Flood Risk Assessment

October 2021

EAS

Sidcup Library
Hadlow Road
Bexley

BexleyCo Homes

Document History

Sidcup Library Flood Risk Assessment report

JOB NUMBER: 3267/2021
DOCUMENT REF: FRA
REVISIONS: B

Revision	Comments	By	Checked	Authorised	Date
A	Draft	BD	LW	SA	11/10/2021
B	Final	LW	LW	SA	15/10/2021
C					
D					
E					

TRANSPORT PLANNING ■ HIGHWAYS AND DRAINAGE ■ FLOOD RISK ■ TOPOGRAPHICAL SURVEYS
Unit 23 The Maltings Stanstead Abbotts Hertfordshire SG12 8HG Tel 01920 871 777 e: contact@eastp.co.uk www.eastp.co.uk

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1 Introduction

1.1 This Flood Risk Assessment (FRA) report has been prepared in support of an application for a proposed residential block at the former Sidcup Library, Hadlow Road, Sidcup DA14 4AQ. A location plan is included in **Appendix A**.

1.2 The proposed development comprises the demolition of the existing library building and the construction of a 32 unit apartment block with car and cycle parking areas. Development proposals are enclosed in **Appendix B**.

1.3 The site is located in Flood Zone 1, at low risk of fluvial flooding. However, this FRA will investigate all flood sources and consider any mitigation measures where necessary.

1.4 The contents of this FRA is based on the advice set out in the National Planning Policy Framework (NPPF) published in July 2021 and Annex 3: Flood risk vulnerability classification, also from the NPPF.

1.5 This report is based on a site-specific topographic survey, BGS geological maps, Environment Agency (EA) flood maps, local flood risk policy, Thames Water sewer records and OS mapping.

1.6 This document includes the following sections:

- Section 2 - describes the relevant policy;
- Section 3 - site description, including site levels, proximity to watercourses etc.;
- Section 4 – investigates each flood source and recommends any mitigation measures;
- Section 5 - concludes the report.

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2 Policy Context

Introduction

2.1 This section sets out the policy context. This FRA is based on the advice set out in the National Planning Policy Framework (NPPF) published in July 2021 and the Planning Practice Guidance (PPG) published March 2014, which is updated on an ad hoc basis.

National Planning Policy Framework

2.2 Paragraph 167 footnote 55 of the NPPF states:

"A site-specific flood risk assessment should be provided for all developments in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use."

2.3 The flood zones are defined as:

- Flood Zone 1 – Land assessed as having a less than 1 in 1,000 (<0.1%) annual probability of flooding from fluvial sources;
- Flood Zone 2 – Land assessed as having between a 1 in a 100 and 1 in 1,000 (1% to 0.1%) annual probability of flooding from fluvial sources;
- Flood Zone 3a – Land assessed as having a 1 in 100 or greater (>1%) annual probability of flooding from fluvial sources, or at least 0.5% annual probability of tidal flooding;
- Flood Zone 3b – Land where water has to flow or be stored in times of flood.

2.4 Paragraph 159 discusses the suitability of development location, particularly with regards to future risks induced by climate change:

"Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere".

2.5 Paragraph 160 of the National Planning Policy Framework (NPPF) sets out how:

"*Strategic policies should be informed by a strategic flood risk assessment, and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards".*

2.6 The EA Flood Map for Planning shows the site to be located entirely in Flood Zone 1, at low risk of flooding from fluvial sources. This is considered to be an area with less than 1 in 1000 annual probability of flooding. The EA Flood Map is enclosed at **Appendix C.**

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The London Plan (2021)

2.7 Policy SI 12 'Flood risk management' states:

'A Current and expected flood risk from all sources (as defined in paragraph 9.2.12) across London should be managed in a sustainable and cost-effective way in collaboration with the Environment Agency, the Lead Local Flood Authorities, developers and infrastructure providers.

B Development Plans should use the Mayor's Regional Flood Risk Appraisal and their Strategic Flood Risk Assessment as well as Local Flood Risk Management Strategies, where necessary, to identify areas where particular and cumulative flood risk issues exist and develop actions and policy approaches aimed at reducing these risks. Boroughs should cooperate and jointly address cross-boundary flood risk issues including with authorities outside London.

C Development proposals should ensure that flood risk is minimised and mitigated, and that residual risk is addressed. This should include, where possible, making space for water and aiming for development to be set back from the banks of watercourses.

D Developments Plans and development proposals should contribute to the delivery of the measures set out in Thames Estuary 2100 Plan. The Mayor will work with the Environment Agency and relevant local planning authorities, including authorities outside London, to safeguard an appropriate location for a new Thames Barrier.

E Development proposals for utility services should be designed to remain operational under flood conditions and buildings should be designed for quick recovery following a flood.

F Development proposals adjacent to flood defences will be required to protect the integrity of flood defences and allow access for future maintenance and upgrading. Unless exceptional circumstances are demonstrated for not doing so, development proposals should be set back from flood defences to allow for any foreseeable future maintenance and upgrades in a sustainable and cost-effective way.

G Natural flood management methods should be employed in development proposals due to their multiple benefits including increasing flood storage and creating recreational areas and habitat.'

2.8 The London Plan was considered during the preparation of this report to ensure that the new development complies to the flood risk requirements above.

Local Policy

Bexley Council Draft Local Plan (2021) and Local Plan Alterations (2038)

2.9 Bexley Council is currently at the consultation stage of creating a new draft Local Plan. It is anticipated to be published in the latter half of 2022. The aim of the updated local plan is to meet the social, economic, and environmental needs of Bexley.

Bexley Core Strategy (adopted February 2012)

2.10 In the meantime, the adopted Core Strategy is the relevant planning document. This sets out the Council's long-term vision for development in the borough.

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2.11 Policy CS08 'Adapting to and mitigating the effects of climate change, including flood risk management' states:

"All development should contribute to the delivery of sustainable development by planning for, adapting to, and mitigating the impacts of climate change, by reducing the carbon emissions related to the construction and operation of all development.

2.12 The policy goes on to say:

"In addition, this will comprise:

…g following the sequential approach to flood risk management advocated in national planning policy and its associated practice guidance;

h applying the recommendations of Bexley's Strategic Flood Risk Assessment;"

2.13 The location of the development in Flood Zone 1 demonstrates that a sequential approach has been followed. The information contained within the Bexley Strategic Flood Risk Assessment has been considered below.

Bexley Strategic Flood Risk Assessment (SFRA) (2010)

2.14 The Bexley Strategic Flood Risk Assessment assesses a range of sources of flooding using the best available data at time of publishing. The aim of the SFRA is to help guide planning and development away from areas of flood risk in the borough. It details historic flood events which affected the borough and also summaries all sources of flooding. Although low lying areas of the borough are at risk of tidal flooding from the Thames, no flood events have occurred close to the site. The main cause of flooding within the local area is from surface water.

2.15 Figure 4 of the SFRA details the location of Environment Agency Main Rivers across the borough and the extent of historic flood events. The site shown to remain outside all recorded historic events.

2.16 Figure 5 of the SFRA notes the location of defences and areas benefitting from defences. There are no tidal or fluvial defences within the vicinity of the site

2.17 Figure 8 shows the groundwater level is typically around 30m to 35m below ground.

2.18 Figure 10 details groundwater source protection zones and confirms the site lies above Source Protection Zone 2.

2.19 Figure 12 indicates the geology in the local area has intermediate suitability for infiltration drainage features.

2.20 Figure 16 does not show any historic flood risk events relating to drainage features near to the site.

2.21 Figure 18 of Bexley Heath SFRA details potential surface water flow routes and ponding areas across the borough. There are no surface water flow routes or areas of ponding shown within the site or in the vicinity of the site.

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3 Existing Site Assessment

Site Description

3.1 The site is located at Sidcup Library, Hadlow Road, Bexley DA14 4AQ (TQ 46445 71744). The red line boundary covers an area of 0.24 hectares. A location plan is contained in **Appendix A**. The building fronts Hadlow Road and there is also a vehicle access to the east of the building onto St Johns Road.

3.2 The site is located in Sidcup, within the London Borough of Bexley. The High Street is immediately south west of the site, and the train station is approximately 850m to the north.

3.3 Hadlow Road is to the immediate west of the site, and beyond this are the shops and businesses on the High Street. To the north are residential dwellings, and to the east and south are a supermarket and other businesses.

3.4 The proposed development is for an apartment block which includes 32 units over four floors, comprising:

- 13 one-bedroom apartments;
- 13 two-bedroom apartments;
- 6 three-bedroom apartments.

3.5 There will also be a cycle store on the ground floor for 58 bicycles, along with a car park with 16 spaces to the east of the building. A communal amenity area has also been provided to the east of the building. The proposed building includes a green roof with PV panels.

3.6 The proposed development plans are included at **Appendix B.**

Local Watercourses

3.7 There are no watercourses within the vicinity of the site. The nearest EA 'Main River' is the River Cray, approximately 1.5km to the east.

Site Levels

3.8 A topographic survey is enclosed in **Appendix D**. Ground levels at the site are all around 60m AOD to 61m AOD. There appears to be a slight fall to the east, where ground levels are around 60.45m AOD at the access onto St Johns Road.

Geology

3.9 With reference to the British Geological Survey online mapping (www.bgs.ac.uk), the site is located within an area with Harwich Formation; Sand and Gravel. No superficial deposits have been recorded on the site.

3.10 There are two boreholes located within close distance the site BGS reference TQ47SE145 and TQ47SE146.

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3.11 TQ47SE146, named SIDCUP DRAINAGE SCHEME 17, was completed to a depth of 5m and is approximately 35m to the south west of the site. Groundwater was recorded between 0.80m and 2.90m below ground level.

3.12 TQ47SE145, named SIDCUP DRAINAGE SCHEME 16, has a depth of 5m. This borehole is located directly within the site, and recorded groundwater levels of between 3m and 4m below ground.

3.13 Although the SFRA suggests groundwater is around 30m below ground level, the borehole suggest it could be as shallow as 0.80m below ground level in the vicinity. It is therefore recommended onsite ground investigation takes place prior to construction to confirm groundwater levels.

Sewer Records

3.14 Sewer records obtained by Thames Water are enclosed in **Appendix E**. These show a 375mm surface water sewer is located on the northern-west boundary of the site on Hadlow Road and flows towards the north. A 225mm foul sewer is also within Hadlow Road, flowing to the north.

3.15 A 375mm foul sewer and a 225mm surface water sewer are located within the High Street, flowing to the north west.

Existing Drainage System

3.16 It is assumed that the existing building discharges surface water runoff to the Thames Water sewer in Hadlow Road to the west. The existing car park may have a surface water connection to the Thames Water sewer in St Johns Road to the east of the site.

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4 Potential Sources of Flooding

Fluvial

4.1 A copy of the Environment Agency's Flood Map is enclosed in **Appendix C**. The site is located in Flood Zone 1, at low risk of fluvial flooding. Land in Flood Zone 1 is defined as land having less than 1 in 1000 annual probability of river or sea flooding (<0.1%) in any year.

Surface Water

4.2 Surface water flooding refers to flooding caused when the intensity of rainfall, particularly in urban areas, can create runoff which temporarily overwhelms the capacity of the local drainage systems including sewers, rivers and watercourses or does not infiltrate into the ground. The water ponds on the ground and flows towards low-lying land. This source of flood risk is also known as 'pluvial'.

4.3 The surface water mapping on the gov.uk website (https://flood-warning-information.service.gov.uk/long-term-flood-risk/map) shows the entire site is in an area at very low risk flooding. This is defined as less than a 1 in 1000 probability of flooding each year. This mapping has been included in **Appendix F**.

4.4 Hadlow Road is shown to be at medium and low risk of surface water flooding, with depths below 300mm in the 'low risk' (or worst-case) scenario.

4.5 The surface water extent from the road does not however reach the site, so would not pose a significant risk to the dwellings or the car park.

Groundwater

4.6 The MAGIC Map website (https://magic.defra.gov.uk/MagicMap.aspx) shows the site to be located in an Outer Source Protection Zone II. The MAGIC Map shows the site is located above a Secondary A Aquifer based on bedrock.

4.7 The MAGIC Map identifies the groundwater vulnerability risk as 'high'. This means that any pollutant discharged at ground level could pose a moderate risk to groundwater, based on the hydrological, geological, hydrogeological and soil properties. Therefore, should infiltration SuDS methods be proposed for the new development, it is important to ensure the runoff is filtered prior to discharging to the ground.

4.8 The BGS website shows two historic boreholes from 1976 located within close proximity to the site (ID: TQ47SE146 and TQ47SE145). The borehole record indicates that groundwater was struck as shallow as 0.80m (35m from the site) and 3.00m below ground level (at the site).

4.9 The site is already developed and has hardstandings on the car park, so there would be little opportunity for groundwater to emerge. It is however recommended that further ground investigation is carried out to better confirm the groundwater level on the site, and that water resistant membranes are included on the ground floors and the ground floor apartments are raised 150mm above the external ground level to provide some protection to these apartments.

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4.10 Given the above, it is unlikely that groundwater would emerge on the site and pose a risk to the new development and the risk of flooding from groundwater is low.

Artificial

4.11 The EA Flood Map for Planning shows the site is not at risk of flooding from reservoirs, and there are no other artificial flood sources nearby. The risk from artificial sources is considered to be low.

Sewer Flooding

4.12 Sewer flooding generally results from localised short-term intense rainfall events overloading the capacity of the private and public drainage or due to failures within the public sewer.

4.13 Figure 16 of the SFRA show there are no recorded sewer flooding incidents within the vicinity of the site.

4.14 Sewer flooding is considered to be a residual risk, as it cannot be predicted or completely mitigated against. While this risk could occur, it is unlikely to pose a significant risk to the development, so is considered to be low. Should sewer flooding occur, flood waters are likely to remain within the highway, rather than flow towards the site, so no specific mitigation measures are considered necessary.

Mitigation Measures

4.15 A review of the flood sources indicated that the site is in a low-risk area, and a new sustainable drainage system will be included to manage surface water runoff from all impermeable areas. While a residual risk of sewer flooding and groundwater emergence remains, these are unlikely to pose a significant hazard to the site. It is recommended that further ground investigation is carried out to confirm the groundwater level beneath the site, and water resistant materials are used on the ground floors to provide some protection. Ground floor finished floor levels should be set 150mm above external ground levels to help protect the apartments against surface water and groundwater ingress. No other specific mitigation measures are considered to be necessary.

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5 Summary and Conclusion

5.1 This Flood Risk Assessment and SuDS Report has been prepared in support of an application for a proposed residential apartment providing 32 units at the former Sidcup Library, Hadlow road, Sidcup DA14 4AQ.

5.2 The proposed development comprises the demolition of an existing library building and the construction of a 32 unit apartment block with a car park, cycle storage and communal amenity area.

5.3 The site is located in Flood Zone 1, at low risk of fluvial flooding. All other flood sources were investigated and considered to be low risk, although there remains a residual risk of sewer flooding from a blocked or surcharging manhole nearby. High groundwater has historically been recorded nearby, therefore it is recommended that further ground investigation is carried out. It is recommended that the ground floor finished floor level is raised 150mm above external ground levels, and water resistant materials are used to help protect against surface and groundwater ingress.

5.4 The site is at low risk of flooding and the proposals do not increase flood risk onsite or elsewhere, therefore the proposed development is considered to be suitably located on this site.

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6 Appendices

Appendix: A – Location Plan
Appendix: B – Development Plans
Appendix: C – EA Flood Map for Planning
Appendix: D – Topographic Survey
Appendix: E – Thames Water Sewer Records
Appendix: F - Surface Water Mapping

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Appendix: A – Location Plan

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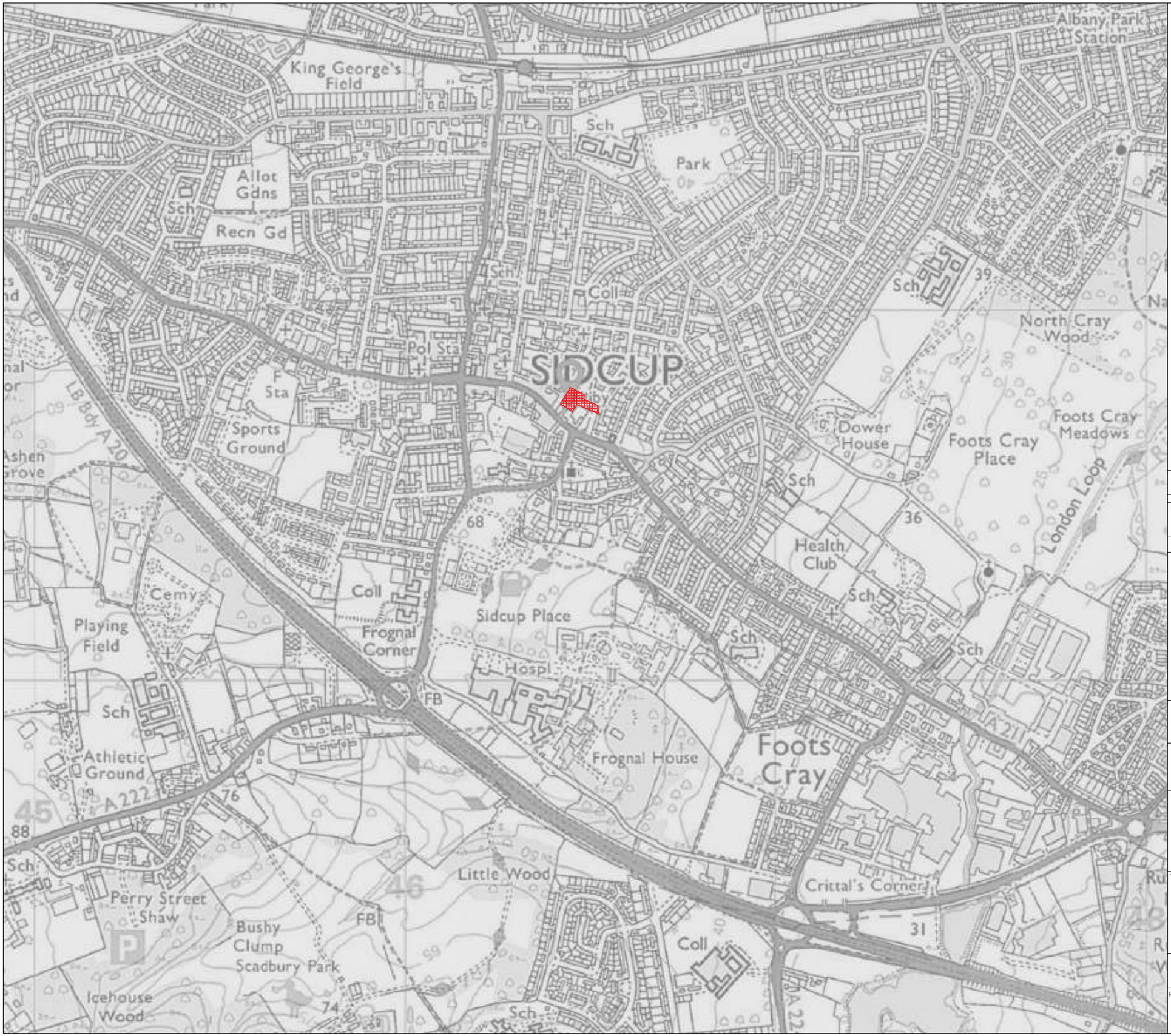

KEY:

SITE LOCATION

REV	DATE	BY	DESCRIPTION	CHK	APD

DRAWING STATUS:

EAS

Unit 23, The Maltings, Stanstead Abbotts, Hertfordshire, SG12 8HG
Tel: 01920 871777

www.eastp.co.uk

CLIENT:

ARCHITECT:

PROJECT:

SIDCUP LIBRARY,
HADLOW ROAD, SIDCUP

TITLE:

LOCATION PLAN

SCALE @ A3:	DESIGN–DRAWN:	DATE:
1:1000	BD	15/10/2021

PROJECT No:	DRAWING No:
3267	FIG01

Appendix: B – Development Plans

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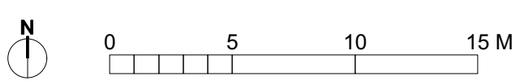

Do not scale from this drawing. This drawing is based on dimensional survey information provided by others. The architect cannot accept resposibility for the accuracy of this survey information. All dimensions are shown in metric.

DRAWING NOTES

ISSUE	REASON FOR ISSUE	DATE
A	Design updates following structural coordination	07/10/2021
B	Desgn update	13/10/2021

KEY PLAN

stitch
Architects & Urban Designers
Suite 6, Fusion House, 28 Rochester Place, London, NW1 9DF
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PROJECT
Sidcup Library

PROJECT CODE	CLIENT
20217	BexleyCo

DRAWING TITLE	STATUS
Ground floor plan	Draft

SCALE	SHEET	DATE OF FIRST ISSUE
1:250 @ A3	A3	17.09.21

DRAWING NUMBER	REVISION
20217-STCH-XX-00-0100	-

DRAWING NOTES

ISSUE	REASON FOR ISSUE	DATE
A	Design updates following structural coordination	07/10/2021
B	Desgn update	13/10/2021

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PROJECT
Sidcup Library

PROJECT CODE	CLIENT
20217	BexleyCo

DRAWING TITLE	STATUS
1st-2nd Floor Plan	Draft

SCALE	SHEET	DATE OF FIRST ISSUE
1:250 @ A3	A3	17.09.21

DRAWING NUMBER	REVISION
20217-STCH-XX-00-0101	-

DRAWING NOTES

ISSUE	REASON FOR ISSUE	DATE
A	Design updates following structural coordination	07/10/2021
B	Desgn update	13/10/2021

KEY PLAN

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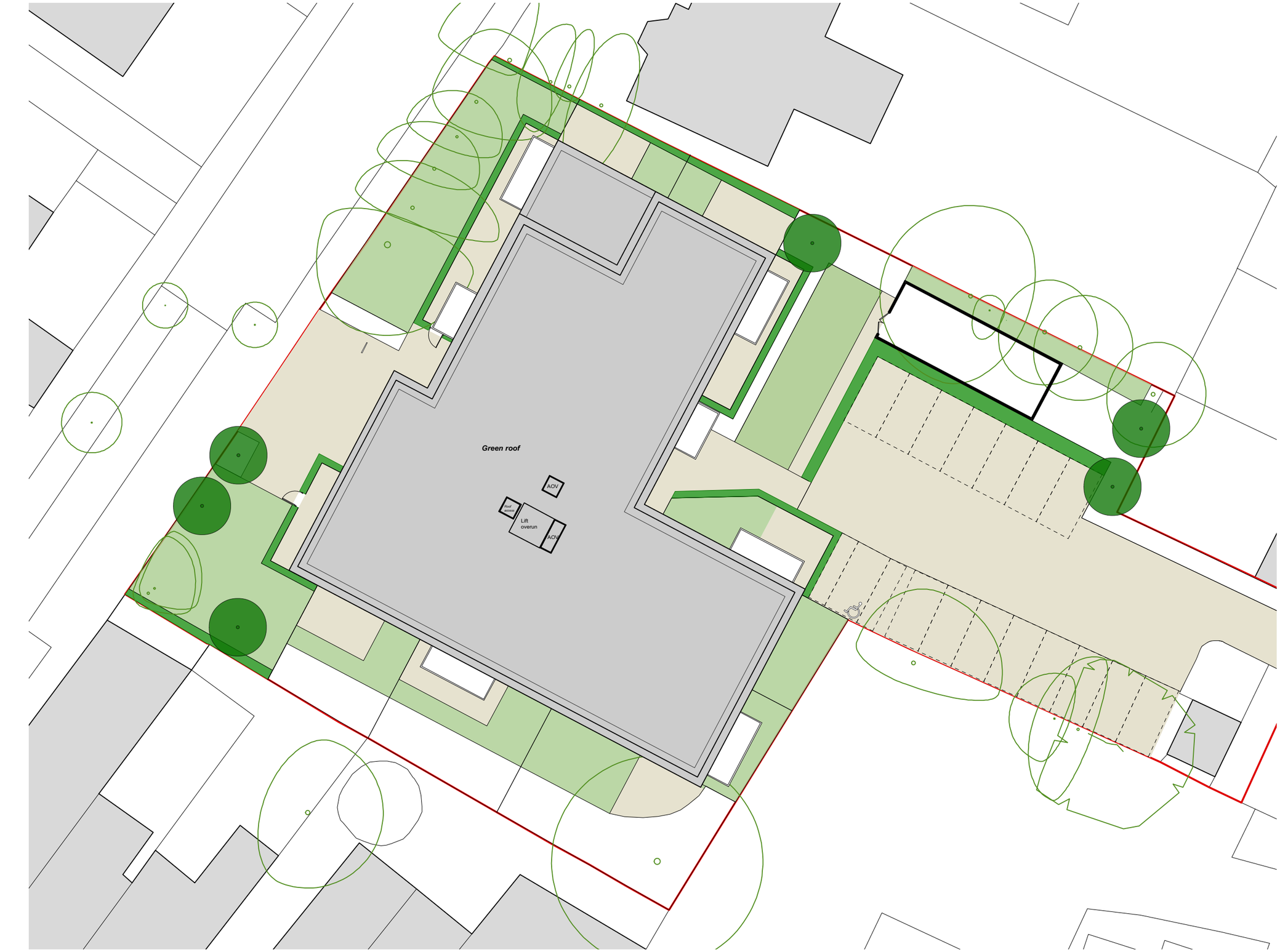
PROJECT
Sidcup Library

PROJECT CODE	CLIENT
20217	BexleyCo

DRAWING TITLE	STATUS
3rd floor plan	Draft

SCALE	SHEET	DATE OF FIRST ISSUE
1:250 @ A3	A3	17.09.21

DRAWING NUMBER	REVISION
20217-STCH-XX-00-0102	-



DRAWING NOTES

ISSUE	REASON FOR ISSUE	DATE
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B	Desgn update	13/10/2021

KEY PLAN

stitch
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PROJECT
Sidcup Library

PROJECT CODE	CLIENT
20217	BexleyCo

DRAWING TITLE	STATUS
Roof Plan	Draft

SCALE	SHEET	DATE OF FIRST ISSUE
1:250 @ A3	A3	17.09.21

DRAWING NUMBER	REVISION
20217-STCH-XX-00-0103	-

Appendix: C – EA Flood Map for Planning

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Flood map for planning

Your reference	Location (easting/northing)	Created
Sidcup	**546451/171755**	**11 Oct 2021 13:53**

Your selected location is in flood zone 1, an area with a low probability of flooding.

This means:

- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Environment Agency

Flood map for planning

Your reference
Sidcup

Location (easting/northing)
546451/171755

Scale
1:2500

Created
11 Oct 2021 13:53

- Selected area
- Flood zone 3
- Flood zone 3: areas benefitting from flood defences
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Flood storage area

0 20 40 60m

Appendix: D – Topographic Survey

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Tree Schedule

1	Locust	d=0.25	h=6
2	Sycamore	d=0.25	h=10
3	Sycamore	d=0.15	h=9
4	Sycamore	d=0.15	h=9
5	Sycamore	d=0.15	h=9
6	Sycamore	d=0.2	h=10
7	Sycamore	d=0.15	h=8
8	Ash	d=0.25	h=10
9	Sycamore	d=0.15	h=8
10	Lime	d=0.5	h=12
11	Lime	d=0.25	h=12
12	Lime	d=0.5	h=12
13	Sycamore	d=0.45	h=12
14	Sycamore	d=0.5	h=12
15	Fruit	d=0.25	h=5
16	Sycamore	d=0.6	h=12
17	Sycamore	d=0.5	h=12
18	Fruit	d=0.15	h=5
19	Lime	d=0.5	h=12
20	Lime	d=0.45	h=12
21	Lime	d=0.45	h=12
22	Lime	d=0.45	h=12
23	Lime	d=0.45	h=12
24	Cypress	d=0.45	h=12
25	Cypress	d=0.4	h=12
26	Cypress	d=0.4	h=12
27	Cypress	d=0.4	h=12

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H4	546497.478	171737.832	60.809
H5	546511.329	171726.234	61.202
H6	546488.137	171738.591	60.947
H6A	546492.274	171736.710	60.954
H7	546484.005	171752.332	60.720
H7A	546476.524	171758.267	60.778
H8	546469.309	171744.888	60.732
H9	546458.653	171726.192	61.560
H9A	546454.526	171731.462	60.944
H10	546433.119	171739.758	60.827
H11	546432.469	171758.204	60.482
H11A	546434.143	171743.613	60.887
H12	546448.865	171781.503	59.660
H13	546438.042	171765.775	60.241

Hook Survey Legend

Hedge
Undergrowth
Tree
Bush
Building
Glass Building
Open Building
Telephone line
Power line
Banking
Contour line — 64 —
Survey Station H5
Gate
Level .115.28
Ordnance Survey Benchmark OSBM
Foul Drainage 100mm FW MH CL 117.10 IL 116.75
Storm Drainage 100mm SW MH CL 117.10 IL 116.75

Abbreviations

Animal Sett	Sett
Air Valve	AV
Borehole	BH
Bus Stop	BS
Cover Level	CL
Earth Rod	ER
Electricity Pole	EP
Fire Hydrant	FH
Inspection Cover	IC
Invert Level	IL
Lamp Post	LP
Manhole	MH
Marker	MK
Name Plate	RNP
Power Pole	PP
Rain water Pipe	RWP
Road Sign	RS
Rodding Eye	RE
Reinforced Steel Joint	RSJ
Soil Vent Pipe	SVP
Stop Valve	SV
Survey Station	STN
Telegraph Pole	TP
Tree Stump	Stump
Trial Hole	TH
Unable To Lift	UTL
Vent Pipe	VP
Water Valve	WV

Metres
0 5 10
Scale

Notes

All trees are identified where possible. Species, spread, height and girth are indicative only.

Drainage has been surveyed where found, and traced where possible.

Eaves and ridge heights of surrounding buildings have been surveyed where possible.

HOOK SURVEY PARTNERSHIP
Land & Building Surveyors
www.hooksurvey.com

Project : Sidcup Library, Hadlow Road, Sidcup, Kent, DA14 4AQ

Client : Bexley Co Homes

Drawing title : Topographical Survey

Job No. :	Dwg No. :	Revision :
S21/8305	S21/8305/01	-
Scale : 1:200	Date : June 2021	Drawn by : D.S.

Grid & Levels related to :
Ordnance Survey (OSGB36) coordinate system and level data defined by Geoid model OSTN15, based around 2 survey stations H1 & H2 with a scale factor of 1.00000

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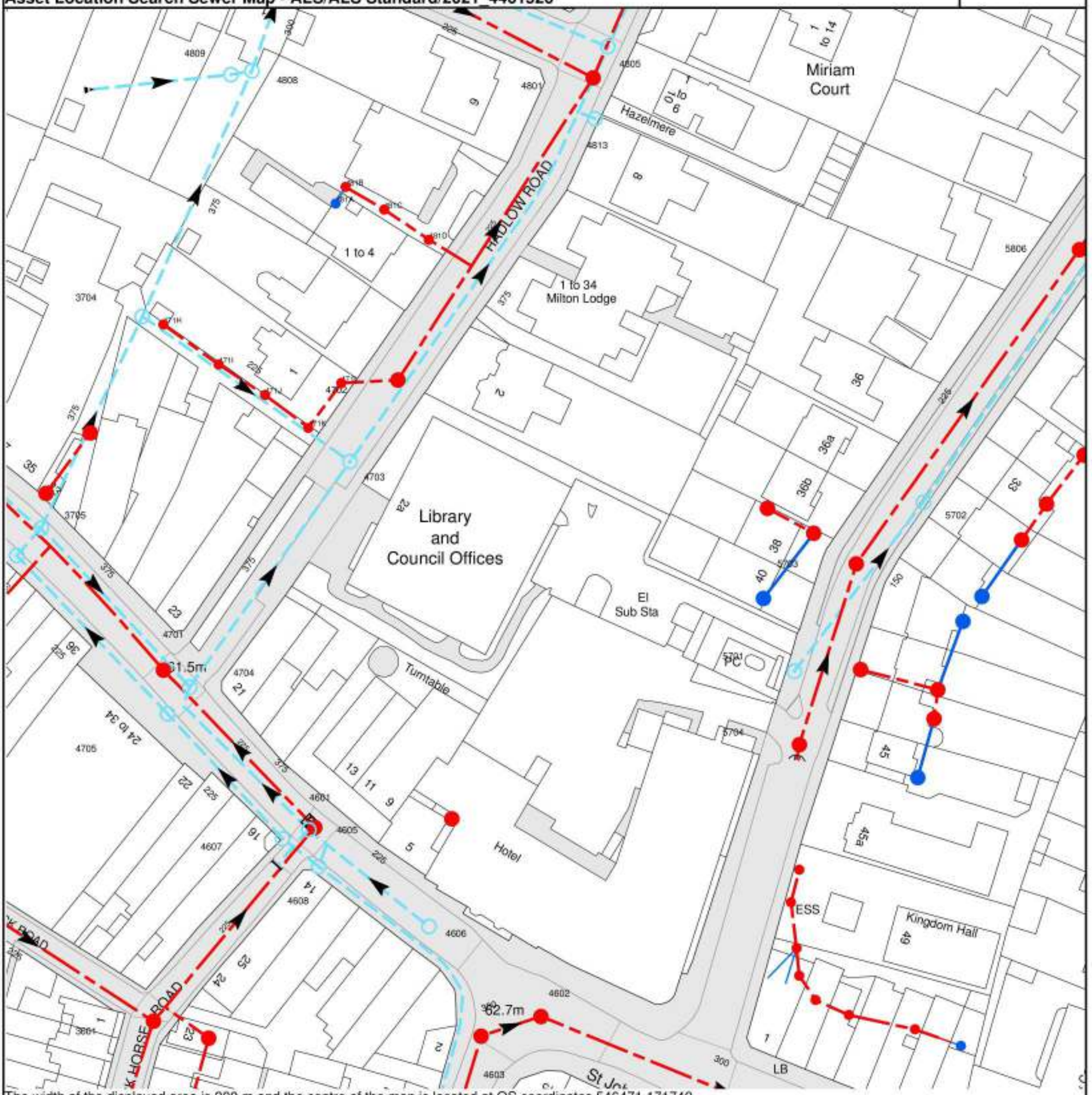
Appendix: E – Thames Water Sewer Records

TRANSPORT PLANNING ■ HIGHWAYS AND DRAINAGE ■ FLOOD RISK ■ TOPOGRAPHICAL SURVEYS
Unit 23 The Maltings Stanstead Abbotts Hertfordshire SG12 8HG Tel 01920 871 777 e: contact@eastp.co.uk www.eastp.co.uk

Asset Location Search Sewer Map - ALS/ALS Standard/2021_4461526



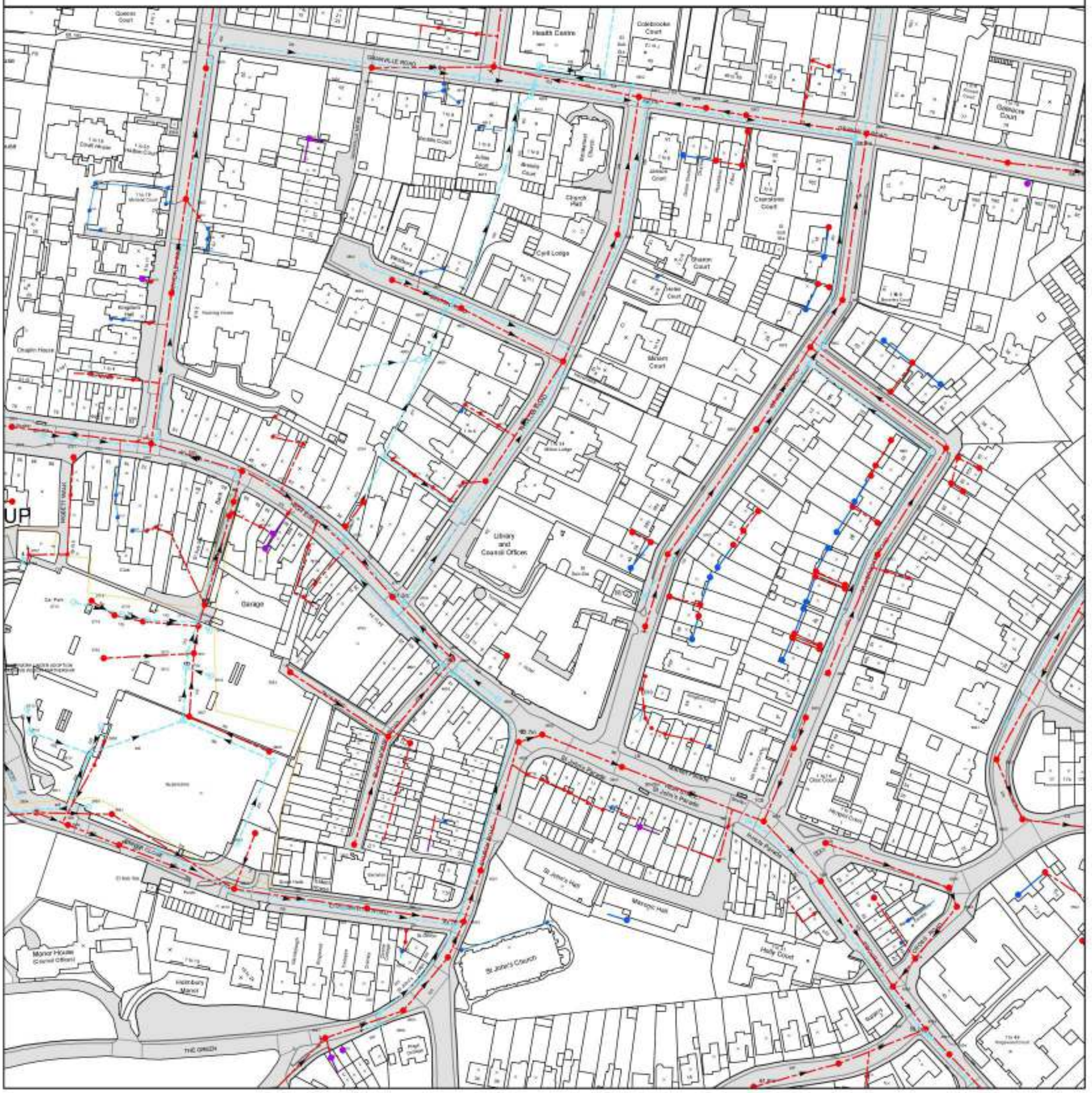
The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 546471,171749

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.

Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

Based on the Ordnance Survey Map with the sanction of the Controller of H.M Stationary Office License Number 10019345

ALS/ALS Standard/2021_4461526

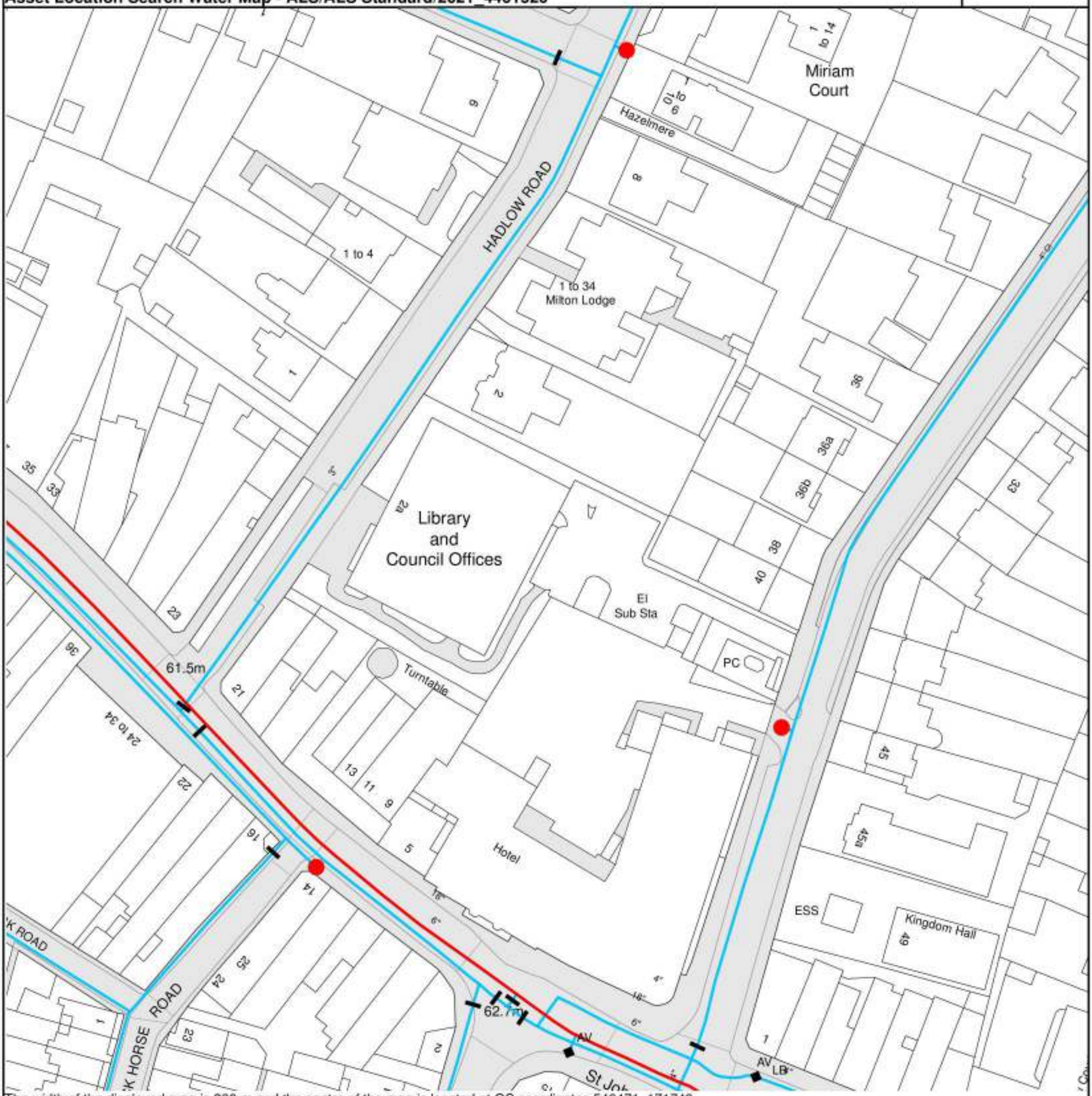


The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual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

Scale:	1:1790
Width:	500m
Printed By:	Rveldhur
Print Date:	06/07/2021
Map Centre:	546470,171749
Grid Reference:	TQ4671NW

Comments:

Asset Location Search Water Map - ALS/ALS Standard/2021_4461526



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 546471, 171749.

Appendix: F - Surface Water Mapping

TRANSPORT PLANNING ■ HIGHWAYS AND DRAINAGE ■ FLOOD RISK ■ TOPOGRAPHICAL SURVEYS
Unit 23 The Maltings Stanstead Abbotts Hertfordshire SG12 8HG Tel 01920 871 777 e: contact@eastp.co.uk www.eastp.co.uk

EA Risk of Surface Water Flooding

Flood risk

Extent of flooding

Location

DA14 4AQ

Site Location

Extent of flooding from surface water

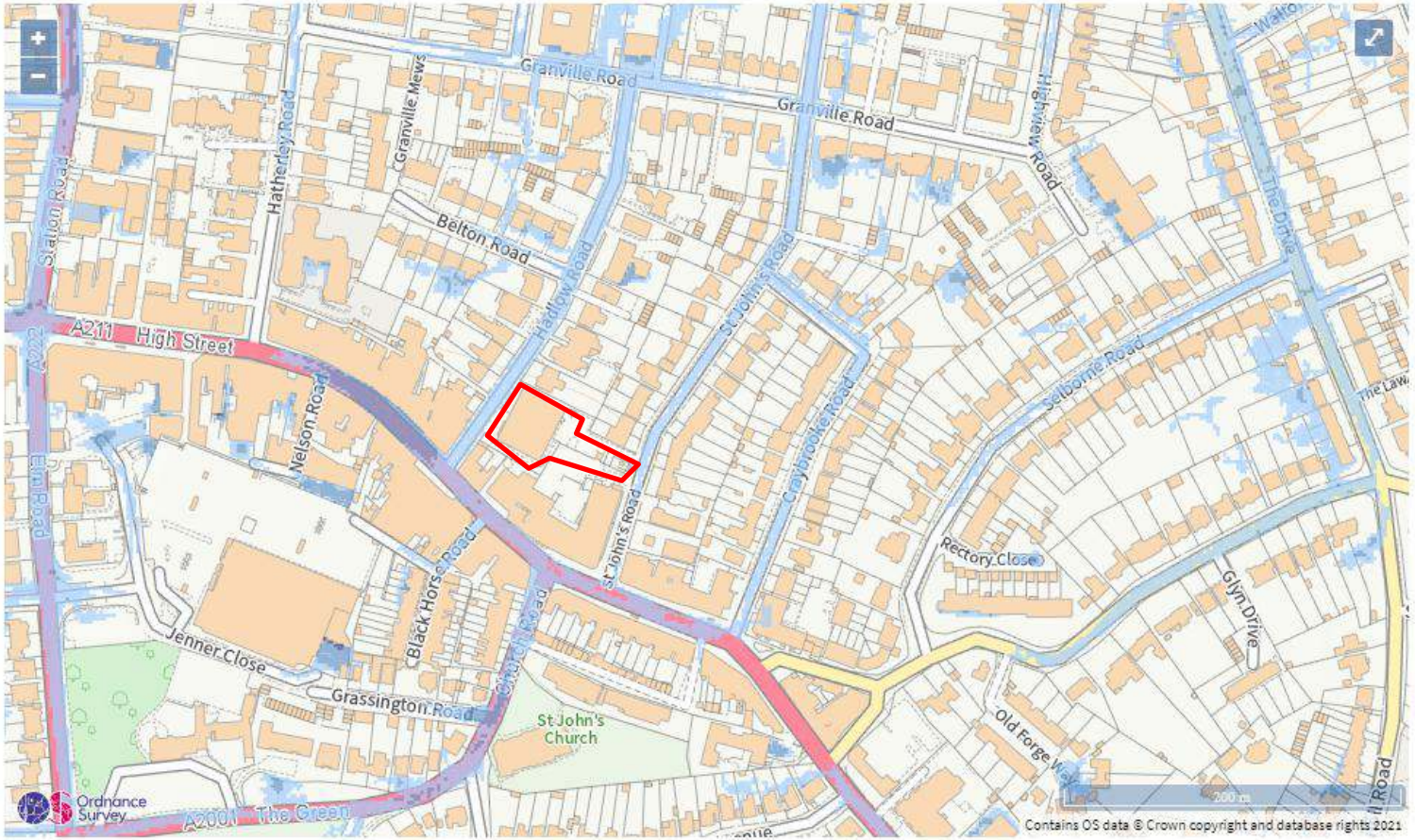
High Medium Low Very low Location you selected

Flood risk

Low risk: depth

Location

DA14 4AQ



Surface water flood risk: water depth in a low risk scenario

Flood depth (millimetres)

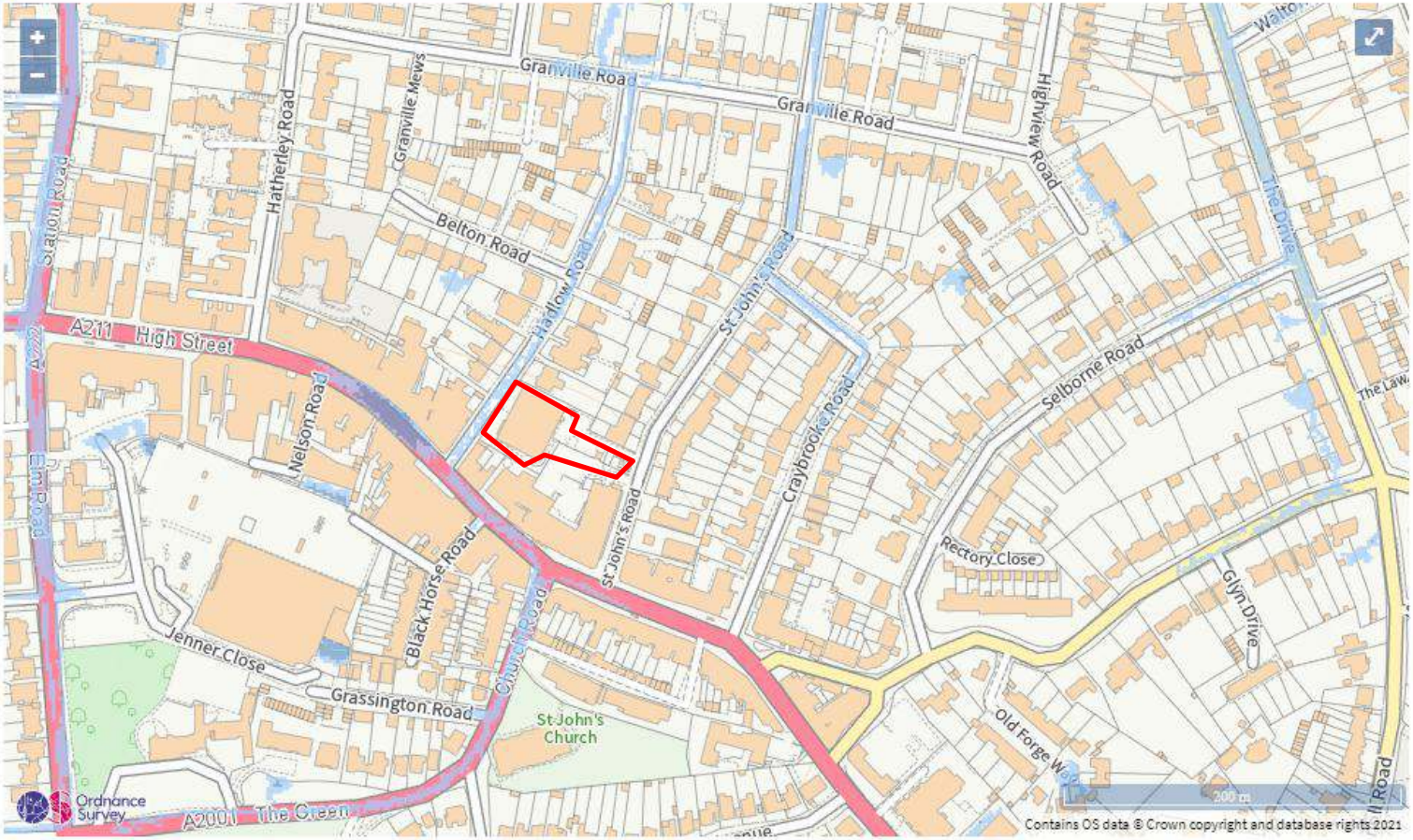
Over 900mm | 300 to 900mm | Below 300mm | Location you selected

Flood risk

Medium risk: depth

Location

DA14 4AQ



Surface water flood risk: water depth in a medium risk scenario

Flood depth (millimetres)

Over 900mm | 300 to 900mm | Below 300mm | Location you selected

Flood risk

High risk: depth

Location

DA14 4AQ

Surface water flood risk: water depth in a high risk scenario

Flood depth (millimetres)

Over 900mm | 300 to 900mm | Below 300mm | Location you selected