elliottwood

4 Montpelier Square, London, SW7 1JT

Flood Risk Assessment

engineering a better **society**

elliottwood | engineering a better society

		Remarks:	For Information				
Revision:	P1	Prepared by:	Tim Kenning BSurv	Checked by:	Paul Chance CEng MICE	Approved by:	Paul Chance CEng MICE
Date:	17/02/2021	Signature:		Signature:		Signature:	

Contents

Appendices

elliottwood | engineering a better society

Our practice

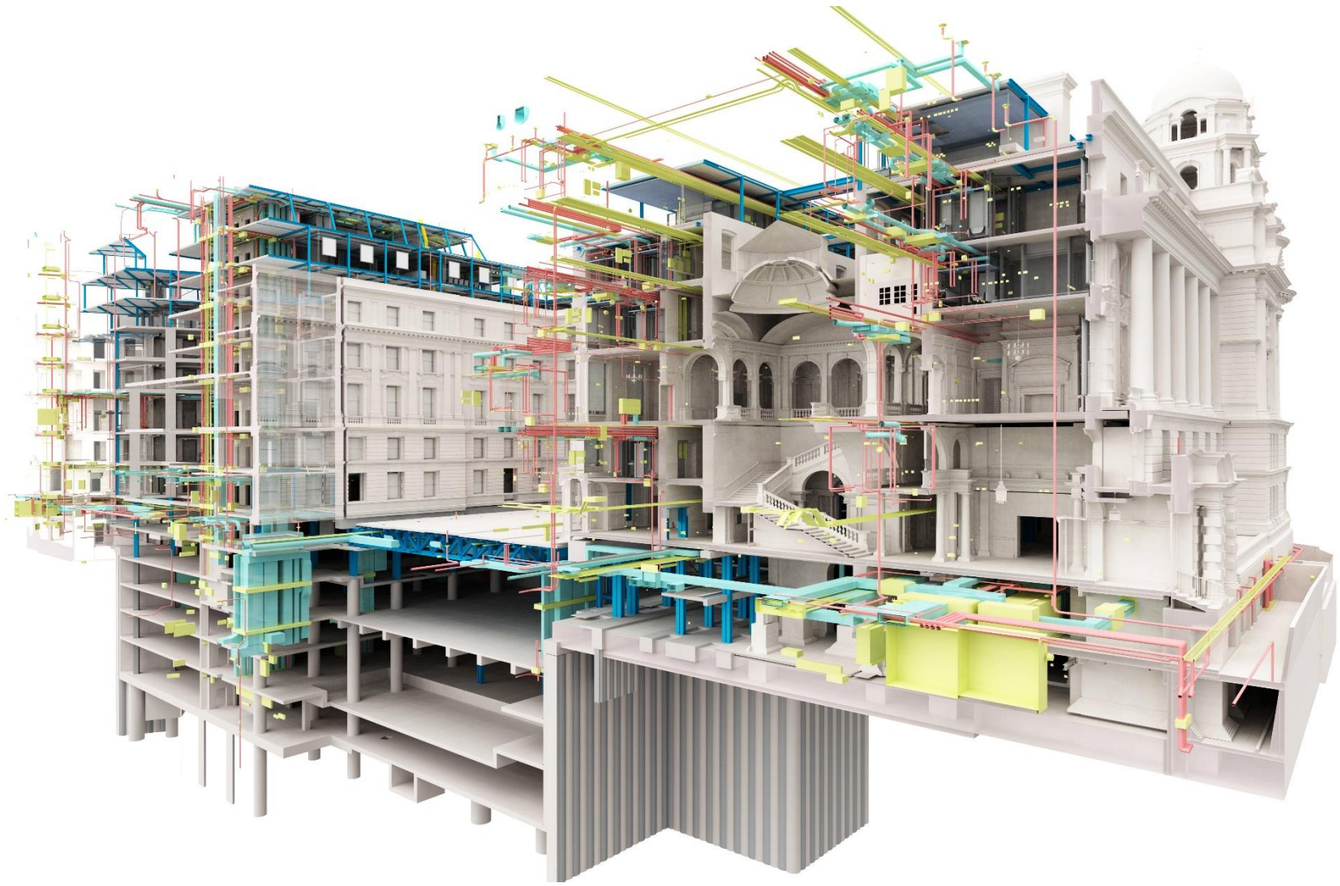
Elliott Wood work with likeminded people to engineer a better society

Our portfolio is extraordinarily diverse, and we particularly enjoy those projects which provide the opportunity to engineer for the common good – from making dramatic improvements to the life of a town or city, through to nurturing a new generation of exceptional engineers in our own in-house academy.

Despite more than twenty years in practice, we continue to be curious and find ways to pass on the benefit of our collective experience. We foster enquiring minds and share ideas because we know that this knowledge can make a real difference to our clients.

Engineering is often about the unseen: much of what we do is hidden when a building is complete. But engineering is not a necessary evil – it's much cleverer than that. Our role is to demystify the invisible workings of a structure, to reveal unexpected opportunities and to make the existing engineering work harder.

We value both technical and creative thinking and are activists for a new kind of engineering profession in which our craft is pivotal to the design process. We are no ordinary engineers.



Reveal / Materialise / Impact

Engineers make a difference

We like to be involved at the start of our clients' creative and commissioning journey, because we are concerned that not enough people are realising the full potential of their buildings. They are only working with what they can see.

Our process challenges usual perceptions of the engineer's role, because we help clients to see the unseen and achieve results beyond the aspirations of the brief – and which have a positive legacy for their wider communities.

Reveal

We ask questions. With innovative thinking, we reveal the unexpected opportunities in an already ambitious brief.

Materialise

We give ideas life. Using expertise and imagination, we materialise new assets for our clients.

Impact

We make a difference. Our work not only benefits our clients, it has a positive impact on society as a whole.

elliottwood | engineering a better society

One

Executive Summary

1.1 Executive Summary

The proposed development is located solely within Flood Zone 1. The site is however shown to be located within the Knightsbridge Surface Water Flood Risk Hotspot area.

Flood risk from surface water, groundwater, sewers and artificial water bodies is considered to be low.

The proposed development is considered as a 'more vulnerable development', and thus is permitted within Flood Zone 1 in line with Planning Policy Guidance (PPG).

Two

Introduction

2.1 Introduction

Elliott Wood has been commissioned to produce a site-specific Flood Risk Assessment (FRA) for the proposed development at 4 Montpelier Square, London, SW7 1JT

This report is intended to review all potential sources of flooding to the proposed development, evaluate the sensitivity of the site to flooding and consider any impact to the surrounding area that the development may cause.

The following documents have been reviewed during preparation of this FRA;

- Westminster Draft Strategic Flood Risk Assessment (SFRA) (2019)
- Basement Development in Westminster SPD (2014)
- National Planning Policy Framework (NPPF) (2019)
- Planning Practice Guidance (PPG)
- Thames Water Public Sewer Records
- The London Plan

Three

Existing Site

3.1 Site Location

The development site is located on Montpelier Square, approximately 200m to the south of Hyde Park as shown in Figure 1 below. It is located on OS Grid Reference 527413 E 179519 N.

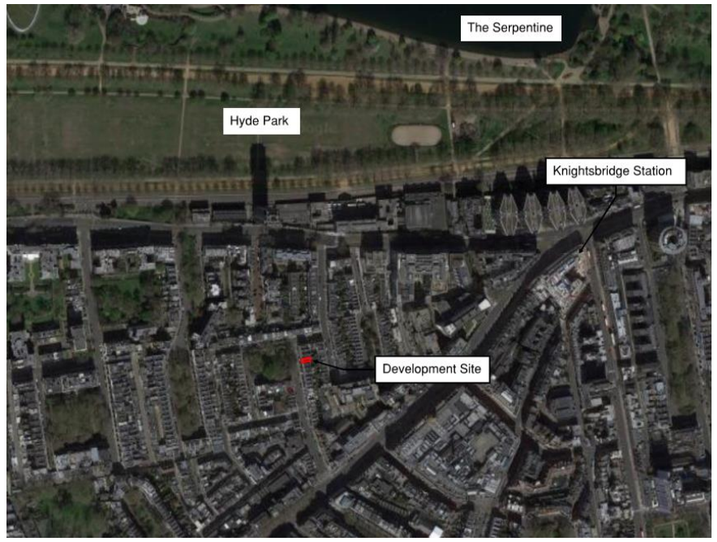


Figure 1 - Site Location Map. Site shown in red. (Source: Google Maps)

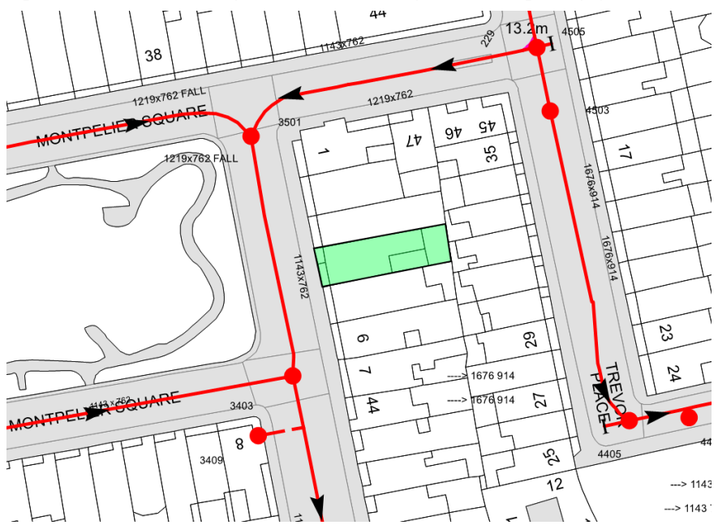


Figure 2 - Site Boundaries

3.2 Existing Development Site

The existing site comprises of a mid-terrace 5 storey residential dwelling built in the mid-19th century. The property is Grade II listed in a conservation area within the London Borough of Westminster. A layout of the existing building's lower ground floor plan and ground floor plan can be found in Figure 3.

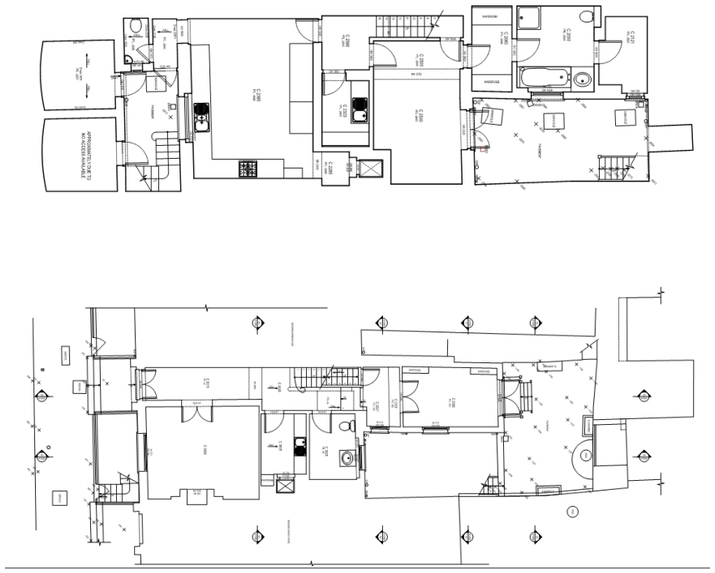


Figure 3 - Existing building's Lower Ground and Ground Floor Plans

3.3 Existing Topography

A topographical survey of the site and adjacent road has been carried out. The survey confirms that there are three steps up from the edge of the highway into the property. Refer to **Appendix A** for a copy of the Existing Buildings Ground Floor Plan.

3.4 Underlying Geology

According to the British Geological Society data, the site is situated on the London Clay Formation. This is overlain by the Hackney Gravel Member – Sand and Gravel.

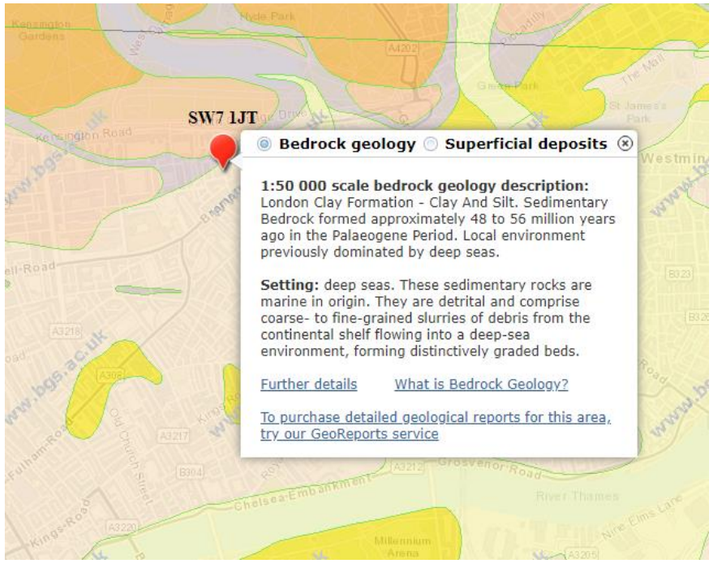


Figure 4 - Site Geology (Source: British Geological Society)

Four

Proposed Development

The proposed scheme includes refurbishment and alterations to the existing dwelling and the addition of a single storey basement under the existing building footprint.

Five

Planning and Flood Risk Management Policy

The Planning Policy Guidance (PPG) states that an FRA must demonstrate that there is no increase in flood risk on or off site and that only appropriate development is considered in areas at risk of flooding.

5.1 Flood Risk Vulnerability Classification

The proposed development vulnerability is classed as “more vulnerable” in line with PPG.

5.2 Flood Risk Vulnerability and Flood Zone Compatibility

The site is located within Flood Zone 1. Table 1 indicates that the development is permitted within Flood Zone 1.

Table 1 - Flood Risk Vulnerability and Flood Zone Compatibility (Source: PPG)

Flood risk vulnerability classification	Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Zone 1	Yes	Yes	Yes	Yes	Yes
Zone 2	Yes	Yes	Exception Test required	Yes	Yes
Zone 3a	Exception Test required	Yes	No	Exception Test required	Yes
Zone 3b functional floodplain	Exception Test required	Yes	No	No	No

Six

Flood Risk

6.1 Potential Sources of Flooding

Table 2 summarises the potential sources of flooding that could pose a flood risk to a development, these are assessed in detail within the following sections of this FRA report.

Table 2 - Potential Sources of Flooding

Flood Source	Mechanism	Site Impact
Tidal/fluvial	This is where extreme flood levels result in overtopping/breach of river defences, thus leading to tidal/fluvial flooding.	This may result in flood waters entering buildings via thresholds and other openings and flooding of external areas.
Groundwater	Rising groundwater within underlying aquifers	Rising groundwater levels could affect basements if a pathway is available.
Surface Water Run-off from Heavy Storm Events	Surcharging of existing drainage networks leading to overland flows to the subject site.	Flood water may enter the subject site from adjacent highways which may flood buildings and external areas within the subject site.
Artificial Water Bodies	Structural failure of banks/structures serving artificial water bodies leading to rapid flood inundation. Overtopping of artificial water bodies.	Rapid flood inundation or flood waters from overtopping to a subject site will lead to flood waters within external areas and may enter the buildings via low points and level thresholds.
Drainage / Infrastructure Systems	Blockages within site drainage systems or inadequate capacity within surrounding infrastructure to deal with extreme return periods.	Blockages or surcharging of public sewers will lead to surface / foul water flows backing up into site. This possess a flood risk to basements and low-lying areas.

6.2 Tidal/Fluvial Flooding

The online flood maps from GOV.UK show the site to be located within Flood Zone 1, therefore tidal and fluvial flood risk is considered to be low as shown within Figure 5.

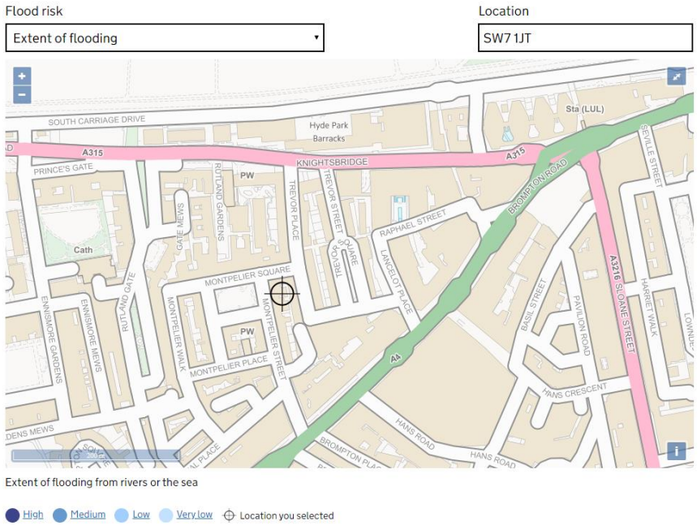


Figure 5 - Planning flood map showing site is located within Flood Zone 1. (GOV.UK Flood Maps)

6.3 Ground Water Flooding

Groundwater flooding occurs when water levels in the ground rise above surface levels. It is most likely to occur in areas underlain by permeable ground, called aquifers.

Figure 6 below is an extract from Westminsters Draft SFRA; Increased Potential for Elevated Groundwater map which indicates that the site is located inside of an area of increased potential for elevated groundwater. However, no ground water flooding incidents have been reported in the vicinity of the site. As a result, the development is deemed to be at low risk of flooding from elevated groundwater.

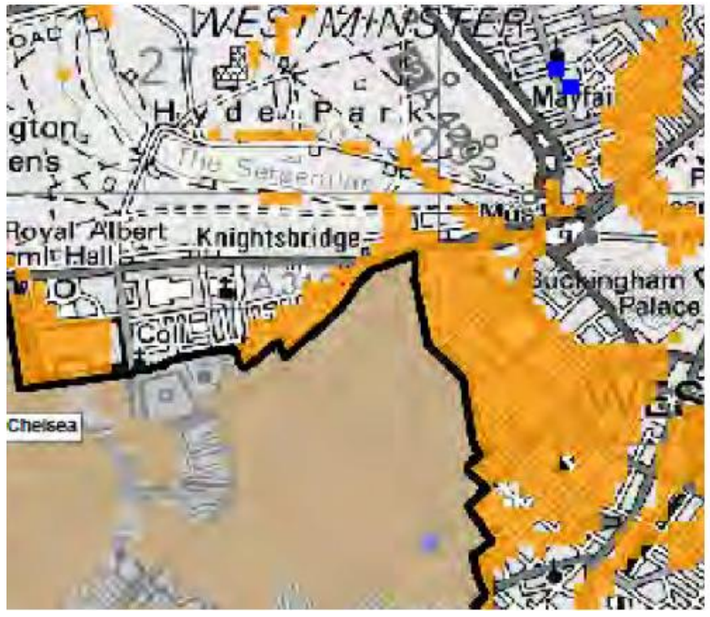


Figure 6 - Areas at Risk of Flooding from Groundwater' (Draft SFRA)

6.4 Surface Water Flooding/Overland Flows

Surface water flooding may occur during intense or prolonged rainfall events where there is insufficient capacity within the existing drainage infrastructure which leads to overland flows.

Figure 7, taken from GOV.UK indicates that there is a low risk of surface water flooding on site.

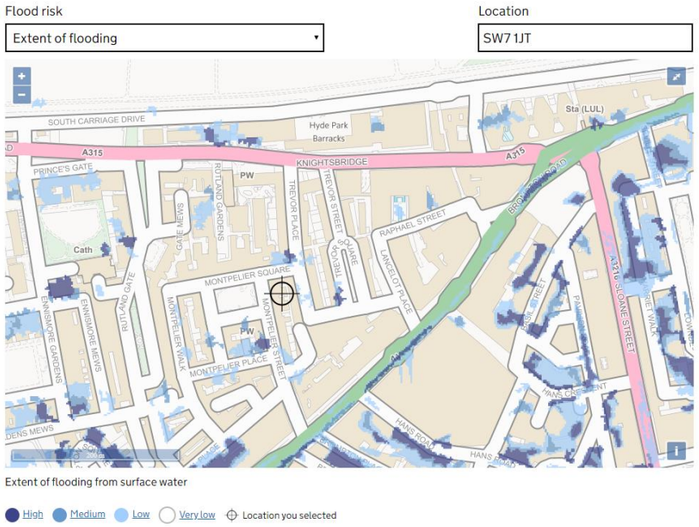


Figure 7 - Surface Water flood risk to the site (GOV.UK flood maps)

Figure 8 below is an extract from Westminsters Draft SFRA; Surface Water Flood Risk Hotspots. This indicates that the site is located within the Knightsbridge Surface Water Flood Risk Hotspot area.

Figure 8 - Surface Water Flood Risk Hotspots (Draft SFRA)

6.5 Sewer Flooding

Sewer flooding is usually localised and short lived, it can be caused by intense rainfall events overloading the capacity of the sewer, blockages, poor maintenance or structural failure of sewers.

Sewer flooding records have been obtained from Thames Water which indicate that there have been no reported incidents of flooding at the site as a result of surcharging public sewers. A Sewer Flooding History for the proposed site can be found in **Appendix B**. Flood risk from sewers is therefore deemed to be low on site.

6.6 Flooding from Artificial Water Bodies

As shown in Figure 9 below, the site is outside the extent of flooding from reservoirs. Reservoir flooding is extremely unlikely, and it should be noted that there has been no loss of life in the UK from reservoir flooding since 1925. Furthermore, the Reservoirs Act 1975 stipulates that all large reservoirs must be inspected and supervised thus ensuring that they are inspected regularly, and essential safety work is carried out where required.

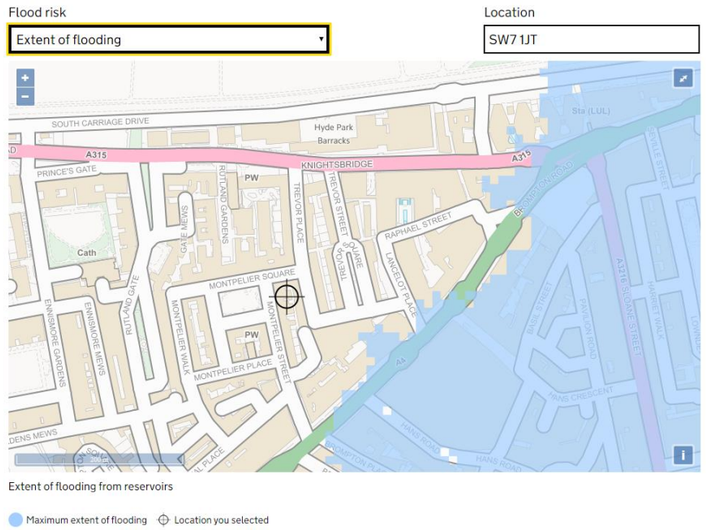


Figure 9 - Flood risk from reservoirs to the site. (GOV.UK Flood Maps)

Seven

Conclusion

The proposed development is located solely within Flood Zone 1 and is deemed to be at low risk from tidal and fluvial flooding. The site is however shown to be located within the Knightsbridge Surface Water Flood Risk Hotspot area.

Flood risk from surface water, groundwater, sewers and artificial water bodies is considered to be low.

The proposed development is considered as ‘more vulnerable development’, and thus is permitted within Flood Zone 1 in line with Planning Policy Guidance (PPG).

elliottwood

Appendices

engineering a better society

elliottwood | engineering a better society

A Existing Ground Floor Building Survey

LBMV architects

Luigi Montefusco Ltd
72 Haverstock Hill
NW3 2BE London
M+44 (0) 7837344073
T+44 (0) 207 483 3880

DRAWINGS STATUS: PLANNING PERMISSION | A3

PROJECT TITLE: HOUSE REFURBISHMENT

4 Montpelier Square
SW7 1JT

DRAWN	CHECKED
UG - MF	LM
DATE	SCALE
21.09.2020	1:100@A3

DRAWING TITLE: EXISTING LOWER GROUND AND GROUND FLOOR PLAN

JOB NO	DRAWING NO
0078	A1002

GENERAL NOTE
- This drawing should be removed from currency immediately when a revised version is issued.
- All dimensions to be checked on site by the contractor. Discrepancies to be reported before proceeding with the works.
- This drawing is copyrighted.
- All dimensions in mm's.

LEGEND

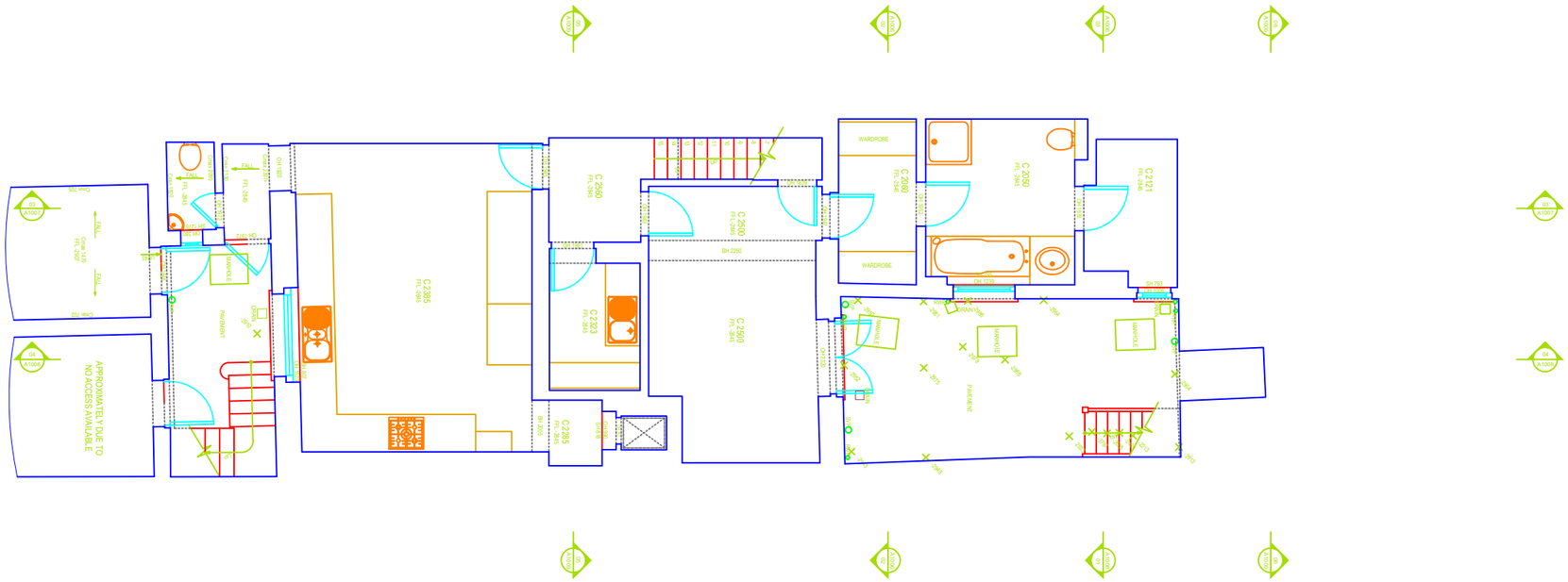
1.50	0	1	2 m
1.100	0	1	5 m
1:500	0	10	20 m
1:1000	0	10	50 m
1:1250	0	10	50 m

N

REV	DESCRIPTION	DATE	NAME
00		--/--/----	

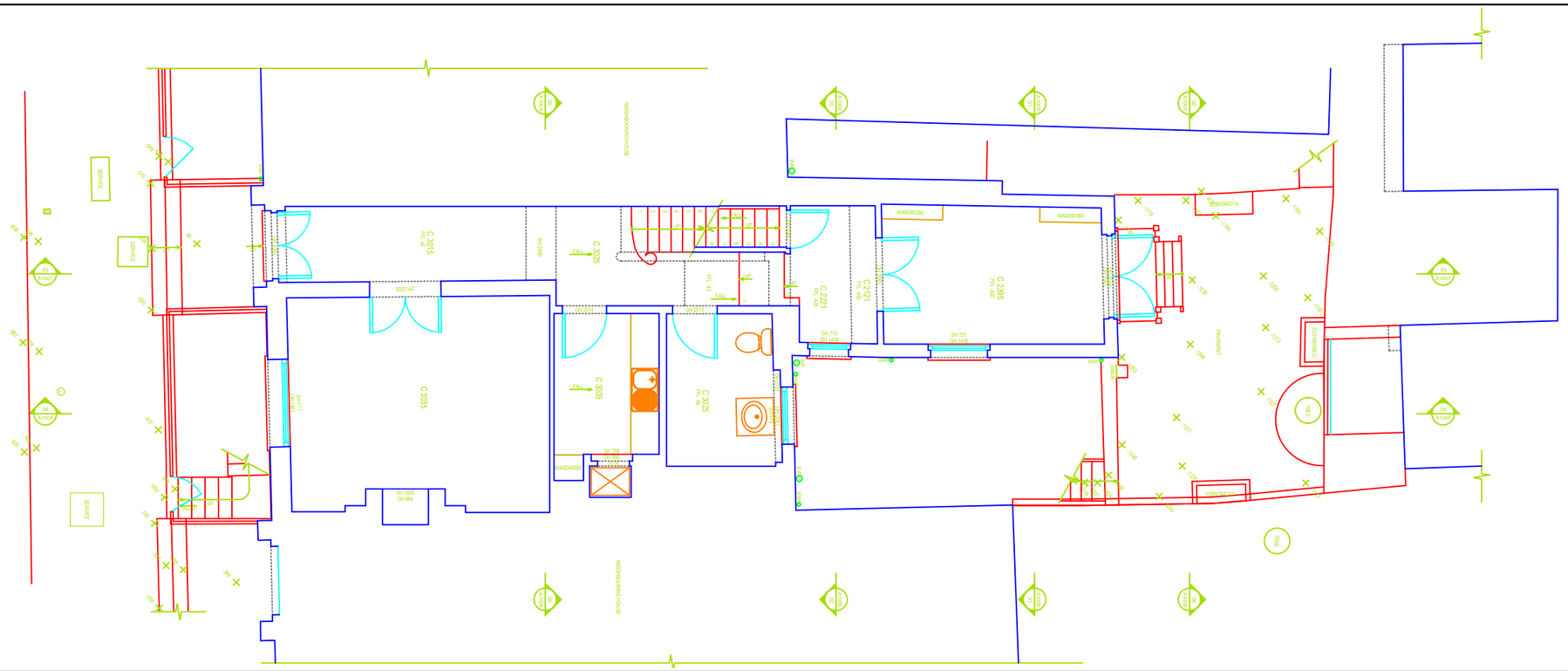
EXISTING LOWER GROUND FLOOR PLAN

SCALE 1:100



EXISTING GROUND FLOOR PLAN

SCALE 1:100



B Thames Water Sewer Flooding History Enquiry

Sewer Flooding
History Enquiry

Property Searches

Elliott Wood Partnership Limited

The Broadway

Search address supplied
4
Montpelier Square
London
SW7 1JT

Your reference 2190560

Our reference SFH/SFH Standard/2020_4298130

Received date **10 November 2020**

Search date **30 November 2020**

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0845 070 9148

Sewer Flooding
History Enquiry

Property Searches

Search address supplied: 4,Montpelier Square,London,SW7 1JT

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

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0845 070 9148

Sewer Flooding
History Enquiry

Property Searches

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: 0800 316 9800 or website www.thameswater.co.uk

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0845 070 9148

elliottwood | engineering a better **society**

London
55 Whitfield Street
Fitzrovia
W1T 4AH
+44 207 499 5888

Wimbledon
241 The Broadway
London
SW19 1SD
+44 208 544 0033

Nottingham
1 Sampsons Yard
Halifax Place
Nottingham
NG1 1QN
+44 870 460 0061

www.elliottwood.co.uk