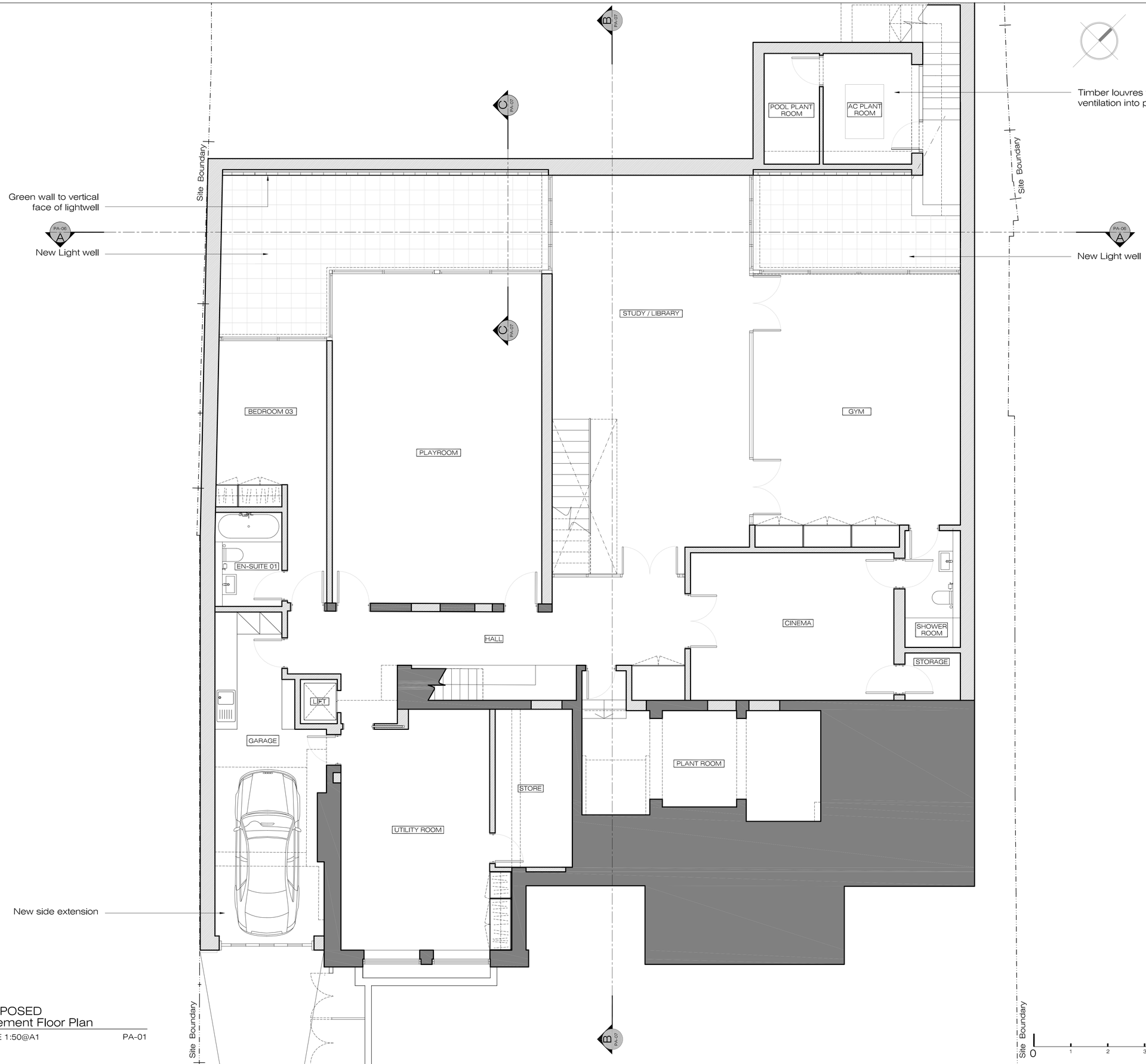
Level datum	GPS
Grid orientation	GPS
Job number	17228

Drawing No. 17228_OGL — Rev.

Comments
This plan should only be used for its original purpose. GreenHatch Ltd accepts no responsibility for this plan if supplied to any party other than the original client.
All dimensions should be checked on site prior to design and construction.
Drainage information (where applicable) has been visually inspected from the surface and therefore should be treated as approximate only.

Notes:

DO NOT SCALE



PROPOSED
Basement Floor Plan
SCALE 1:50@A1 PA-01

0 1 2 3 4 5m

XUL ARCHITECTURE

Ground Floor Office
102 Belsize Lane
London NW3 5BB

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

PLEASE NOTE:

1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE FABRICATION.
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8. ALL DRAWINGS TO BE APPROVED BY XUL BEFORE CONSTRUCTION.

ADDITIONAL NOTES:

PLANNING DRAWING KEY

Existing Wall

New Wall

All windows to be replaced by double glazed windows.

New brickwork to match existing stock and detail.

REVISIONS

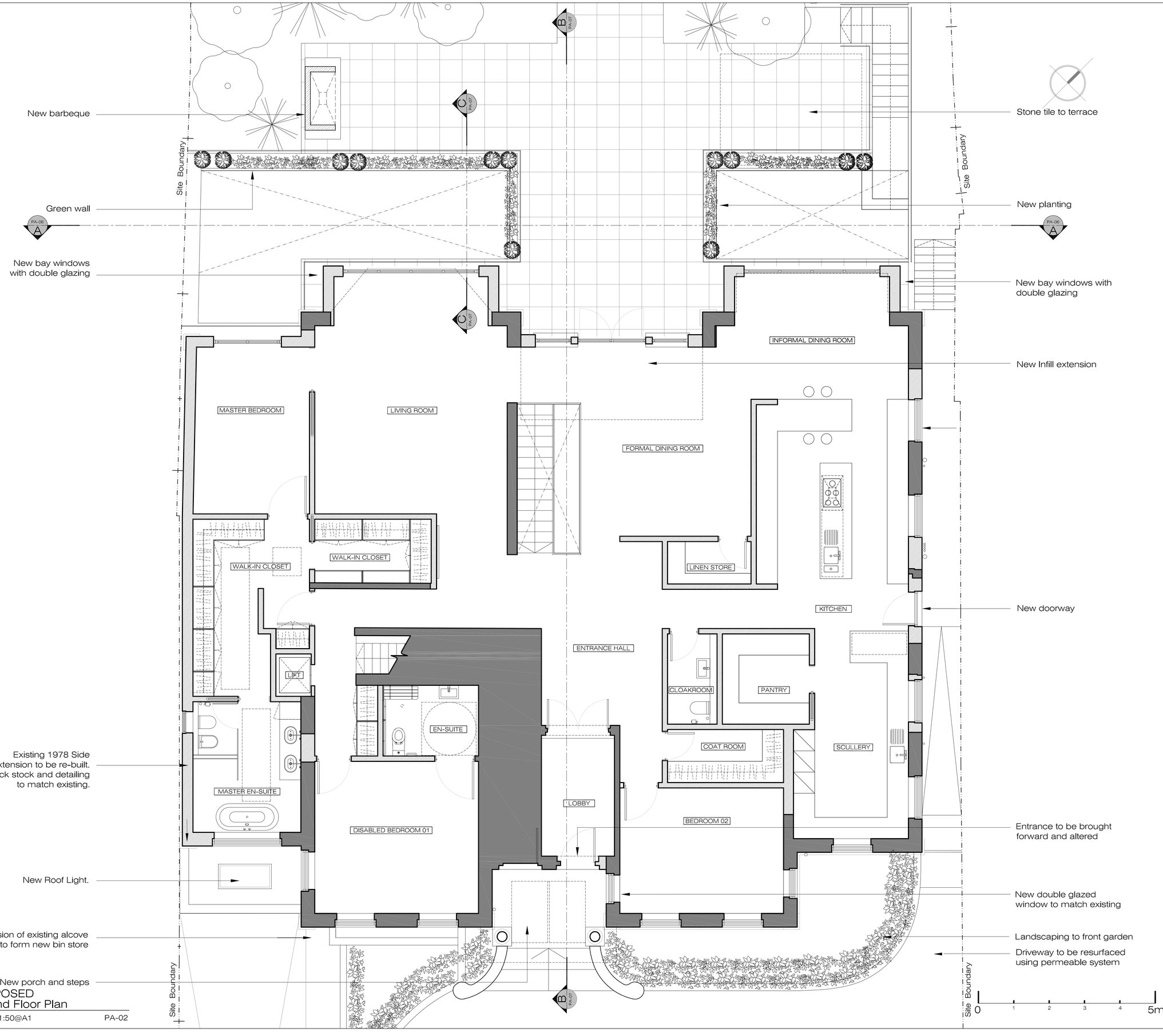
No	Date	Description Issue For	Issue By
00	13/08/12	PRE-PLANNING	OJ
01	17/08/12	INFORMATION	OJ
02	24/08/12	PRE-PLANNING	AS
03	29/08/12	PRE-PLANNING	AS
04	18/10/12	PRE-PLANNING	AS
05	19/10/12	PLANNING	AS
06	06/11/12	PLANNING	AS
07	13/12/12	INFORMATION	CC

Client
PRIVATE CLIENT

Project
09 Templewood Avenue
London NW3 7UY

Title
PROPOSED
Basement floor plan

Scale	Dwg. No.	Rev.
1:50@A1	PA-01	07
Date		
13/12/12		
Drawn	Project Number	
AS	12_11	
Checked		
SS		



PROPOSED
Ground Floor Plan
SCALE 1:50@A1 PA-02

XUL ARCHITECTURE
Ground Floor Office
102 Belsize Lane
London NW3 5BB
Office: +44 (0) 207 431 9014
s.sandler@xularchitecture.co.uk
www.xularchitecture.co.uk

PLEASE NOTE:

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7. ALL FINISHES TO XUL SATISFACTION.
8. ALL DRAWINGS TO BE APPROVED BY XUL BEFORE CONSTRUCTION.

ADDITIONAL NOTES:

PLANNING DRAWING KEY
- Existing Wall
- New Wall

REVISIONS

No	Date	Description Issue For	Issue By
00	13/08/12	PRE-PLANNING	OJ
01	17/08/12	INFORMATION	OJ
02	24/08/12	PRE-PLANNING	AS
03	29/08/12	PRE-PLANNING	AS
04	18/10/12	PRE-PLANNING	AS
05	19/10/12	PLANNING	AS
06	06/11/12	PLANNING	AS
07	05/12/12	INFORMATION	CC
08	13/12/12	INFORMATION	CC

Client
PRIVATE CLIENT

Project
09 Templewood Avenue
London NW3 7UY

Title
PROPOSED
Ground floor plan

Scale	Dwg. No.	Rev.
1:50@A1	PA-02	08
Date 13/12/12		
Drawn CC	Project Number 12_11	
Checked SS		

PROPOSED NORTH-WEST SECTION
SCALE 1:50@A1 PA-05

0 1 2 3 4 5m

XUL ARCHITECTURE

Ground Floor Office
102 Belsize Lane
London NW3 5BB

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

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ADDITIONAL NOTES:

REVISIONS

No	Date	Description Issue For	Issue By
00	17/08/12	INFORMATION	OJ
01	24/08/12	PRE-PLANNING	AS
02	19/10/12	PLANNING	AS
03	06/11/12	PLANNING	AS
04	05/12/12	INFORMATION	CC

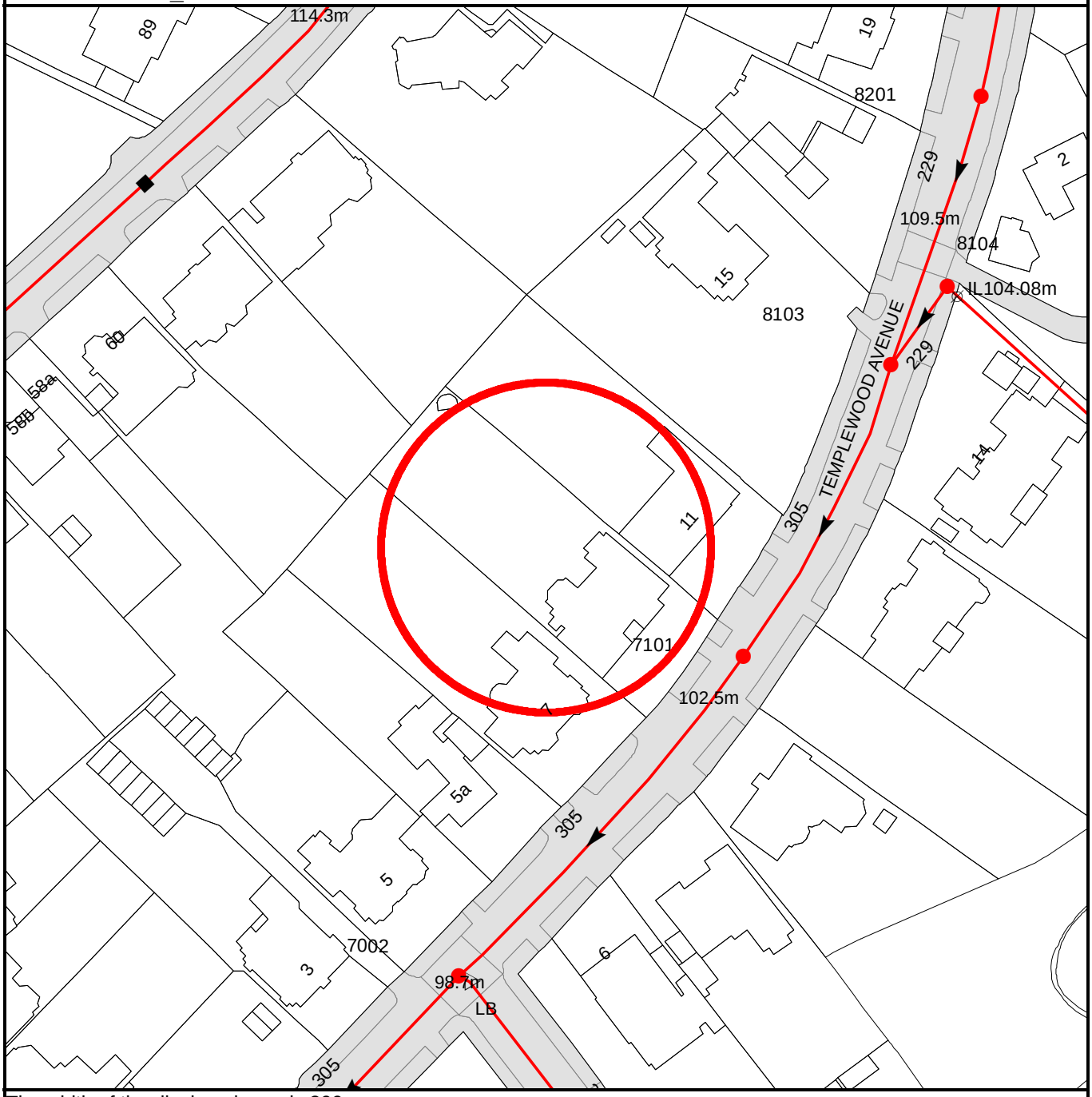
Client
PRIVATE CLIENT

Project
09 Templewood Avenue
London NW3 7UY

Title
PROPOSED
North-West Section (AA)

Scale	Dwg. No.	Rev.
1:50@A1	PA-05	04
Date		
05/12/12		
Drawn	Project Number	
CC	12_11	
Checked		
SS		

Residential CON29DW Drainage & Water Search Sewer Map-DWS/DWS Standard/2012_2375783

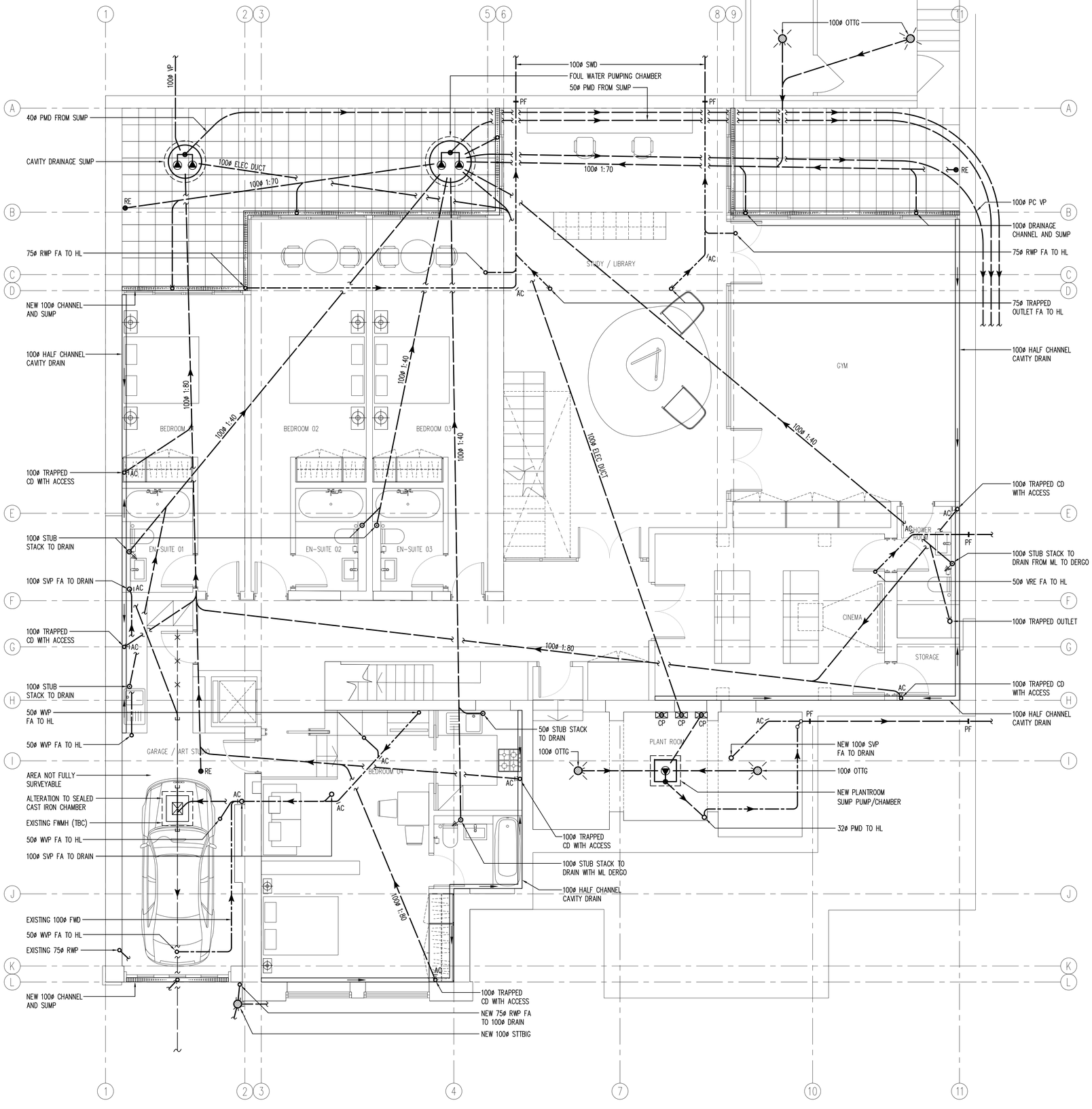


The width of the displayed area is 200m

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

NOTES

1. EXISTING DRAINAGE TO BE CCTV SURVEYED



Basement

Note

ALL DIMENSIONS TO BE VERIFIED ON SITE BEFORE SETTING OUT OR MAKING ANY SHOP DRAWINGS. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE CONSULTANT ENGINEER'S SPECIFICATION.

Orientation

Rev./Date	REVISIONS
P 31.08.12	PRELIMINARY ISSUE

ME7

ME7 Ltd.
Unit 2, Rays Farm Barns, Roman Road
Ingatestone, Essex CM4 9EH
Email: jb@me7.eu
Web: www.me7.eu
Tel: +44(0)1277 353225
M&E Consultants Energy Consultants

ace consultancy engineering business environment
www.acenet.co.uk

Description

BASEMENT PLAN
DRAINAGE AND
PUBLIC HEALTH SERVICES

Project

9 TEMPLEWOOD AVENUE
HAMPSTEAD
LONDON
NW3 7UY

Architect

XUL Architecture
Ground Floor Office
102 Belsize Lane
London, NW3 5BB
Tel : +44(0)207 431 9014

xref	PA-01
Scale	A1 @ 1:50 A3 @ 1:100
Drawn	JB / SBJ
Date	August 2012
Checked	
Issue	PRELIMINARY

Project No.	Services	Dwg No.	Rev.
526	P	1	P