Basement Impact Assessment: 70, Churchway, London NW1 1HY

ESI report reference: 61840R1_REV1
Soil consultants report reference: 9471

Basement Impact Assessment: 70, Churchway, London NW1 1HY

Prepared for

Divine Ideas Architects
Legacy Business Center
Suite 126
2A Ruckholt Road
Leyton
E10 5NP

Report reference: 61840R1_REV1 BIA 70, Churchway, May 2016
Report status: Final

Confidential
Prepared by
ESI Ltd

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Registered office: New Zealand House, 160 Abbey Foregate, Shrewsbury, SY2 6FD. Registered in England and Wales, number 3212832

Basement Impact Assessment: 70, Churchway, London, NW1 1HY

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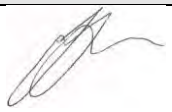
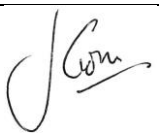
61840R1_REV1. Final

	Name	Signature
Author	Samson Collier, Josh Jones	
Checked by	James Mortimer	
Reviewed by	Joe Gomme, C.Geol	

Revision record:

Issue	Report ref	Comment	Author	Checker	Reviewer	Issue date	Issued to
1	61840R1D1	Draft for external review	SCC	HCV	PAE	16/10/13	D Form Architecture
2	61840R1	Final	SCC	HCV	PAE	18/10/13	D Form Architecture
3	61840R1_REV1	Final_revised	SCC/ JRJ	HCV	JWG	12/05/16	Divine Ideas Architects
4							

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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 (FOR NEXT STEPS)

The development described in this report will cause a decrease in impermeable surface area. Therefore, it is considered that peak runoff and related flooding risk from the proposed development will become reduced. Therefore, there is no action required to mitigate detrimental changes to site runoff.

The likely presence of groundwater at the Site is considered to be very low as the Site is not located above an aquifer and nearby borehole logs do not indicate any localised shallow groundwater. Therefore there is no action required to mitigate impacts on groundwater.

CONTENTS

FIGURES

APPENDICES

1 INTRODUCTION

1.1 This Document

ESI Ltd. (ESI) was commissioned by D Form Architecture in September 2013 to undertake a Basement Impact Assessment for the proposed development at 70 Churchway, London, NW1 1HY at grid reference TQ 29774 82854 in the London Borough of Camden (Figure 1.1).

This document is a desk study which considers the potential impact relating to the proposed basement development in terms of surface water and groundwater flow and flooding and complies with the London Borough of Camden planning guidance notes on subterranean development (London Borough of Camden, 2013).

1.2 Scope of Works

The following scope of works was requested: an assessment of the impacts of the proposed development on ground water flow, levels and drainage, surface water flow and flooding and ground stability. The ground stability section has been undertaken by Soil Consultants (report ref: 9471) and this report addresses the groundwater and surface water sections.

To satisfy planning requirements, a screening analysis of key hydrological and hydrogeological issues has been undertaken. The London Borough of Camden currently has guidance on planning applications for basement extensions (ARUP (2010), Camden Borough Council, (2011)).

The report has been set out in accordance with this guidance with an initial screening assessment followed by a more detailed scoping assessment of specific items.

1.3 Proposed Basement Works

The proposed development is the installation of a single storey basement below the footprint of the existing property. The total depth of the basement will be approximately 3 m below ground level. As part of the proposed development a rectangular area of permeable hardstanding fronting 70, Churchway, and a second similar area facing 72, Churchway, will be removed to accommodate outside open space, likely to contain permeable paving at basement level.

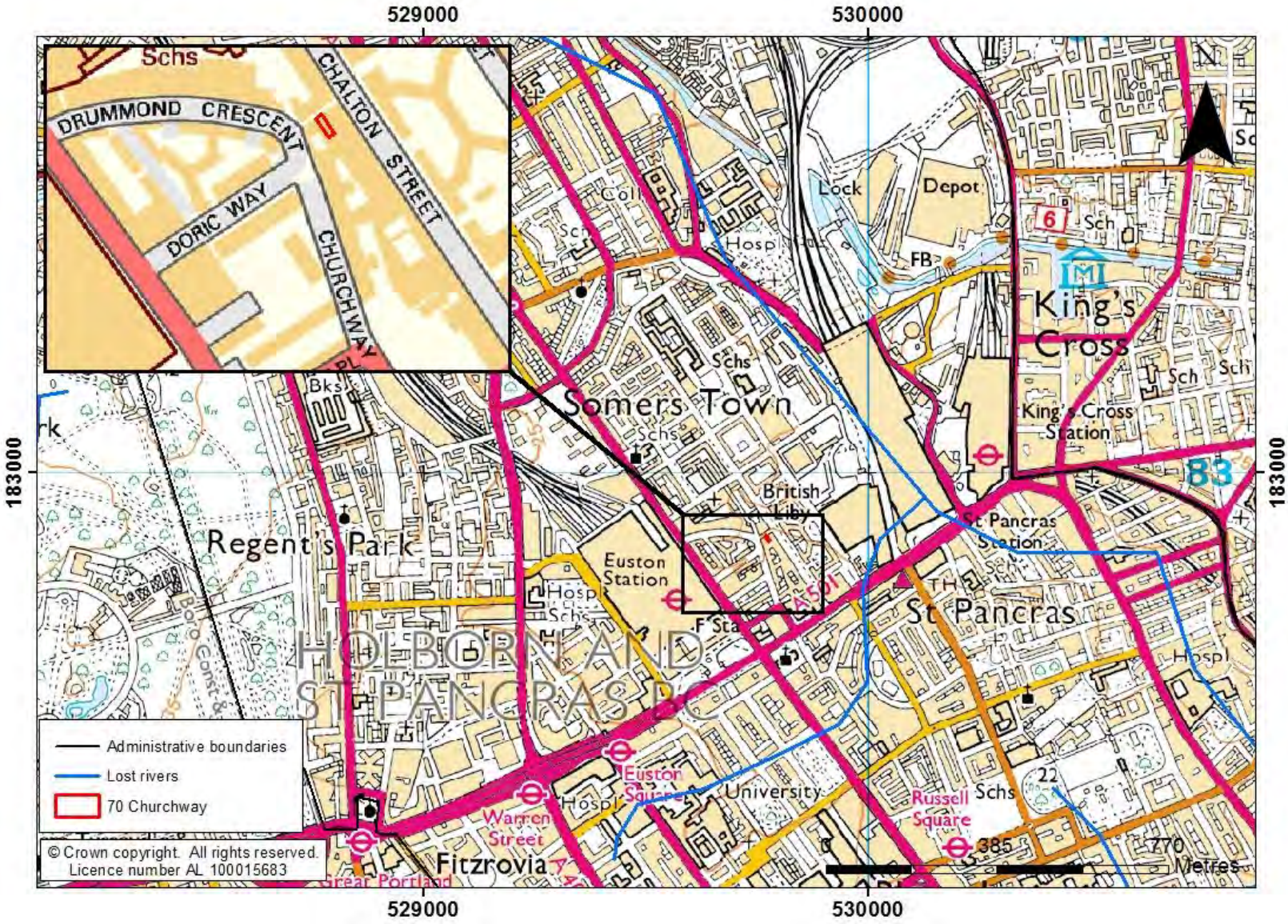


Figure 1.1 Site location.

2 SCREENING

The screening stage for Impact Assessment has been considered as set out in CPG4 (Camden Council, 2011) and the results have been tabulated below.

2.1 SURFACE WATER (Surface flow and flooding screening flowchart (Figure 3, CPG4 (Camden Council, 2011))			
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
2) As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route?	**No**	Based on the plans received (Appendix A) and pending confirmation from a Flood Risk Assessment or Drainage report, the proposed scheme will not alter the site drainage therefore there will be no change in the surface water flows.	Site Plans (Appendix A).
3) Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	**Yes**	The proposed development will include two outside areas as a replacement of parts of the building, which will change the proportion of hard surfaced/ paved external areas.	Site plans (Appendix A).
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?	**No**	A tributary to the “lost” River Fleet runs west to east, passing approximately 250 m south-east of the Site (Figure 1.1). It is possible that the site falls within the catchment of this underground river. However it is highly likely that the river is culverted and it is highly unlikely that there is any direct hydraulic continuity between the historical river course and the Site. The Grand Union canal is located 600m north-east of the Site. This is far enough not to be affected by any change in runoff from the site. The topography in the area is relatively flat (0-7 degrees).	Barton, 1992. Ordnance Survey Mapping. Site plans (Appendix A).
5) Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	**No**	It is possible that the Site falls within the catchment of the underground river mentioned above. However, runoff from the Site would not affect the quality of the culverted river.	Barton, 1992. Ordnance Survey Mapping.

Impact question	Answer	Justification	Reference
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 within a designated flood plain, nor is it a street which is at risk of significant localised tidal flooding or reservoir failure. The Site is at low risk from pluvial flooding. The Site has no history of sewer flooding (Appendix C).	Environment Agency, 2013. Camden Council 2013 Thames Water, 2013.

2.2 GROUND WATER (Subterranean (ground water) flow screening chart (Figure 1, CPG4 (Camden Council, 2011))			
Impact question	**Answer**	**Justification**	**Reference**
1a) Is the site located directly above an aquifer?	**No**	The geology beneath the Site is mapped as London Clay Formation (Figure 2.1). There is up to 3 m depth of made ground overlying the London Clay Formation. Neither of these is classified as an aquifer. The BGS borehole logs TQ28SE721 (20m away), TQ2856348 (40m away) and TQ28SE677 (80m away) (see Appendix B) indicate the presence of 0.6-3 m of made ground above the London Clay. Both strata are classified as unproductive strata with low permeability that have negligible significance for water supply or river base flow.	British Geological Survey, 2013 (A). Environment Agency, 2012.
1b) Will the proposed basement extend beneath the water table surface?	**No**	None of the BGS borehole logs that record the geology below the depth of the proposed development and within a radius of 100 m indicate the presence of a water table.	British Geological Survey, 2013 (A).
2) Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	**No**	There are no wells, watercourses or spring lines known to exist within 100 m of the Site.	Barton, 1992 British Geological Survey, 2013 (A). British Geological Survey, 2013 (B). British Geological Survey, 2013 (C). OS mapping / BGS 1:50,000?
3) 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
4) Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	**Yes**	The proposed basement would be sited beneath the footprint of the existing building; however two parts of the current building will be replaced with outside areas in the proposed development. These areas are likely to comprise permeable paving therefore decreasing the proportion of hard surfaced/ paved areas, allowing for increased rainfall infiltration.	Site Plans

Impact question	Answer	Justification	Reference
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)?	**Yes**	Pending assessment of detailed drainage plans, and the surfacing of the outside areas, there may be potential for increased garden/ soft landscaped areas and therefore increased amount of rainfall permeating into the ground. Pending assessment of detailed drainage plans, the replacement of part of the building with outside space containing permeable paving would increase the amount of rainfall permeating to the ground and decrease the amount of runoff.	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 known ponds or spring lines within 1 km of the Site.	Ordnance Survey Mapping.

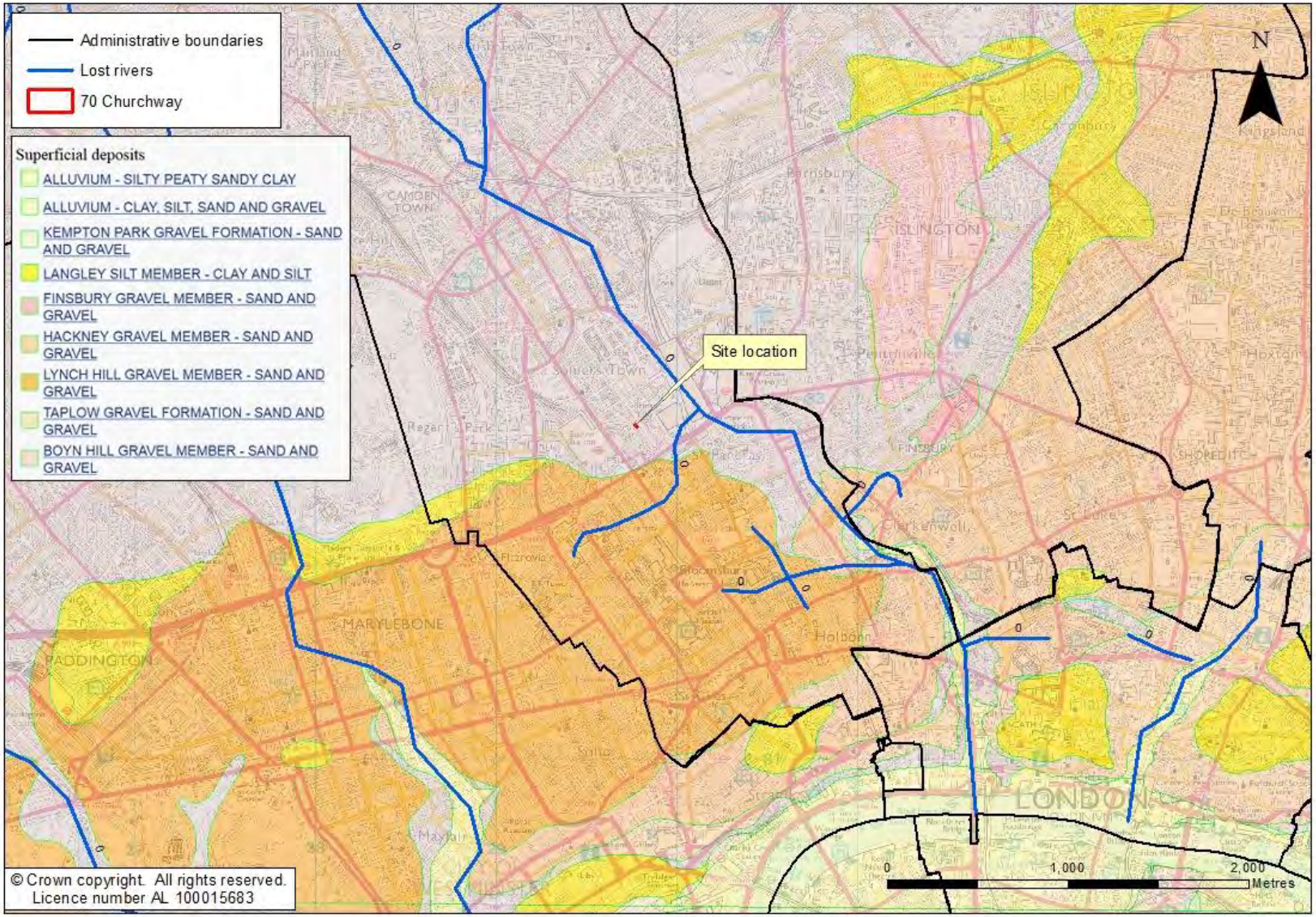


Figure 2.1 Site Geology (Contains British Geological Survey materials © NERC [2013]).

3 SCOPING

The Scoping stage identifies the potential impacts of the proposed development where responses were 'Yes' to the questions raised in the Screening stage, as defined in Section 2.16 of CPG4 (Camden Council, 2011). It is noted that in some cases the answer 'Yes' relates to a positive outcome (e.g. a reduction in run-off) and this is stated under the section on potential impacts.

3.1 SURFACE WATER (Surface flow and flooding screening flowchart (Figure 3, CPG4 (Camden Council, 2011))			
Impact question	**Answer**	**Potential Impacts**	**Reference**
3) Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	**Yes**	The proposed basement would be sited beneath the footprint of the existing construction; however parts of the building will be replaced with outside areas within the proposed development. The outside space is likely to contain permeable paving which will allow additional infiltration and reduce surface water runoff.	Site plans (Appendix A).

3.2 GROUND WATER			
Impact question	**Answer**	**Potential Impacts**	**Reference**
4) Will the proposed basement development result in a change in the proportion of hard surfaced / paved external areas?	**Yes**	The proposed basement would be sited beneath the footprint of the existing construction; however parts of the building will be replaced with outside areas within the proposed development. The outside space is likely to contain permeable paving which will allow additional infiltration and reduce surface water runoff.	Site Plans
5) As part of the site drainage, will more surface water (e.g. rainfall and runoff) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?	**Yes**	Pending assessment of detailed drainage plans, the replacement of a part of the building with a garden will increase the amount of rainfall infiltrating the ground and reduce the amount of runoff. Neighbouring properties have existing basements that extend to depths no greater than the proposed development. As the new garden will be at the lower level of the proposed basement, i.e. 3 m below ground level, there will be negligible impact on neighbouring properties or the existing basements.	Site Plans

4 CONCLUSIONS

Potential impacts of the proposed basement development at 70, Churchway have been considered as set out in the scope of works. The following summary conclusions are made:

- The Site is not within a designated flood plain, nor is it a street which is at risk of significant localised tidal flooding or reservoir failure as defined by the Environment Agency.
- The Site is at low risk from pluvial flooding according to the Camden Council flood risk assessment.
- A tributary to the “lost” River Fleet runs east to west, passing approximately 250 m to the south of the Site. It is highly likely that the historical river is culverted in this area.
- It is expected to be an overall reduction in impermeable surfaces as part of the building will be replaced with outside space containing permeable paving.
- The Site is not located above an aquifer and nearby borehole logs indicate there is no groundwater in this area.
- There is no history of sewer flooding at the site (Appendix C).
- The overall risk from the proposed development is considered to be low due to the reduction in impermeable surfaces and the very low likelihood of groundwater being present.

REFERENCES

ARUP (2010). Camden geological, hydrogeological and hydrological study. Ove Arup & Partners Ltd

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

British Geological Survey, 2013 (A). Received 19/09/13 from http://mapapps.bgs.ac.uk/geologyofbritain/home.html.

British Geological Survey, 2013 (B). Geoindex. Received 19/09/13 from http://mapapps2.bgs.ac.uk/geoindex/home.html

British Geological Survey, 2013 (C). Geoindex. Received 19/09/13 from http://mapapps2.bgs.ac.uk/geoindex/home.html

Camden Council, 2011. Camden Planning Guidance: Basements and lightwells. London Borough of Camden, CPG4.

Camden Council, 2013. Managing flood risk in Camden: The London Borough of Camden's risk management strategy.

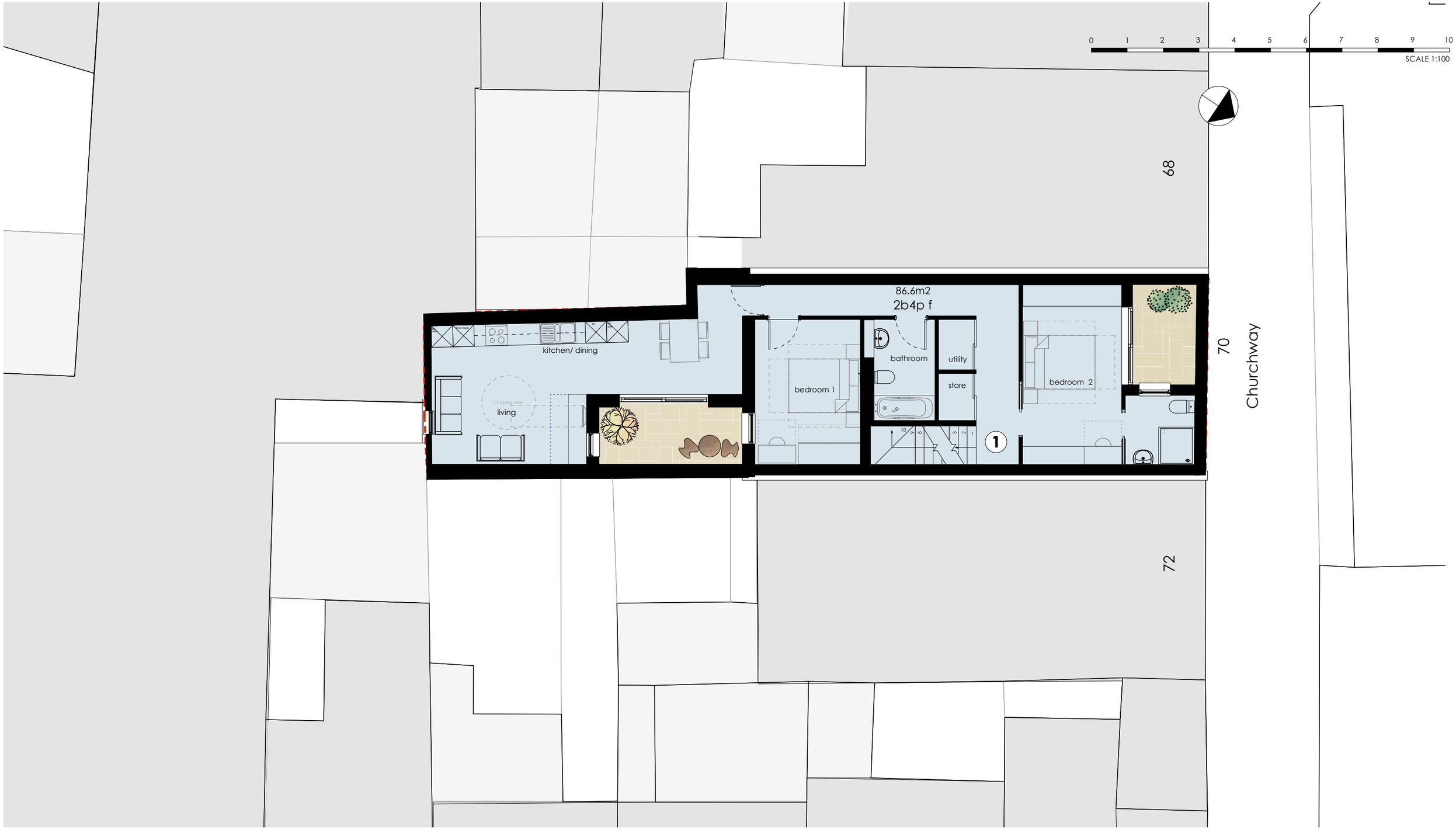
Environment Agency, 2013. What's in your backyard website. Received from http://maps.environment-agency.gov.uk/wiyby, Sep 2013.

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

Thames Water, 2013. Sewer Flooding History Enquiry – Cockpit Yard.

APPENDIX A

Site Plans



OPTION 2

divine ideas architects

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Notes

Client

Rangepay Ltd.

Project

70 Churchway, London, NW1 1LT

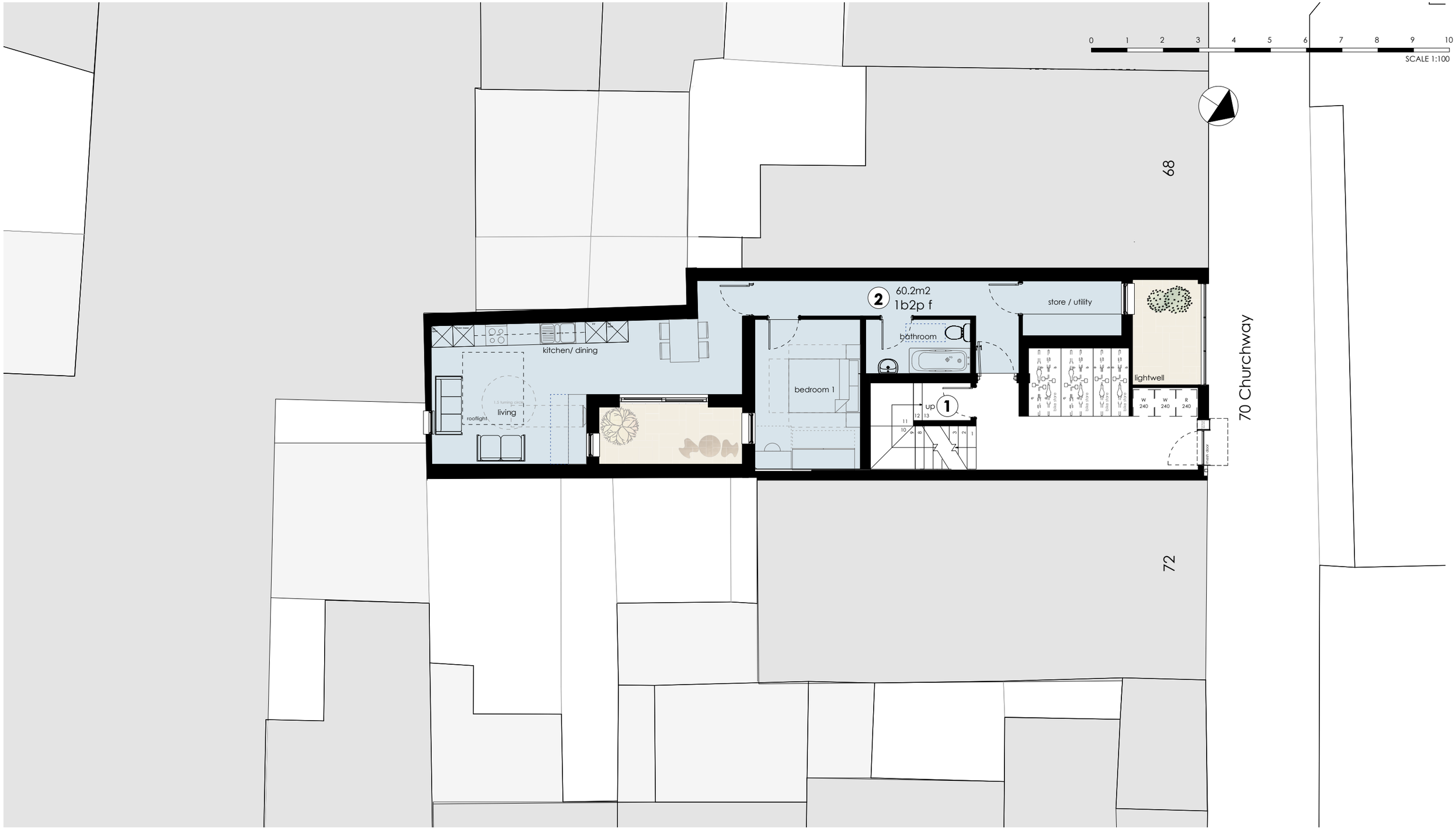
Status

Redesign Option - March 2016

Drawing

Proposed Basement Floor Plan

Project Number	Drawing Ref	Revision	Scale	Page size
1512	230	A	1:100	A3



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Notes

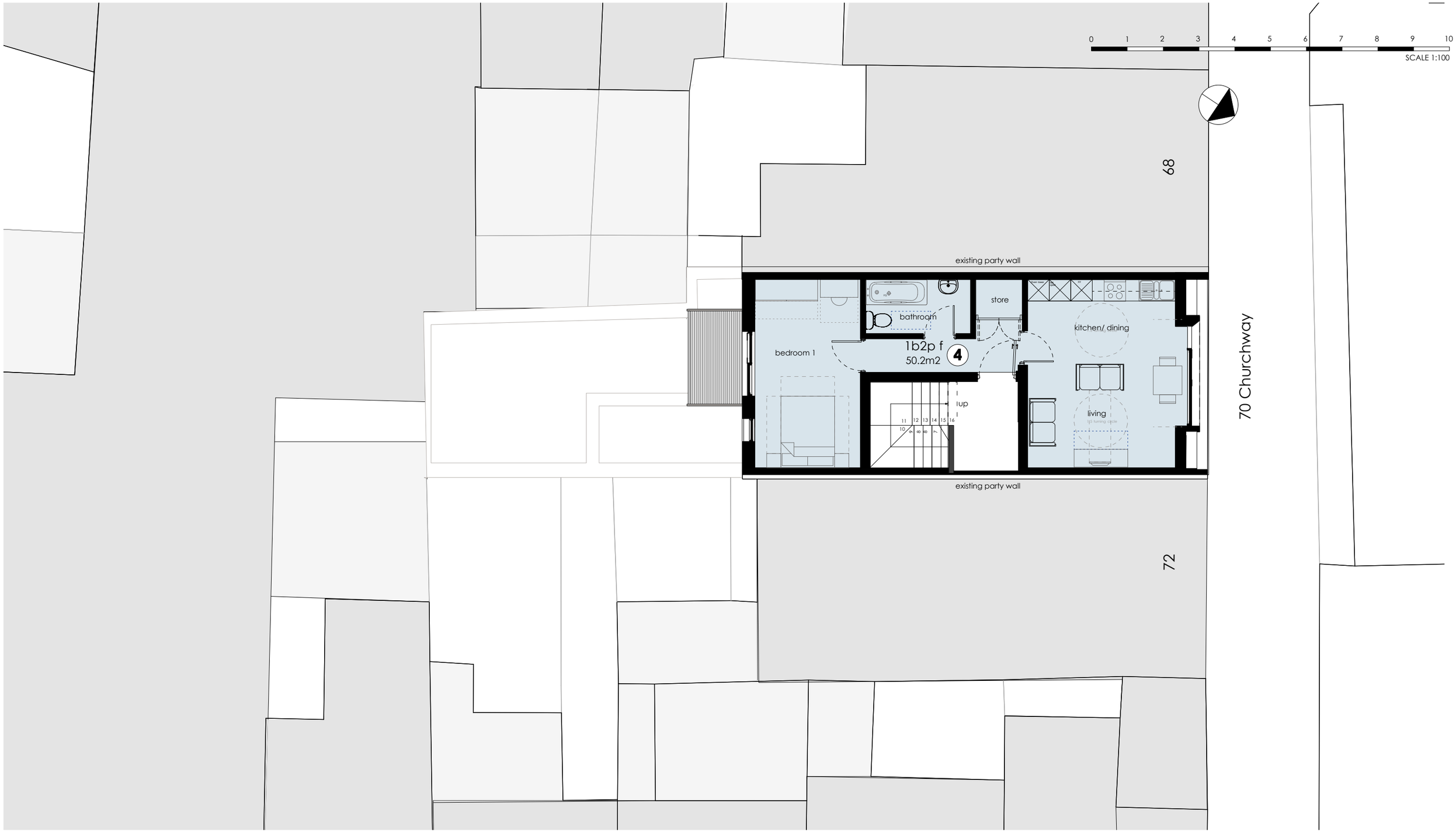
Client
Rangepay Ltd.

Project
70 Churchway, London, NW1 1LT

Status
Redesign Option - March 2016

Drawing
Proposed Ground Floor Plan

Project Number	Drawing Ref	Revision	Scale	Page size
1512	231	A	1:100	A3



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Notes

Client
Rangepay Ltd.

Project
70 Churchway, London, NW1 1LT

Status
Redesign Option - March 2016

Drawing
Proposed Second Floor Plan

Project Number	Drawing Ref	Revision	Scale	Page size
1512	233	A	1:100	A3

Luna Apartments: Melbourne
Example of glazed building with
bronze transparant mesh screen

0 1 2 3 4 5 6 7 8 9 10
SCALE 1:100

70 Churchway
Front Elevation

OPTION 2

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Notes

Client
Rangepay Ltd.

Project
70 Churchway, London, NW1 1LT

Status
Redesign Option - March 2016

Drawing
Proposed Front Elevation

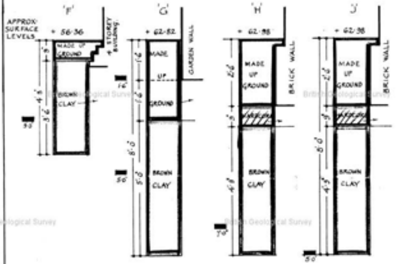
Project Number	Drawing Ref	Revision	Scale	Page size
1512	241	A	1:100	A3

APPENDIX B

Site Geology

BGS BH locations (British Geological Survey, 2013) in relation to 70 Churchway (red polygon)

T8100/421



SIZE OF HOLES

6'0" x 5'0" x DEPTH SHOWN.

NOTES

▬ INDICATES JAR SAMPLES

THE DIGGINGS WERE INSPECTED BY:-
MR F.F. SCOTT: DIST SURVEYOR & C.E.G. DAY: STRUCT SECTION.
BUT AS PRESSURE VALUES HAVE ALREADY BEEN GIVEN FOR TRIAL DIGGINGS C.D+E (SEE DRG Nº HO/232/04) ON THIS SITE NO VALUES WERE TAKEN FOR THE NEW DIGGINGS EXCEPT AS GIVEN IN THE FOLLOWING PARAGRAPH.
A TUBE SAMPLE OF BROWN CLAY WAS TAKEN BY MR DAY FROM HOLE 'F' AND TESTED. RESULT OF TEST GAVE PRESSURE VALUE OF 1 TON FT² AT 4'0" DEPTH

REVISIONS

No	Date	

LONDON COUNTY COUNCIL
ARCHITECT'S DEPARTMENT
HOUSING DIVISION
Waterloo 5000 Extension 7692

Hubert Bennett
Architect to the Council
Drawn E.F.B. Checked A.C.R.L.

Job
CHALTON STREET, ST PANCRAS. N.W.1.

Title
TRIAL DIGGINGS 'F', 'G', 'H' & 'J'

Scale	Date
VERT: 1/4 INCH = 1 FOOT	14th NOV. 1956

Div	Job No	Drwg	Rev
HO	232	07	

LON N5
NW W

RECORD OF BOREHOLE NO. 14

TQ/2856/348
2975-8289

Ground level: + 61.5ft. O.D. Newlyn

Dia of boring: 8in. to 85ft. 6in. to 120ft.

Type of boring: Shell and Auger

Lining tubes: 8in. to 30ft. 6in. to 90ft.

Daily Progress	Samples: Depth	Samples: Type	Change of Strata: Legend	Change of Strata: Depth	Change of Strata: O.D. Level	Description of Strata
	2'0"	D				Concrete floor and base.
	5'0"	D		4'0"	+57.5	Soft to firm brown clay
	7'0"	D		7'0"	+54.5	
	12'0"	D				Firm to stiff fissured brown silty clay, (London Clay)
	15'0"	D		15'0"	+46.5	
	20'0"	D				
	25'0"	D				
3.12.58	30'0"	D				
	35'0"	D				
	40'0"	D				Stiff to very stiff fissured grey silty clay with occ sand partings below 60ft. (London Clay)
	45'0"	D				
	50'0"	D				
	55'0"	D				
4.12.58	60'0"	D		60'0"	+ 1.5	
	63'0"	D				
	65'0"	D				
	68'0"	D				
	73'0"	D				
	75'0"	D				
	80'0"	D				
6.12.58	85'0"	D				Very stiff to hard fissured mottled blue, brown and red silty or sandy clay. (Woolwich and Reading Beds)
	86'0"	D				
	89'0"	D				
8.12.58	98'0"	D				
	100'0"	D				
	105'0"	D				
	108'0"	D		108'0"	-46.5	
	109'0"	D				
9.12.58	114'0"	D				Dense grey clayey fine to medium sand. (Thanet Beds)
10.12.58	119'0"	D		120'0"	-58.5	

Key to type of sample:
- U (4) — 4 in. dia undisturbed sample
- U (14) — 14 in. " "
- D — disturbed sample
- W — water " "
- S ( ) — standard penetration test. No. in brackets gives No. of blows/12 in. penetration

Remarks: (Observations on ground-water, etc.)

A slight seepage of ground-water into the borehole was noticed at a depth of 85ft. below ground level. Water level stood at a depth of 85ft. below ground level on the morning of 8.12.58). It was sealed off by the lining tubes at a depth of 90ft. below ground level.

Location: Vacant site between Churchway and Chalton Street

Scale: 1in. to 10ft.

Drawing No: S.R. 3211

LONDON TRANSPORT EXECUTIVE

BORINGS FOR PROPOSED VICTORIA LINE UNDERGROUND RAILWAY. (CONTRACT 859)

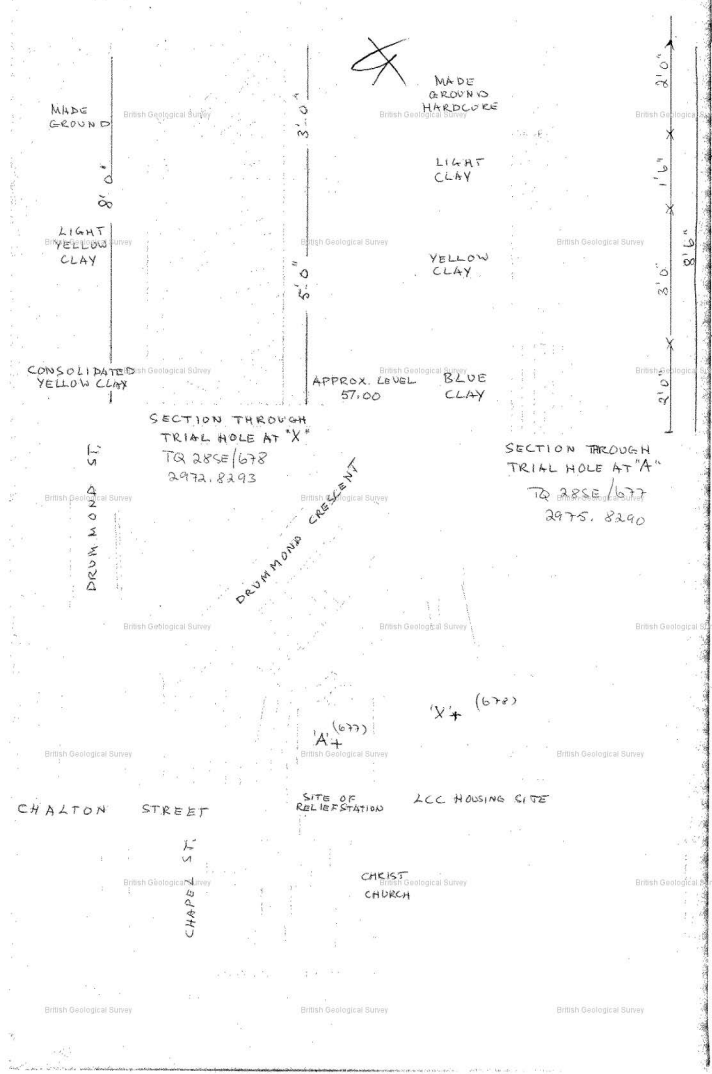
Soils No. S/1931

FIG. 12.

GEORGE WIMPEY & CO., LTD. CENTRAL LABORATORY HAYES

L.C.C. RELIEF STATION TQ 28SE/677-678

PLAN INDICATES POSITIONS OF TRIAL BORES



APPENDIX C

Flooding Risk & Sewer Flooding History Enquiry

Sewer Flooding

History Enquiry

Thames Water Property Searches
12
Vastern Road
Reading
RG1 8DB

Search address supplied 70
Churchway
London
NW1 1HY

Your reference 61840

Our reference SFH/SFH Standard/2013_2583858

Received date **30 September 2013**

Search date **30 September 2013**

Thames Water Utilities Ltd

Property Searches
PO Box 3189
Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504
E searches@thameswater.co.uk
I www.thameswater-propertysearches.co.uk

Registered in England and Wales
No. 2366661, Registered office
Clearwater Court, Vastern Road
Reading RG1 8DB

Sewer Flooding

History Enquiry

Search address supplied: 70, Churchway, London, NW1 1HY

This search is recommended to check for any sewer flooding in a specific address or area

TWUL, trading as Property Searches, are responsible in respect of the following:-

(i) any negligent or incorrect entry in the records searched;

(ii) any negligent or incorrect interpretation of the records searched;

(iii) and any negligent or incorrect recording of that interpretation in the search report

(iv) compensation payments

Thames Water Utilities Ltd

Property Searches
PO Box 3189
Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504
E searches@thameswater.co.uk
I www.thameswater-propertysearches.co.uk

Registered in England and Wales
No. 2366661, Registered office
Clearwater Court, Vastern Road
Reading RG1 8DB

Sewer Flooding

History Enquiry

History of Sewer Flooding

Is the requested address or area at risk of flooding due to overloaded public sewers?

The flooding records held by Thames Water indicate that there have been no incidents of flooding in the requested area as a result of surcharging public sewers.

For your guidance:

- A sewer is “overloaded” when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Flooding as a result of temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded.
- “Internal flooding” from public sewers is defined as flooding, which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.
- “At Risk” properties are those that the water company is required to include in the Regulatory Register that is presented annually to the Director General of Water Services. These are defined as properties that have suffered, or are likely to suffer, internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant reference period (either once or twice in ten years) as determined by the Company’s reporting procedure.
- Flooding as a result of storm events proven to be exceptional and beyond the reference period of one in ten years are not included on the At Risk Register.
- Properties may be at risk of flooding but not included on the Register where flooding incidents have not been reported to the Company.
- Public Sewers are defined as those for which the Company holds statutory responsibility under the Water Industry Act 1991.
- It should be noted that flooding can occur from private sewers and drains which are not the responsibility of the Company. This report excludes flooding from private sewers and drains and the Company makes no comment upon this matter.
- For further information please contact Thames Water on Tel: 0845 9200 800 or website www.thameswater.co.uk

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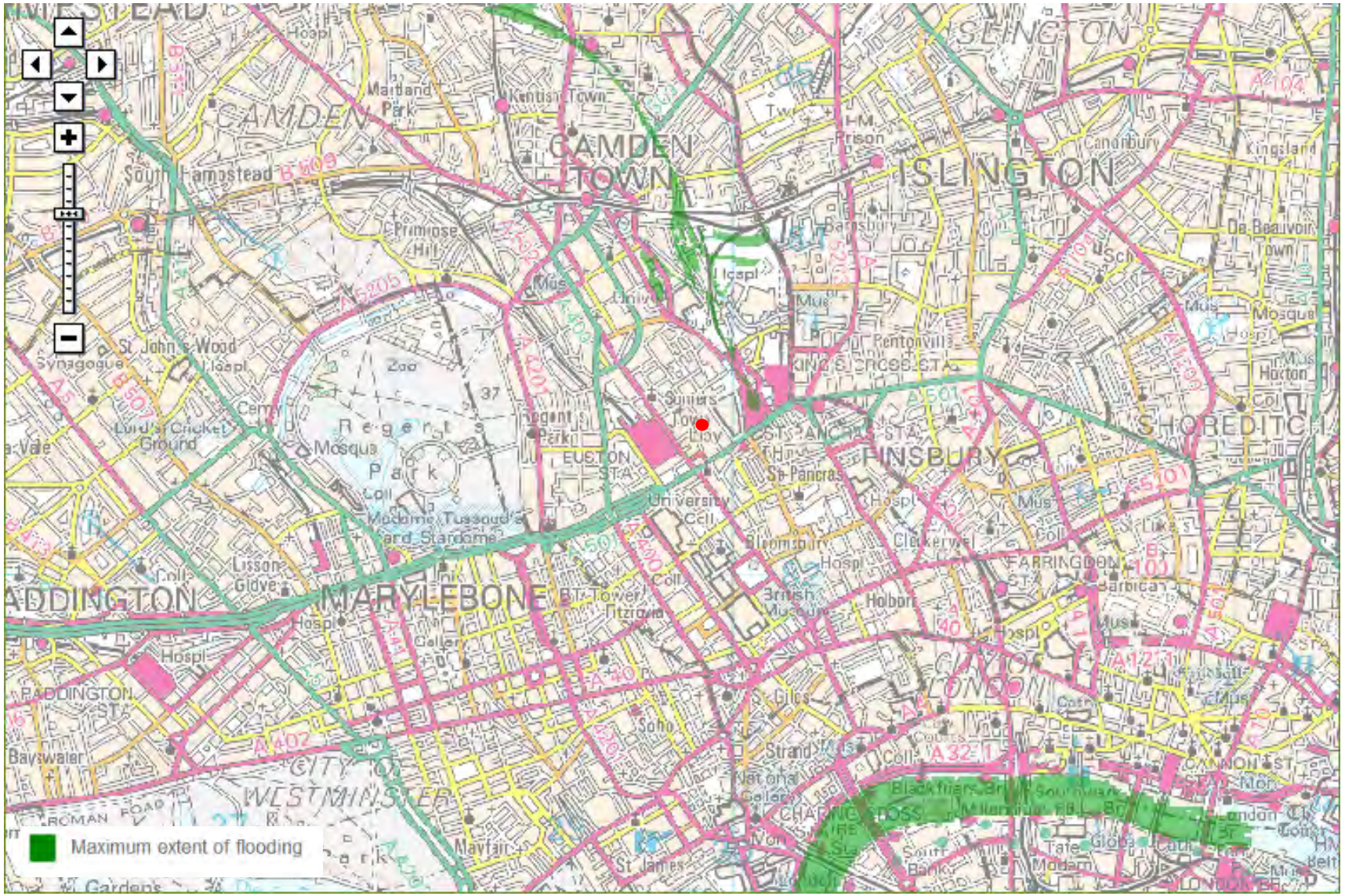
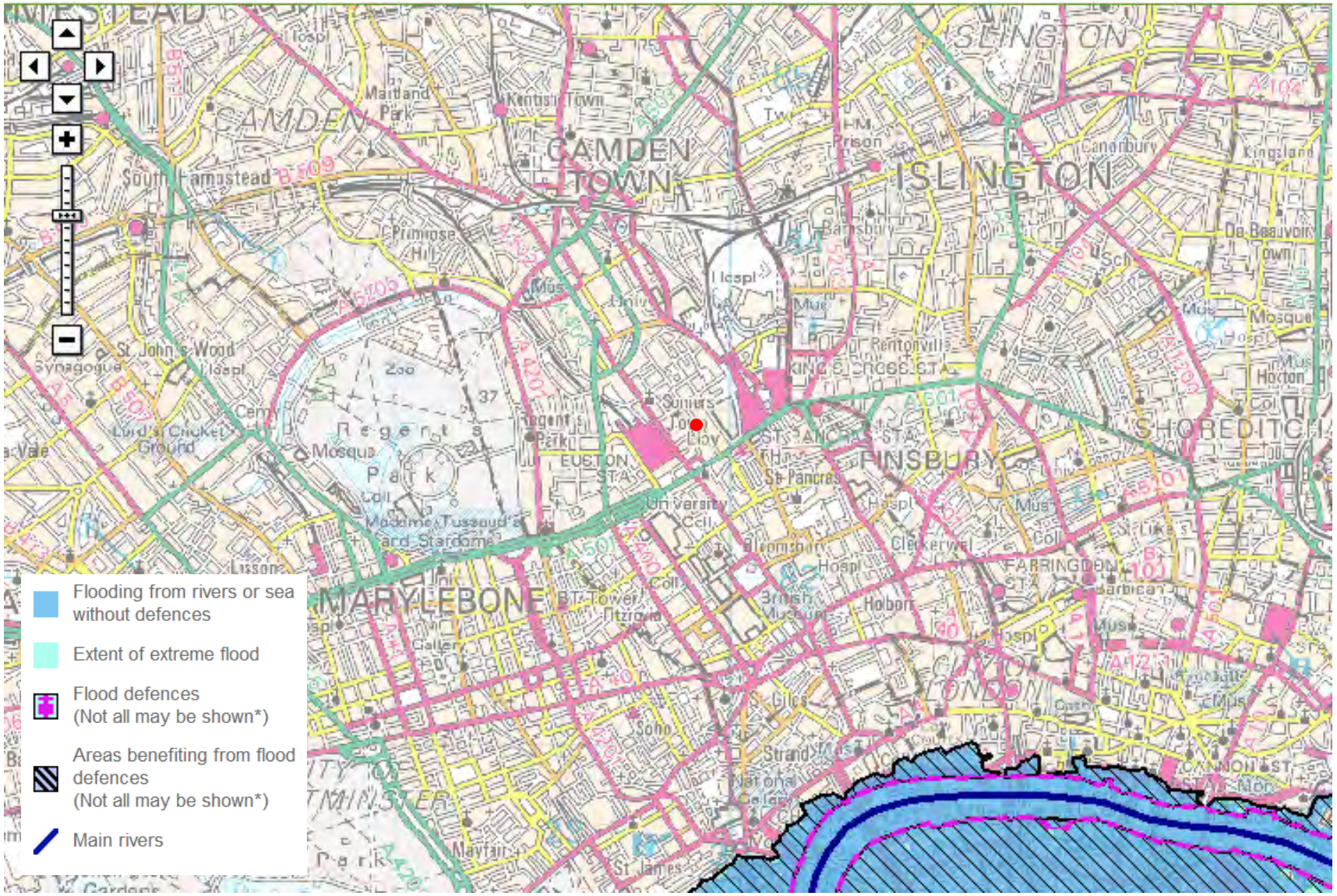


Reservoir Failure Flood Risk Map (Environment Agency 2013)



Tidal and Fluvial Flood Risk Map (Environment Agency 2013)