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**Alan Wood & Partners**

**FLOOD RISK ASSESSMENT FOR  
A PROPOSED DEVELOPMENT AT  
12A HIGH STREET, HAMPTON  
WICK, KINGSTON UPON THAMES**

**PROJECT NO. JAG/AD/JF/50748-  
Rp001**

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**FLOOD RISK ASSESSMENT FOR A PROPOSED DEVELOPMENT AT 12A  
HIGH STREET, HAMPTON WICK, KINGSTON UPON THAMES**

Prepared by: A Dunn



Signed: .....

Date: 26<sup>th</sup> June 2024

Approved by: J Gibson, MEng (Hons), CEng, CWEM MCIWEM  
Director



Signed: .....

Date: 26<sup>th</sup> June 2024

Issue	Revision	Revised by	Approved by	Revised Date

For the avoidance of doubt, the parties confirm that these conditions of engagement shall not and the parties do not intend that these conditions of engagement shall confer on any party any rights to enforce any term of this Agreement pursuant of the Contracts (Rights of third Parties) Act 1999.  
The Appointment of Alan Wood & Partners shall be governed by and construed in all respects in accordance with the laws of England & Wales and each party submits to the exclusive jurisdiction of the Courts of England & Wales.

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## 1.0 INTRODUCTION

### 1.1 **Background**

1.1.1 Alan Wood & Partners were commissioned by C80 Solutions Ltd on behalf of City Lofts London to prepare a Flood Risk Assessment for a proposed development at 12A High Street, Hampton Wick, Kingston upon Thames in support of an application for planning consent.

1.1.2 A Flood Risk Assessment (FRA) for the proposed development is required to assess the development's risk from flooding and to determine the drainage strategy for the development.

### 1.2 **Layout of Report**

1.2.1 Section 1 provides an introduction to the FRA, explains the layout of this FRA and provides an introduction to flood risk and the latest guidance on development and flood risk in England.

1.2.2 Section 2 provides an introduction to the site. The site description is based upon a desktop study and information provided by the developer. In order to obtain further information on flood risk, consultation was undertaken with the Environment Agency.

1.2.3 Section 3 of this report details the information gathered through the consultation.

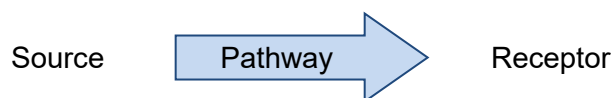
1.2.4 Section 4 of this report details the development proposals and considers the development proposals in relation to the current planning policy on development and flood risk in England (and what type of development is considered appropriate in different flood risk zones). National Planning Policy Framework (NPPF): and its associated Technical Guidance (Communities and Local Government, July 2021) is the current planning policy on flood risk in England, and an introduction to NPPF is provided below.

1.2.5 Section 5 considers the drainage arrangements for the proposed development.

- 1.2.6 Section 6 of this report considers the flood risk to site, and the potential for the development proposals to impact on flood risk. The assessment of flood risk is based on the latest planning policy and utilises all the information gathered in the preparation of the report.
- 1.2.7 Section 7 of this report provides details of any recommendations for further work to mitigate against possible flooding.
- 1.2.8 Section 8 of this report provides a summary of the report.

### 1.3 Flood Risk

- 1.3.1 Flood risk takes account of both the probability and the consequences of flooding.
- 1.3.2 Flood risk = probability of flooding x consequences of flooding
- 1.3.3 Probability is usually interpreted in terms of the return period, e.g. 1 in 100 and 1 in 200 year event, etc. In terms of probability, there is a 1 in 100 (1%) chance of one or more 1 in 100 year floods occurring in a given year. The consequence of flooding depends on how vulnerable a receptor is to flooding. The components of flood risk can be considered using a source-pathway-receptor model.



- 1.3.4 Sources constitute flood hazards, which are anything with the potential to cause harm through flooding (e.g. rainfall extreme sea levels, river flows and canals). Pathways represent the mechanism by which the flood hazard would cause harm to a receptor (e.g. overtopping and failure of embankments and flood defences, inadequate drainage and inundation of floodplains). Receptors comprise the people, property, infrastructure and ecosystems that could potentially be affected should a flood occur.

## 1.4 National Planning Policy Framework

### 1.4.1 General

1.4.1.1 NPPF and its associated Technical Guidance replaces Planning Policy Statement 25 and provides guidance on how to evaluate sites with respect to flood risk.

1.4.1.2 A summary of the requirements of the NPPF is provided below.

### 1.4.2 Sources of Flooding

1.4.2.1 The NPPF requires an assessment to flood risk to consider all forms of flooding and lists six forms of flooding that should be considered as part of a flood risk assessment. These forms of flooding are listed in Table 1, along with an explanation of each form of flooding.

**Table 1: Forms of flooding**

<b>Flooding from Rivers (Fluvial Flooding)</b>
Watercourses flood when the amount of water in them exceeds the flow capacity of the river channel. Flooding can either develop gradually or rapidly, depending on the characteristics of the catchment. Land use, topography and the development can have a strong influence on flooding from rivers.
<b>Flooding from the Sea (Tidal Flooding)</b>
Flooding to low-lying land from the sea and tidal estuaries is caused by storm surges and high tides. Where tidal defences exist, they can be overtopped or breached during a severe storm, which may be more likely with climate change.
<b>Flooding from Land (Pluvial Flooding)</b>
Intense rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems can run quickly off land and result in local flooding. In developed areas this flood water can be polluted with domestic sewage where foul sewers surcharge and overflow. Local topography and built form can have a strong influence on the direction and depth of flow. The design of development down to a micro-level can influence or exacerbate this. Overland flow paths should be taken into account in spatial planning for urban developments. Flooding can be exacerbated if development increases the percentage of impervious area.

<b>Flooding from Groundwater</b>
Groundwater flooding occurs when groundwater levels rise above ground levels (i.e. groundwater issues). Groundwater flooding is most likely to occur in low-lying areas underlain by permeable rocks (aquifers). Chalk is the most extensive source of groundwater flooding.
<b>Flooding from Sewers</b>
In urban areas, rainwater is frequently drained into sewers. Flooding can occur when sewers are overwhelmed by heavy rainfall and become blocked. Sewer flooding continues until the water drains away.
<b>Flooding from Other Artificial Sources (i.e. reservoirs, canals, lakes and ponds)</b>
Non-natural or artificial sources of flooding can include reservoirs, canals and lakes. Reservoir or canal flooding may occur as a result of the facility being overwhelmed and /or as a result of dam or bank failure.

### 1.4.3 Flood Zones

- 1.4.3.1 For river and sea flooding, the NPPF uses four Flood Zones to characterise flood risk. These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences, and are detailed in Table 2.

**Table 2: Flood zones**

Flood Zone	Definition
1	Low probability (less than 1 in 1,000 annual probability of river or sea flooding in any year (<0.1%).
2	Medium probability (between 1 in 100 and 1 in 1,000 annual probability of river flooding (1%-0.1%) or between 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5%-0.1%) in any year).
3a	High probability (1 in 100 or greater annual probability of river flooding (>1%) in any year or 1 in 200 or greater annual probability of sea flooding (>0.5%) in any given year).
3b	This zone comprises land where water has to flow or be stored in times flood. Land which would flood with an annual probability of 1 in 20 (5%) or is designed to flood in an extreme flood (0.1%) should provide a starting point for discussions to identify functional floodplain.

## 1.4.4 Vulnerability

1.4.4.1 NPPF classifies the vulnerability of developments to flooding into five categories. These categories are detailed in Table 3.

**Table 3: Flood risk vulnerability classification**

Flood Risk Vulnerability Classification	Examples of Development Types
<b>Essential Infrastructure</b>	<ul style="list-style-type: none"> <li>- Essential utility infrastructure including electricity generating power stations and grid and primary substations</li> <li>- Wind turbines</li> </ul>
<b>Highly Vulnerable</b>	<ul style="list-style-type: none"> <li>- Police stations, ambulance stations, fire stations, command centres and telecommunications installations required to be operational during flooding.</li> <li>- Emergency dispersal points.</li> <li>- Basement dwellings.</li> <li>- Caravans, mobile homes and park homes intended for permanent residential use.</li> </ul>
<b>More Vulnerable</b>	<ul style="list-style-type: none"> <li>- Hospitals.</li> <li>- Residential institutions such as residential care homes, children’s homes, social services homes, prisons and hostels.</li> <li>- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.</li> <li>- Non-residential uses for health services, nurseries and educational establishments.</li> <li>- Sites used for holiday or short-let caravans and camping.</li> </ul>
<b>Less Vulnerable</b>	<ul style="list-style-type: none"> <li>- Building used for shops, financial, professional and other services, restaurants and cafes, hot foot takeaways, offices, general industry, storage and distribution, non-residential institutions not included in “more vulnerable” and assembly and leisure.</li> <li>- Land and buildings used for agriculture and forestry.</li> </ul>
<b>Water Compatible</b>	<ul style="list-style-type: none"> <li>- Docks, marinas and wharves.</li> <li>- Water based recreation (excluding sleeping accommodation).</li> <li>- Lifeguard and coastguard stations.</li> <li>- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.</li> </ul>



1.4.4.2 Based on the vulnerability of a development, NPPF states within what Flood Zones(s) the development is appropriate. The flood risk vulnerability and Flood Zone ‘compatibility’ of developments is summarised in Table 4.

**Table 4: Flood risk vulnerability and flood zone compatibility**

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	1	✓	✓	✓	✓	✓
	2	✓	✓	Exception Test	✓	✓
	3a	Exception Test	✓	x	Exception Test	✓
	3b	Exception Test	✓	x	x	x

#### 1.4.5 The Sequential Test, Exception Test and Sequential Approach

1.4.5.1 The Sequential Test is a risk-based test that should be applied at all stages of development and aims to steer new development to areas with the lowest probability of flooding (Zone 1). This is applied by the Local Planning Authority by means of a Strategic Flood Assessment (SFRA).

1.4.5.2 The SFRA and NPPF may require the Exception Test to be applied to certain forms of new development. The test considers the vulnerability of the new development to flood risk and, to be passed, must demonstrate that:

- There are sustainability benefits that outweigh the flood risk and;
- The new development is safe and does not increase flood risk elsewhere.

1.4.5.3 The Sequential Approach is also a risk-based approach to development. In a development site located in several Flood Zones or with other flood risk, the sequential approach directs the most vulnerable types of development towards areas of least risk within the site.

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## 1.4.6 Climate Change

- 1.4.6.1 There is a planning requirement to account for climate change in the proposed design. The recommended allowances should be based on the most relevant guidance from the Environment Agency and the Lead Local Flood Authority.

## 2.0 EXISTING SITE DESCRIPTION

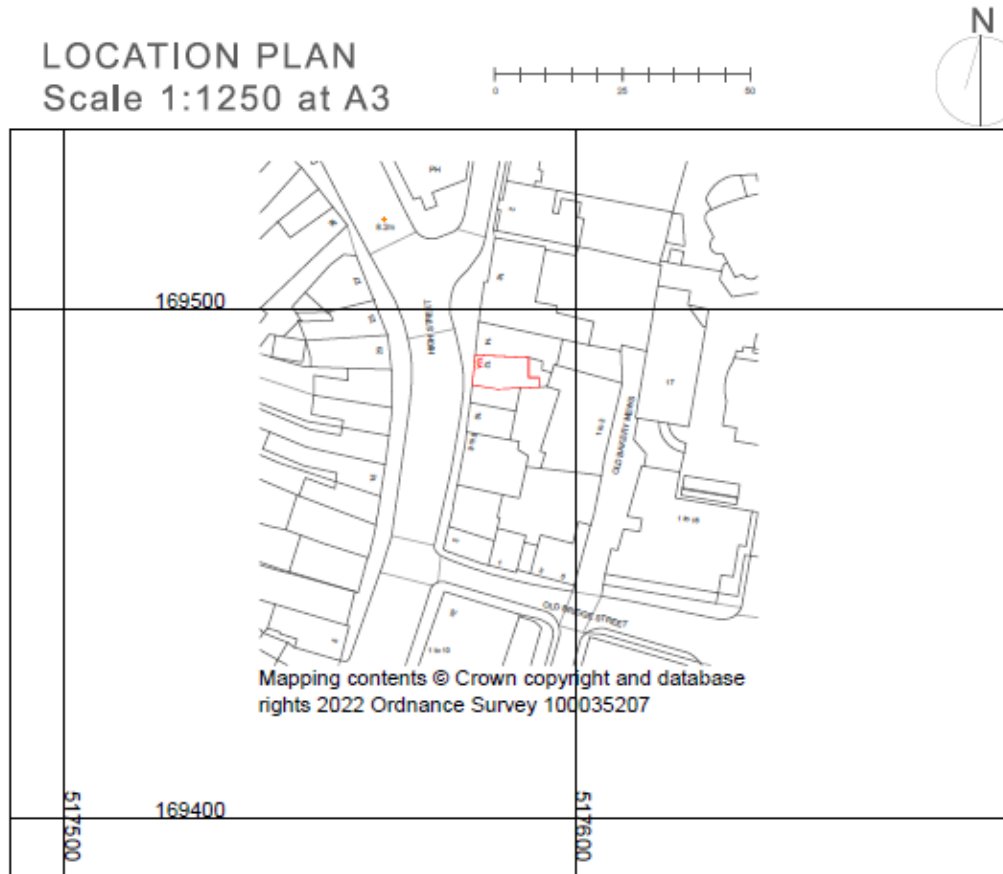
### 2.1 Location

- 2.1.1 The proposed development site is located at 12A High Street, Hampton Wick, Kingston Upon Thames.
- 2.1.2 The application site lies on the eastern side of High Street, to the south of the junction with Lower Teddington Road.
- 2.1.3 An aerial photograph and location plan are included in Figures 1 and 2 below, which identify the location of the site.

Figure 1: Aerial Photograph



Figure 2: Site Location Plan



2.1.4 The Ordnance Survey grid reference for the centre of the site development is approximately 517580, 169490.

## 2.2 Site Description

2.2.1 The application site comprises a two-storey residential apartment at first and second floor level. Access to the property is gained via an entrance door and hallway at the lower ground level. All living accommodation is consequently on the upper floor levels.

## 2.3 Surrounding Features

2.3.1 The property fronts onto High Street, with a residential area beyond. There are adjacent commercial/residential properties immediately to the north and to the south.

2.3.2 There is a small marina situated to the east of the site.

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2.3.3 The River Thames is situated approximately 100m to the east of the application site.

## **2.4 Topography**

2.4.1 A topographic survey of the road and footpath fronting the property has been undertaken.

2.4.2 The survey shows that the existing road level fronting the property is at approximately 7.87m OD(N), whilst the back of the footpath adjacent to the entrance to the property is shown to be at a level of 8.10m OD(N)

2.4.3 A copy of the topographic survey drawing is included in Appendix A.

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### 3.0 CONSULTATION

- 3.1 Consultation has taken place with the Architect in order to obtain relevant information pertaining to the proposed development.
- 3.2 Consultation has taken place with the Environment Agency in order to obtain relevant information in respect of flood mapping and flood risk data, details of which are incorporated within this report.
- 3.3 Consultation has taken place with London Borough of Richmond Upon Thames in respect of surface water drainage in their role as Lead Local Flood Authority in the region and in respect of flood mapping from the Strategic Flood Risk Assessment (SFRA).

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## **4.0**     **PROPOSED DEVELOPMENT**

### **4.1**     **Development Proposals**

- 4.1.1     The project involves alterations and refurbishment works to the existing apartment.
- 4.1.2     Copies of the drawings showing details of the existing and proposed layout of the development are included in Appendix B.

### **4.2**     **Flood Risk**

- 4.2.1     In terms of flood risk vulnerability, the construction of buildings for residential use is classed as 'More Vulnerable' development (Table 3).
- 4.2.2     As the proposed development involves alterations and refurbishment works to an existing residential property, it is considered that the project is classed as 'Minor Development' in terms of flood risk vulnerability and is therefore considered to be appropriate in this location.

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## **5.0** **DRAINAGE ASSESSMENT**

- 5.1 The project includes the provision of additional sanitary ware on the upper floor levels, which will connect into the existing waste arrangement.
- 5.2 However, the project does not include any new below-ground drainage services.
- 5.3 The project will therefore not create any risk of flooding to the application site or to other parties beyond the site boundary resulting from drainage works.

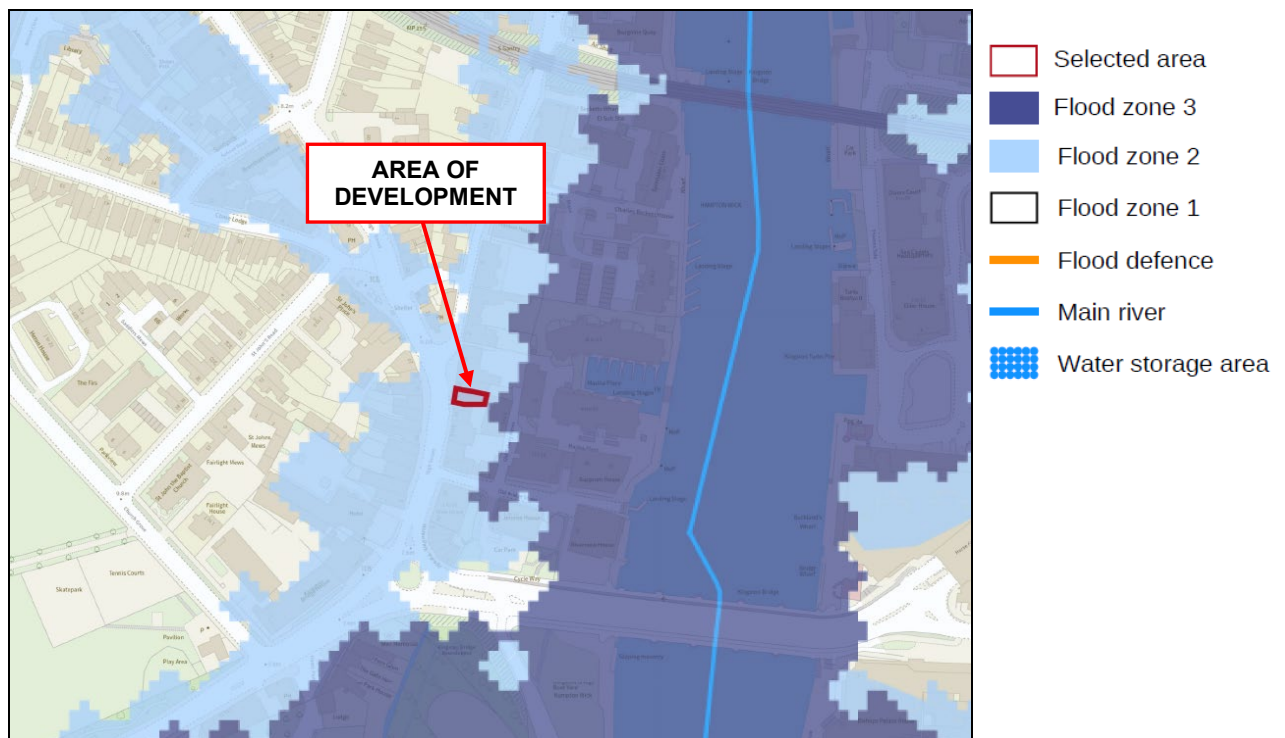


## 6.0 FLOOD RISK ASSESSMENT

### 6.1 Flood Zone

6.1.1 A copy of the Environment Agency Flood Map for Planning is included in Figure 3 below which identifies the development site to be located within an area designated as Flood Zone 2, (medium probability of flooding), comprising land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding or between a 1 in 200 and 1 in 1000 annual probability of sea flooding in any year.

Figure 3: Environment Agency Flood Map for Planning dated June 2024

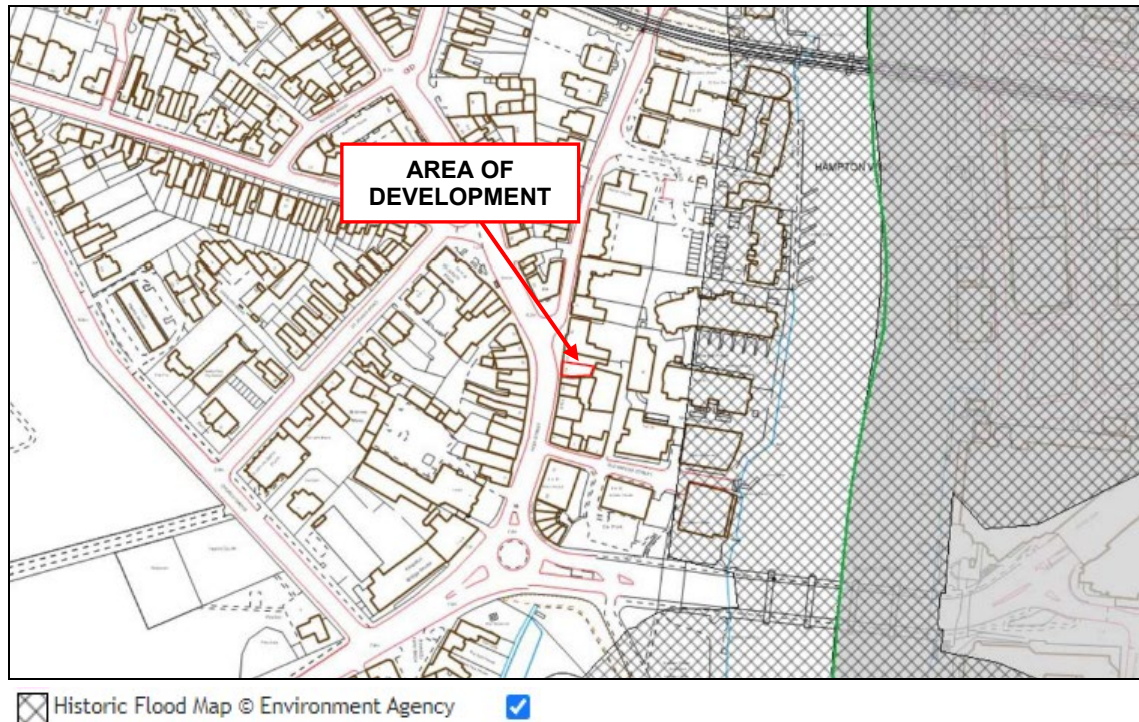


### 6.2 Historic Flooding

6.2.1 The data received from The Environment Agency shows that there is no record of historic flooding in the area of the development.

6.2.2 An abstract from the historic flood extent map incorporated in the London Borough of Richmond Upon Thames Strategic Flood Risk Assessment is included in Figure 4 below.

Figure 4: London Borough of Richmond Upon Thames SFRA map showing the Extent of Historic Flooding



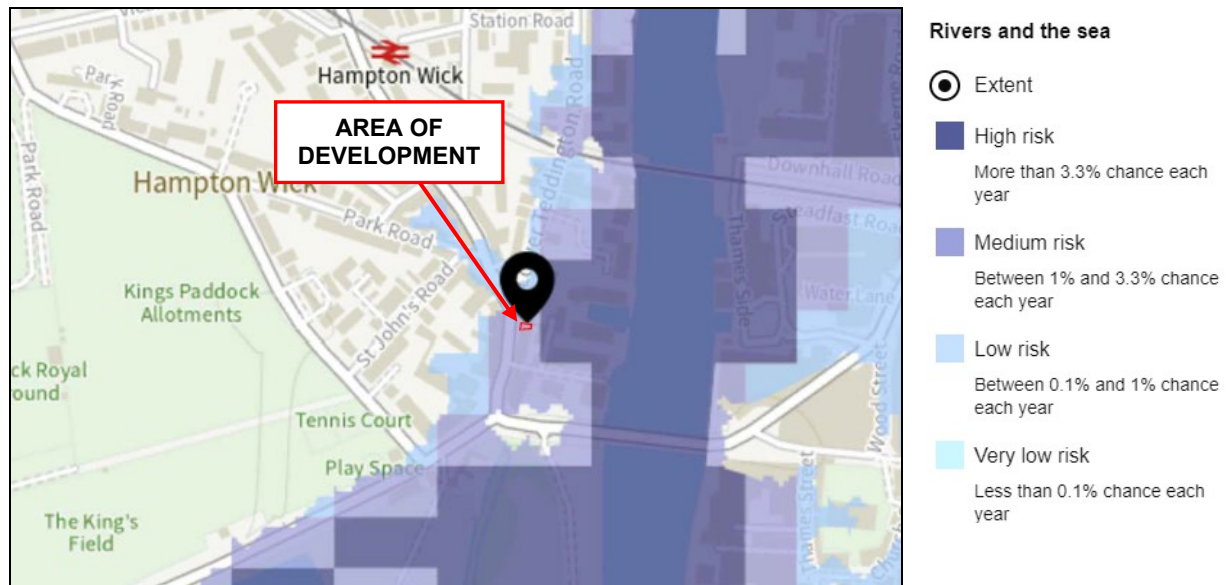
6.2.3 The historic flooding map from the Richmond upon Thames Strategic Flood Risk Assessment shows that there are no records of historical flooding to the property.

### 6.3 Fluvial/Tidal Flooding

6.3.1 The River Thames is situated approximately 100m to the east of the development and is the major source of potential flooding in the area of the application site.

6.3.2 A copy of the map produced by the Environment Agency showing the likely extent of flooding from Rivers or the Sea is included in Figure 5 below. The map shows that the application site lies in an area which is considered to be at 'medium risk' of flooding.

Figure 5: Environment Agency map dated June 2024 showing the extent of flooding from rivers or the sea



- 6.3.3 Product 4 flood risk data has been obtained from the Environment Agency in respect of the application site.
- 6.3.4 The data shows that the site lies in an area which is prone to flooding during a future 1 in 100 probability flood event.
- 6.3.5 The data shows that for the 1 in 100 probability of flooding, including 35% climate change, the predicted flood modelling level for the River Thames in proximity to the application site is 8.11m OD(N), whilst the modelled flood plain level is shown to be 8.19m OD(N).
- 6.3.6 A study of the guidance on future climate change published by the UK Government states that for 'More Vulnerable' development the Central Allowance for climate change should be used. A study of the peak river flows mapping shows that the predicted increase in river flows for the River Thames for the 2080's Central Level is currently stated at 17%, whilst the Higher Level is currently stated at 27%. We therefore consider that the 35% allowance in the flood modelling data should be more than sufficient.
- 6.3.7 The data received shows that the flood hazard rating at the location of the application site is 'Hazard to Most'.

- 6.3.8 The Environment Agency have also advised that a new River Thames defence scheme is currently being undertaken which will reduce the flood risk in the region once the works have been completed.
- 6.3.9 A copy of the flood data received from the Environment Agency is included in Appendix C.
- 6.3.10 As the application site is shown to lie in Flood Zone 2, flood mitigation measures will need to be considered in respect of the current application.
- 6.3.11 Details of any such measures are set out in Section 7 of this report.

## 6.4 Surface Water Flooding

- 6.4.1 A copy of the Environment Agency map showing the extent of flooding from surface water is included in Figure 6 below.

Figure 6: Environment Agency map dated June 2024 showing the extent of flooding from surface water



- 6.4.2 The map shows that the site lies in an area which is not considered to be at risk from surface water flooding.
- 6.4.3 The risk to the development from this potential flood source is considered to be low and acceptable.

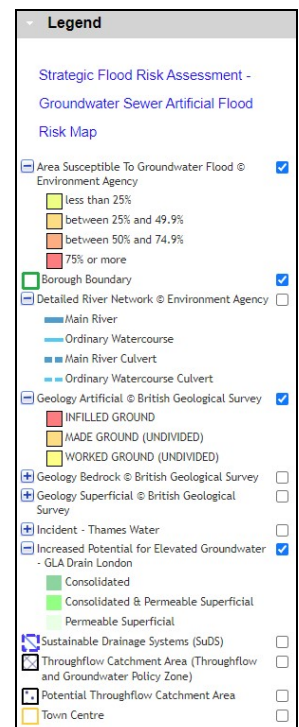
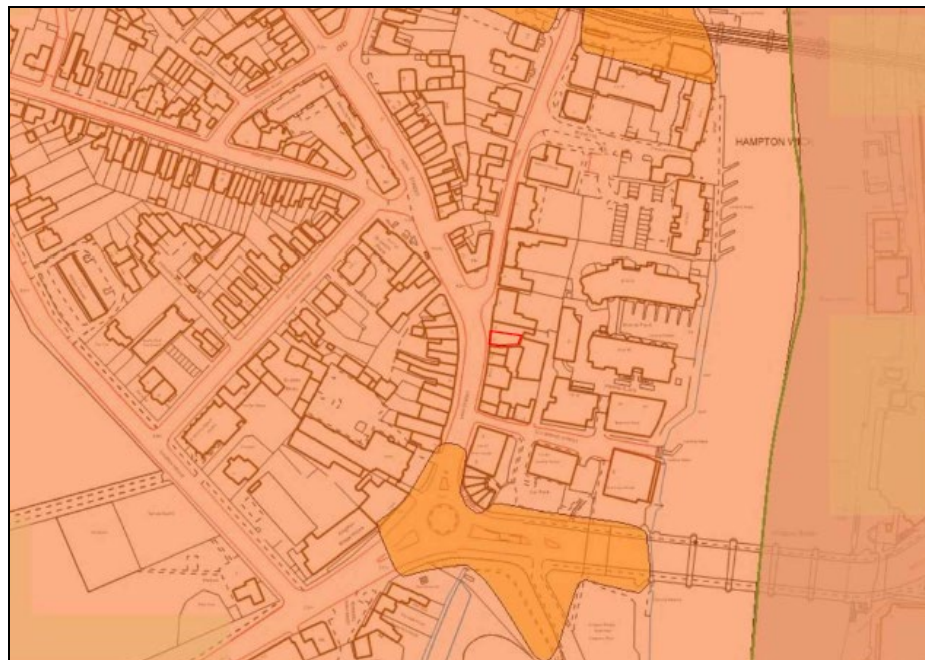
## 6.5 Flooding from Open Drainage Ditches

- 6.5.1 There are no open drainage ditches in the local area which could pose any risk of flooding to the application site
- 6.5.2 The risk to the development from this potential flood source is considered to be low and acceptable.

## 6.6 Groundwater Flooding

- 6.6.1 Groundwater flooding can occur when the sub-surface water levels are high and emerges above ground level.
- 6.6.2 The map produced with the Richmond Upon Thames RUT SFRA showing areas susceptible to groundwater flooding is included in Figure 7 below.

Figure 7: Richmond Upon Thames RUT SFRA Groundwater Map



- 6.6.3 The map shows that the risk from groundwater flooding in the locality of the application site is 25% to 49.5%.
- 6.6.4 However, the proposed development does not include any excavation works and consequently the risk to the development from this potential flood source is considered to be low and acceptable.

6.6.5 The risk of flooding from this potential flood source is therefore considered to be low and acceptable.

## **6.7 Flood Risk from Existing Water Mains**

6.7.1 There are existing water mains serving the application site and adjacent properties.

6.7.3 As the proposed development works are at the upper floor levels of the property, the risk from this potential flood source is low and acceptable.

## **6.8 Flooding from Existing Drainage Services**

6.8.1 There are existing drainage services present serving the application site and adjacent properties.

6.8.2 As the proposed development works are at the upper floor levels of the property, the risk from this potential flood source is low and acceptable.

## **6.9 Flooding from New Drainage**

6.9.1 The project does not include any below-ground drainage works.

6.9.2 The risk to the development from this potential source is therefore considered to be low and acceptable.

## **6.10 Flooding from Reservoirs, Canals and Other Artificial Sources**

6.10.1 There is a small marina situated approximately 50m to the east of the site. This lies directly off the River Thames and consequently will not create any additional risk of flooding.

6.10.2 A copy of the map produced by the Environment Agency showing the extent of flooding from reservoirs is included in Figure 8 below.

Figure 8: Environment Agency map dated June 2024 showing the Extent of Flooding from Reservoirs



- 6.10.3 The map shows that areas of the site are shown to be at risk from reservoir flooding, should there be a failure of the defences to a local reservoir. However, such an occurrence is extremely remote as reservoir defences are inspected and maintained on a regular basis by the Environment Agency. Consequently, the risk to the development from reservoir flooding is considered to be low and acceptable.
- 6.10.4 As the development proposals involve work on the upper floor levels of the building, the risk of flooding from this potential flood source is low and acceptable.
- 6.10.5 The risk to the development from any such potential flood source is therefore considered to be low and acceptable.

## 7.0 FLOOD MITIGATION MEASURES

### 7.1 **Passive Flood Protection**

7.1.1 The predicted modelled flood water level at the location of the site is 8.19m OD(N), whilst the existing pavement level is at 8.10m OD(N). The likely depth of flood water affecting the lower floor level for the 1 in 100 probability flood event including climate change is therefore 90mm.

7.1.2 As access to the property is gained directly from the adjacent public footpath, there is no opportunity to provide a flood defence around the building entrance which could prevent flood waters entering the lower stairway (see Figure 9 below).

*Figure 9: Streetview*



7.1.3 However, as the proposed development involves work to the residential accommodation at first and second floor levels the development is therefore sufficiently elevated above any likely flood level.

7.1.4 There should be minimal flood damage to the lower stairway should this be affected by flood waters during a future flood event.



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## **7.2 Flood Resilience**

7.2.1 As the project involves work at first and second floor levels, there is no requirement for any flood resilient construction methods to be adopted in the project works.

## **7.3 Access/Egress**

7.3.1 The adjacent public road network is shown to lie in Flood Zone 2 (medium probability of flooding) and consequently access to/egress from the development could be affected during a flood situation.

7.3.2 However, this situation already exists in respect of the existing development and therefore the new building works will not create any additional access issues.

## **7.4 Management**

7.4.1 The application site is shown to lie in an area where flood warnings and flood alerts are available.

7.4.2 If not already registered, the development should subscribe to the Environment Agency's early 'Flood Direct' warning service which will alert the developer of any likely flood situations. This will then enable travel arrangements to be programmed accordingly.

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## 8.0 SUMMARY

- 8.1 This report has been prepared to assess the flood risk implications for proposed alterations and refurbishment works at 12A High Street, Hampton Wick, Kingston upon Thames.
- 8.2 The site is shown to lie in Flood Zone 2 (medium probability of flooding) on the Environment Agency Flood Map for Planning. The proposed development is considered to be 'Minor Development' in terms of flood risk vulnerability, which is appropriate in this location.
- 8.3 No potential sources of flooding have been identified in the preparation of this report.
- 8.4 As the development lies at first and second floor level, there is no requirement for any flood protection work or flood resilient construction methods to be adopted in the project works.
- 8.5 Overall, this report demonstrates that the flood risk to the site is reasonable and acceptable and also demonstrates that the development will not increase the risk of flooding to other parties.
- 8.6 Based on the findings of this report, it is considered that planning consent for the development can be granted in terms of the flood risk implications of this application.

## APPENDIX A

### Topographic Survey Drawing



8.2m

PH



Topographical Survey Abbreviations

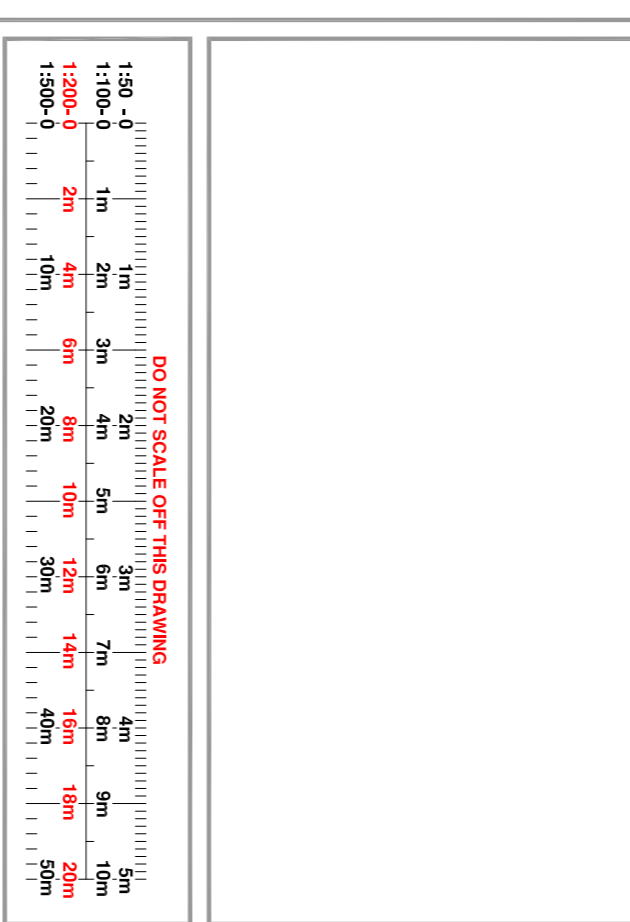
AC	AIR CONDITIONING UNIT	LP	LAMP POST
AD	ADDITIONAL	MR	MARKER POST
BE	BED LEVEL	MR	MANHOLE
BED	BED LEVEL	OHC	OVERHEAD CABLE
BH	BORERHOLE (WITH NO.)	PM	PARKING METER
B5	BRUSH STOP	P	POST
BT	BRITISH TELECOM COVER	RE	ROOFING EYE
BT	CABLE TELEVISION COVER	RS	REPAIRING WALL
CAV	CABLE TELEVISION COVER	RL	REINFORCING WALL
CC	CONTROL CABINET	SA	SECURITY CAMERA
CC	CONTROL CABINET (MANHOLE)	SCAM	SECURITY CAMERA
COL	COLUMN	SG	STOP GULLY
CP	RAIN WATER DOWN PIPE	SP	STOP VALVE
EC	ELECTRIC COVER	SV	STOP VALVE
EL	ELECTRIC COVER	TAP	WATER TAP
EL	ELECTRIC COVER	TAP	WATER TAP
ER	ELECTRIC POLE	TR	TRAFIC LIGHT
ER	ELECTRIC POLE	TR	TRAFIC LIGHT
FL	FIRE HYDRANT	TL	TOP OF FENCE LEVEL
FL	FIRE HYDRANT	TL	TOP OF FENCE LEVEL
FLT	FLOODLIGHT	TOW	TOP OF WALL LEVEL
G	GULLY	TP	TELEGRAPH POLE
GP	GATE POST	TR	TRAFIC LIGHT
GP	GATE POST	TR	TRAFIC LIGHT
IC	INSPECTION CHAMBER	TR	TRAFIC LIGHT
IC	INSPECTION CHAMBER	TR	TRAFIC LIGHT
IL	INVERT LEVEL	WLV	WATER LEVEL
IL	INVERT LEVEL	WM	WATER METER
KB	KERN OUTLET	WO	WASH OUT
LB	LITTER BIN		



Technical Notes:

- All survey levels and coordinates are related to OS Datum using the OS Active Network. The Grid is orientated to Grid North with a Scale Factor of 1.00.
- All boundaries surveyed are physical features. Please bear in mind that these may not represent the legal survey boundaries.
- Trees are drawn to scale showing the average canopy spread and are approximate estimates only. High points are shown they have been taken from ground level and are an estimate only.
- All underground features have been measured from the surface. Therefore pipe sizes, depths and only the position of the service are shown as a general indication. These must be checked and verified prior to work commencing.
- Whilst every effort has been made to locate all physical features during the survey, no responsibility can be taken where features are obscured or hidden at the time of survey. This is especially important where high volumes of plant or vehicles are present on site.
- Off site features may have been measured remotely and as such may not show the full detail of the features due to limited access or obstructions with the line of sight.
- All critical dimensions including levels should be checked prior to construction. Any errors or discrepancies should be reported immediately.
- All measurements have been taken from ground level only.
- Do not scale from this drawing.

- Tree Information
- 1. Trunk Diameters are measured where possible at approximately 1.5m above ground.
- 2. Tree Symbols are indicative only and are representative of the general canopy size, and therefore may not represent the true canopy position as outlined on site. Tree bolts may also not sit centrally to the canopy.
- 3. Where tree heights are shown they are an approximate height to the top of the canopy and are an estimation from ground level.
- 4. Attention should be paid to the original survey brief as to which trees have actually been surveyed; i.e. Only Trees larger than 75mm diameter, or Only Trees within the site.



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21 MARKET SQUARE  
SANDRACH  
CHESHIRE  
CV11 1AT  
TEL: 0800 024 882  
WEB: WWW.REDBOXSURVEYS.CO.UK  
EMAIL: INFO@REDBOXSURVEYS.CO.UK

**Client:**  
City Lofts London

**Project:**  
12 High St  
Hampton Wick  
Kingston upon Thames KT1 4DB

**Drawing Title:**  
Topographical Survey

Rev.	Description	Surveyed	Approved	Date
1				

Surveyor:	Checked By:	Approved By:	Date of Survey:	Date of Issue:
BB	NE	AJS	29/05/24	07/08/24

Drawing Status:	Scale:	Paper Size:	Sheet No.:
FINAL	1:200	A1	1 of 1

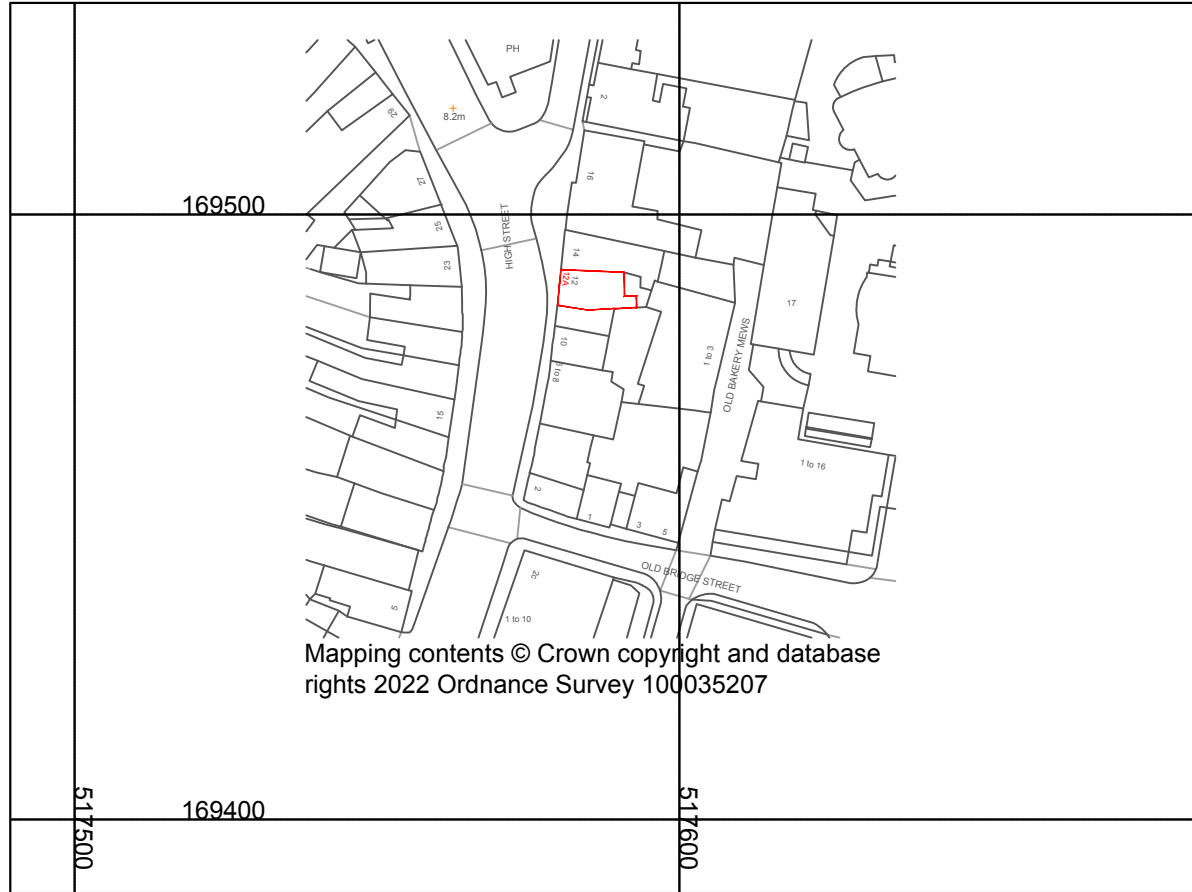
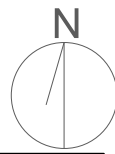
Project No: RBS-24/2805 Drawing No: RBS-24/3805/001

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## APPENDIX B

### Site Layout Drawings

LOCATION PLAN  
Scale 1:1250 at A3



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EXISTING SITE PLAN  
Scale 1:200 at A3



Front

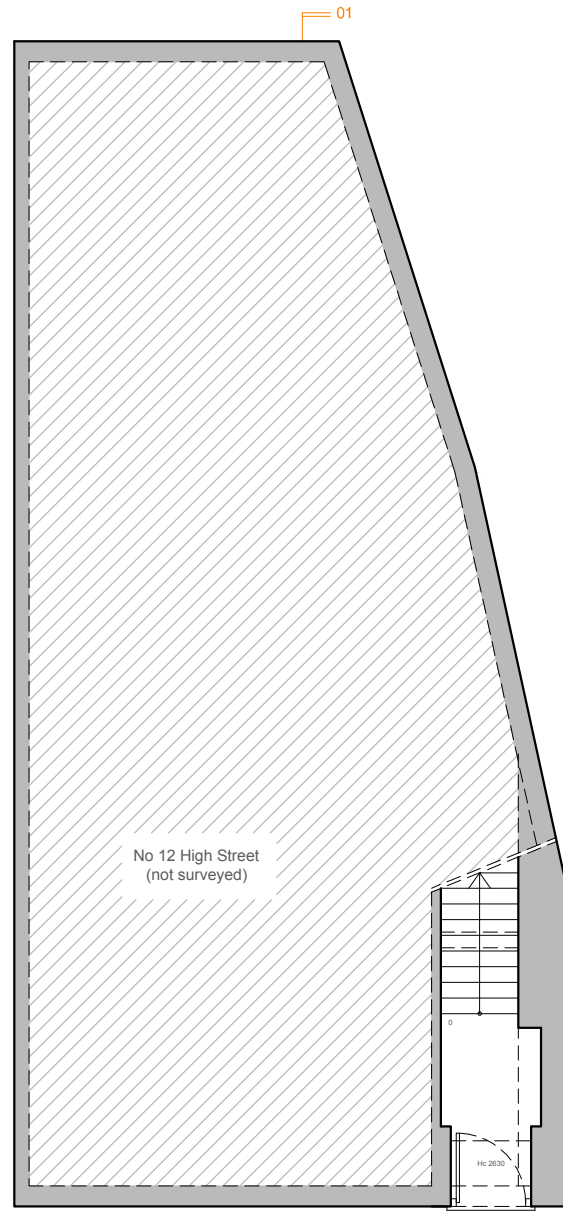


Rear



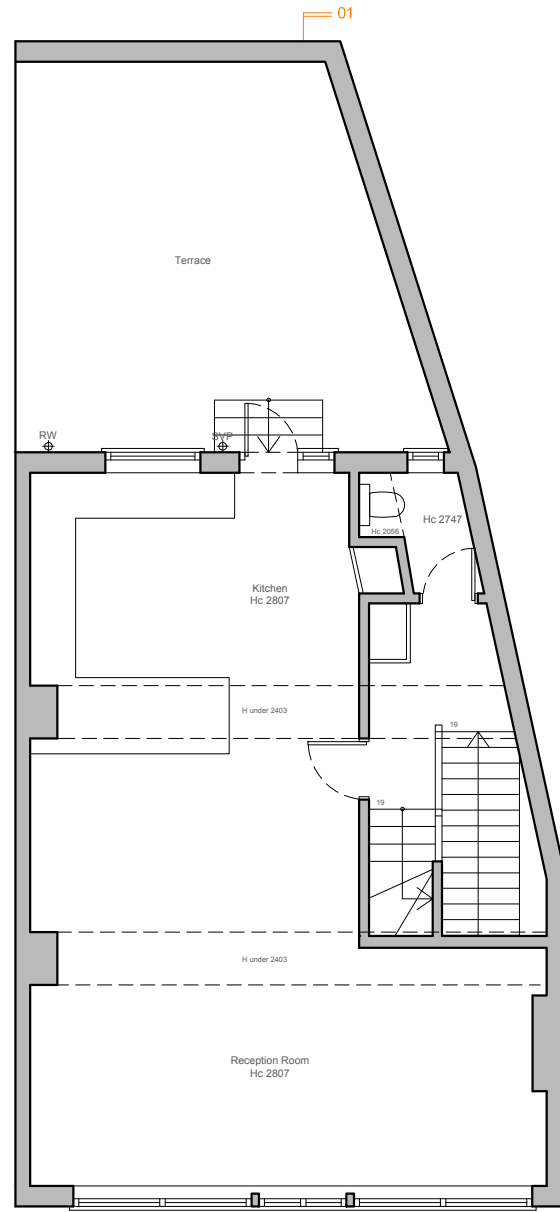
Terrace

Existing Ground Floor  
(Access to Flat No 12A)



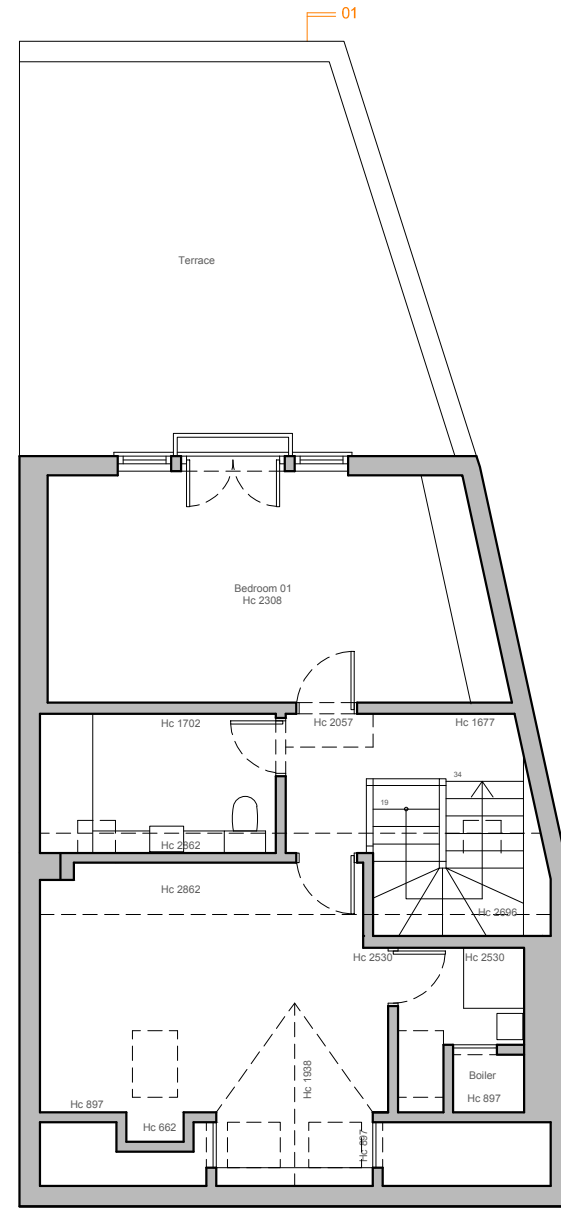
FRONT

Existing First Floor



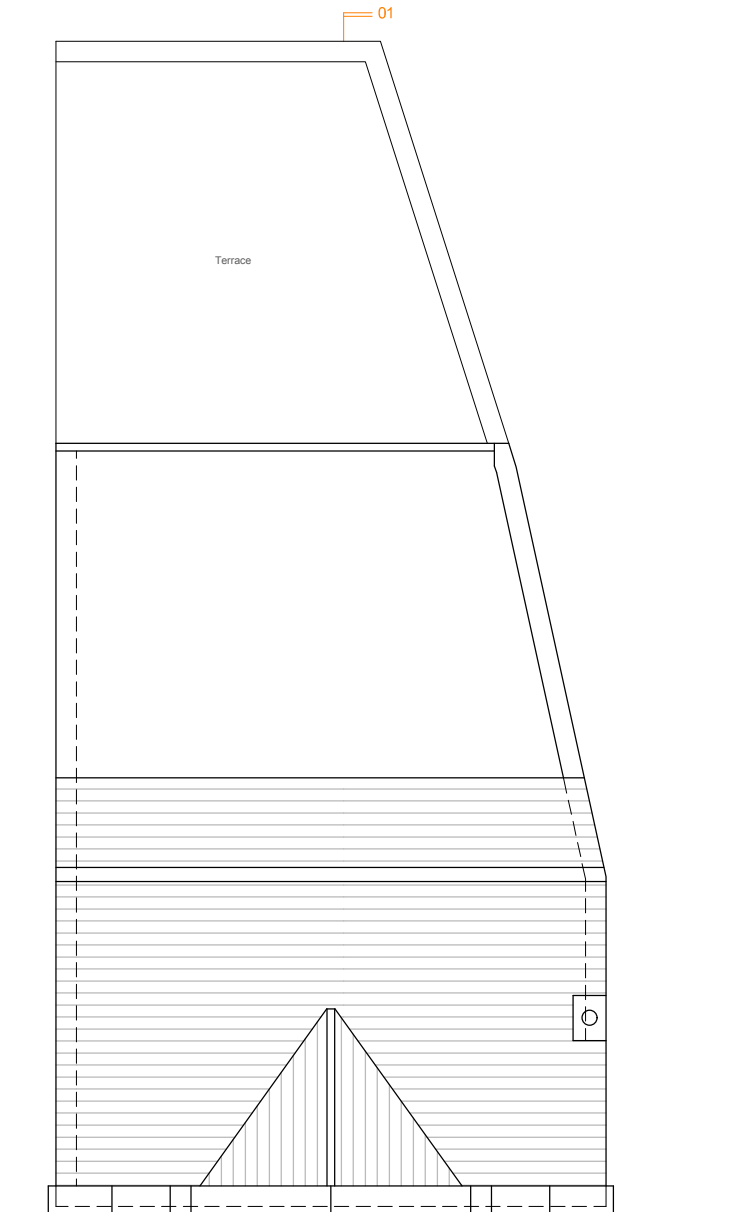
FRONT

Existing Second Floor



FRONT

Existing Roof Plan

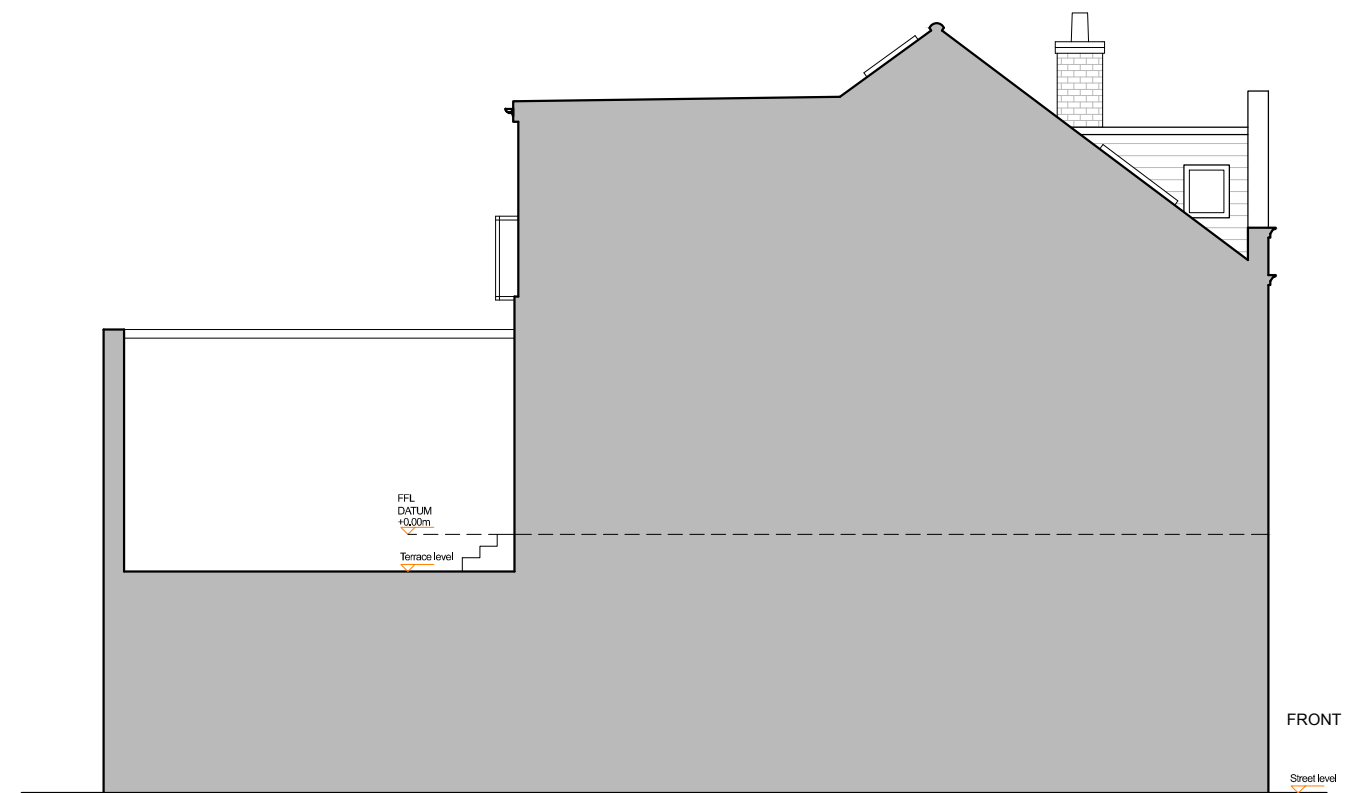


FRONT

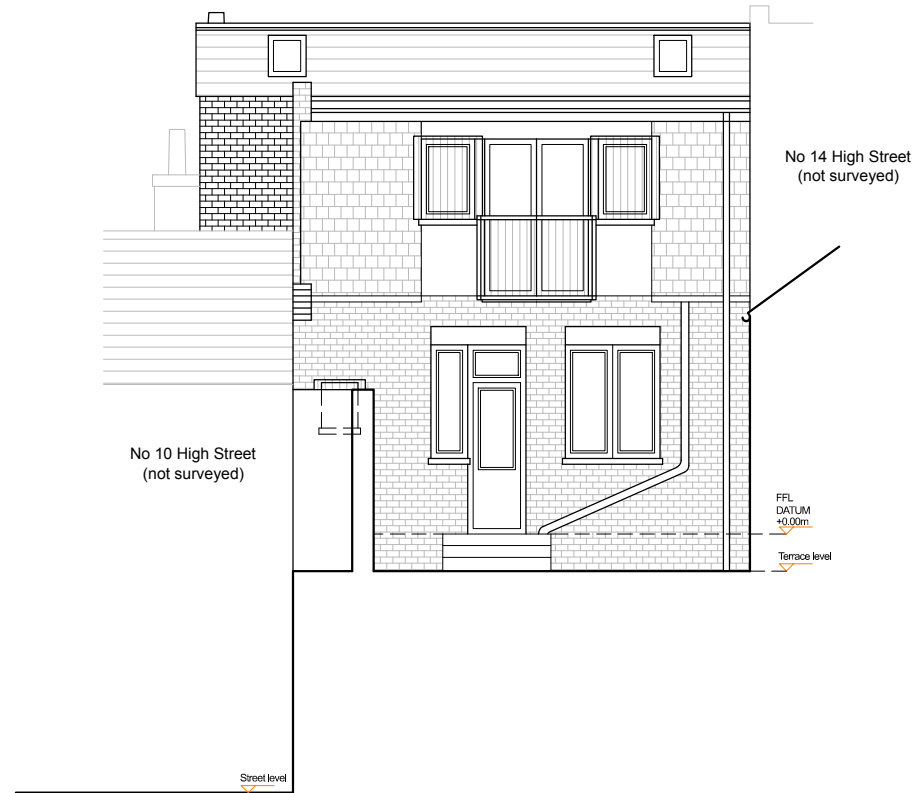
Existing Front Elevation



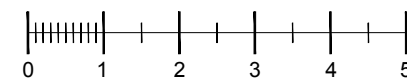
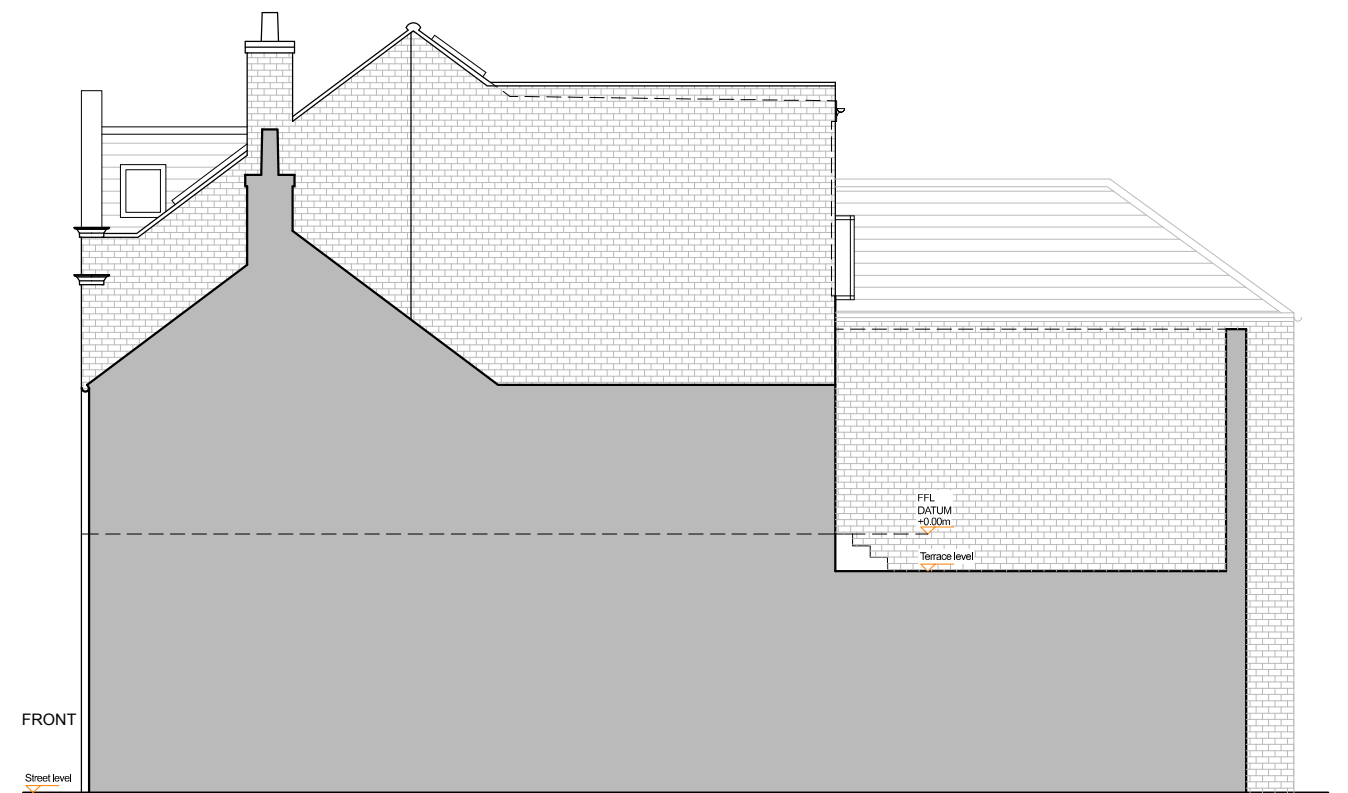
Existing Side Elevation



Existing Rear Elevation

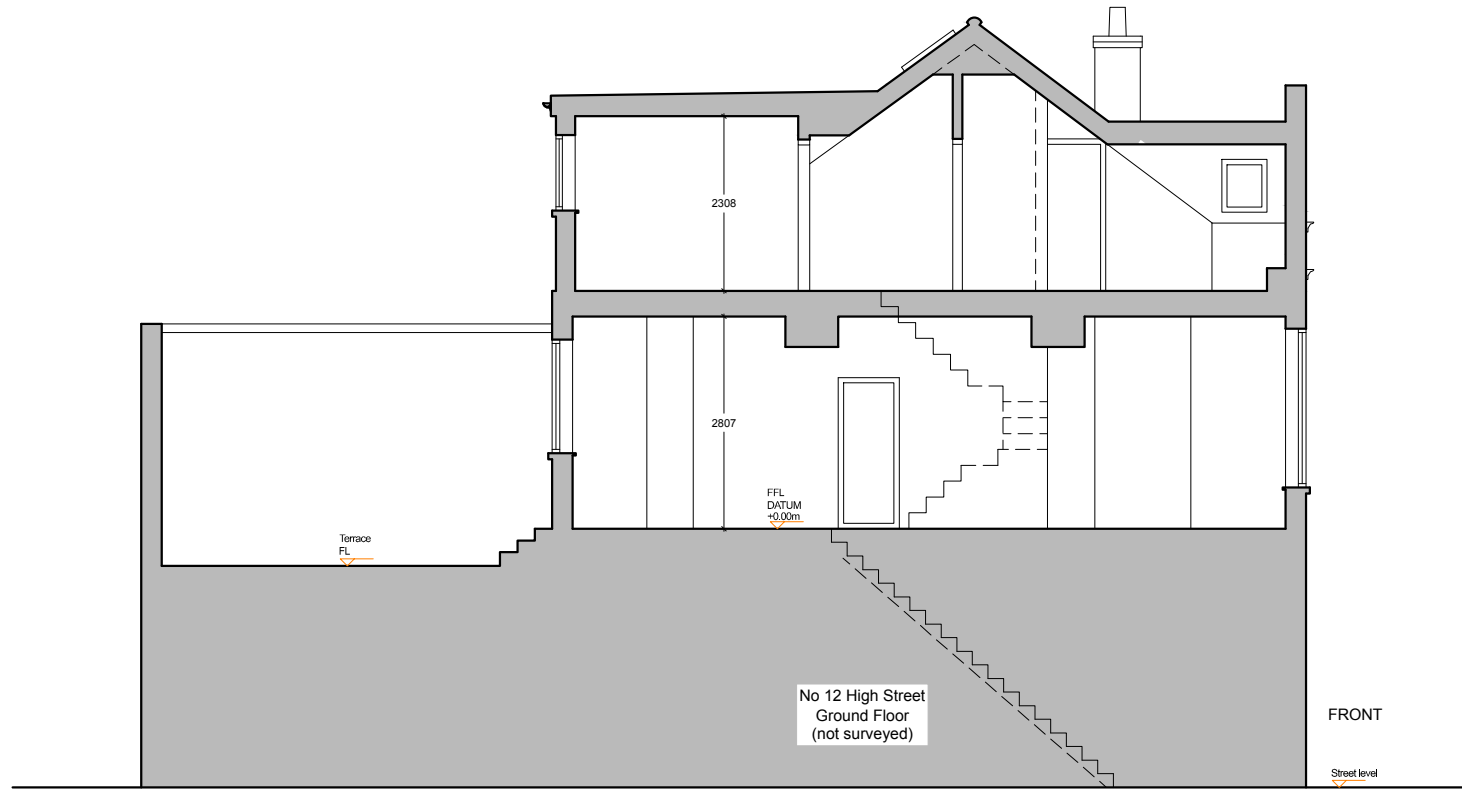


Existing Side Elevation





Existing Section 01



Architecture  
100



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Project:  
12 High Street, Hampton Wick  
Kingston upon Thames  
KT1 4DB

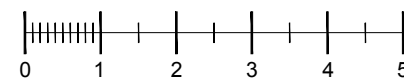
Client:  
City Loft London

Drawing ID:  
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Drawing Description:  
Existing Sections 01

Drawn by:  
MG

Drawing Scale:  
1:100 @ A3



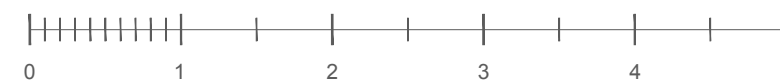
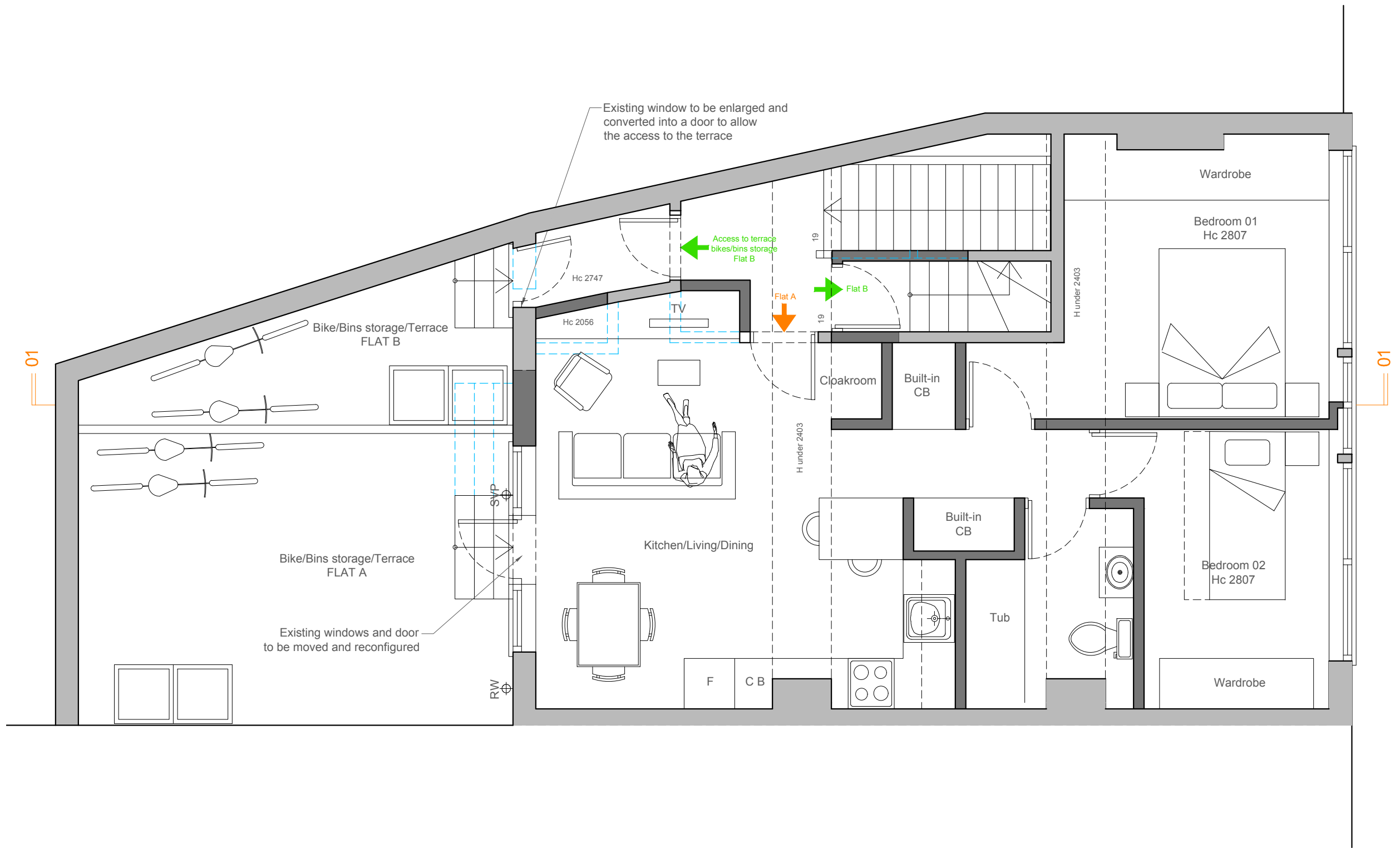
REV.	DATE	DESCRIPTION
A	14.02.2022	Existing following survey 29.11.2021

Proposed Ground Floor-Entrance Flat A and B



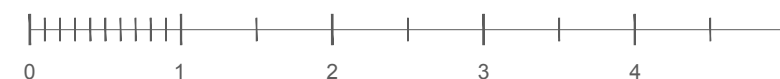
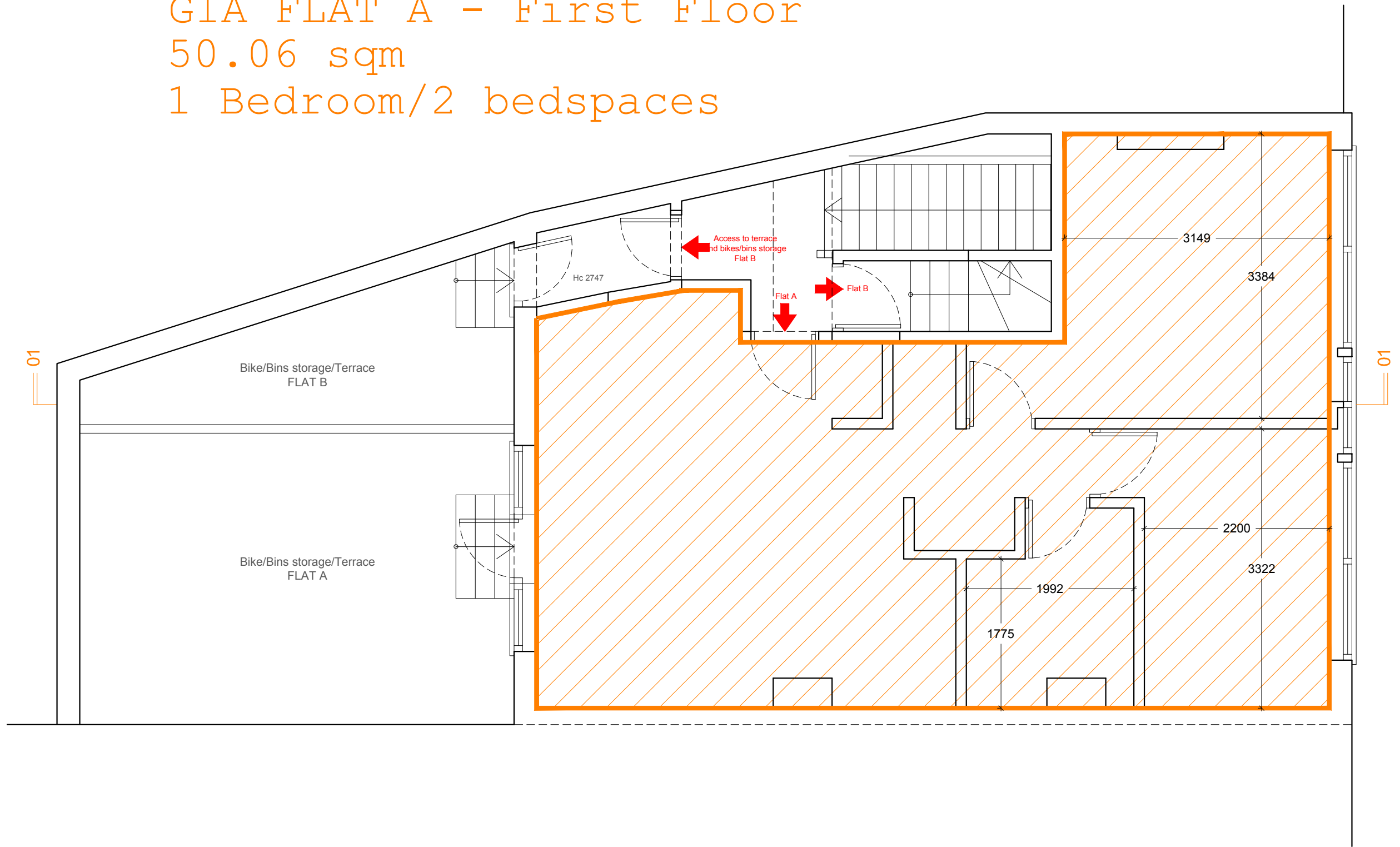
Proposed First Floor - FLAT A 50.06 sq m.

Existing Proposed Alterations



REV.	DATE	DESCRIPTION
A	14.02.2022	Proposed Drawings
B	21.03.2022	Proposed Drawings following meeting with client

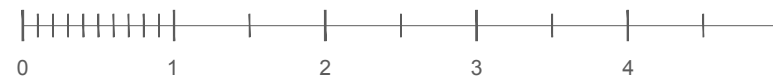
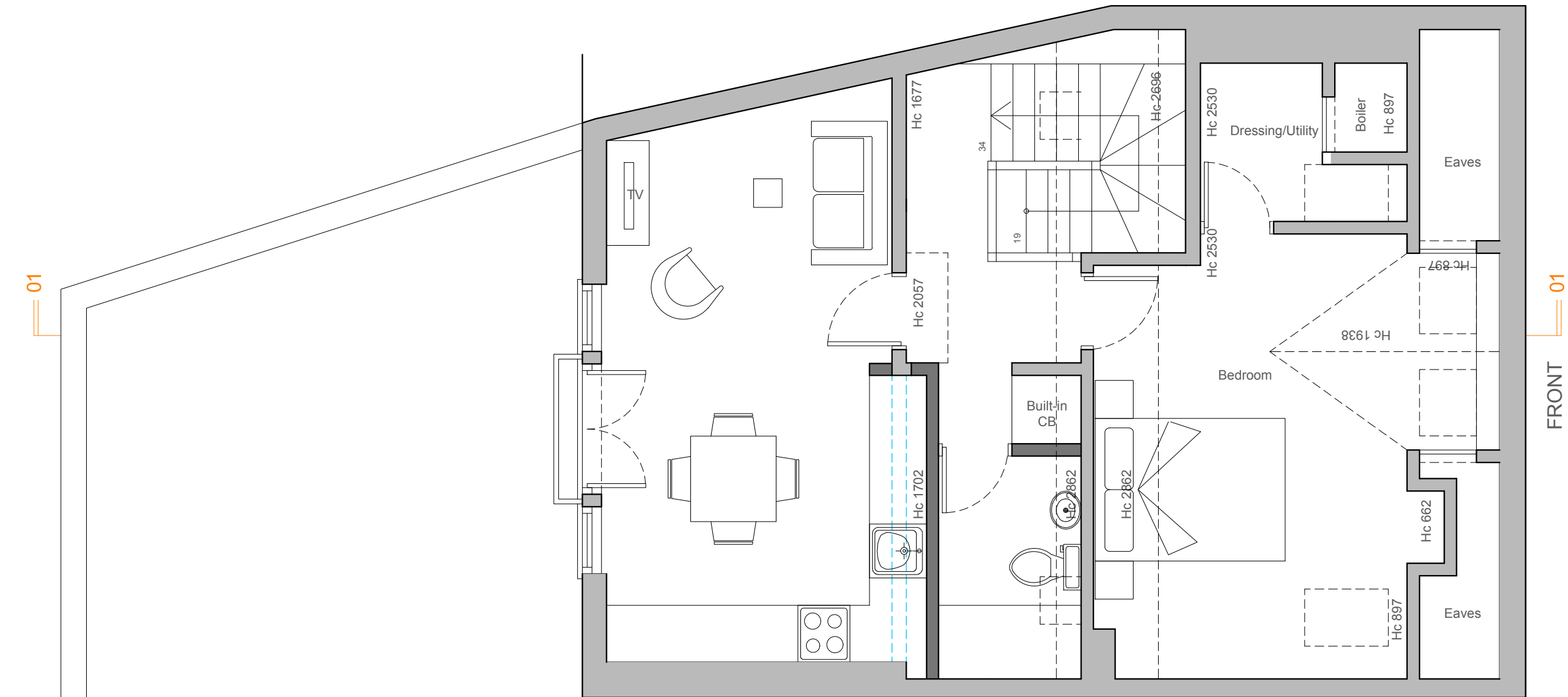
GIA FLAT A - First Floor  
 50.06 sqm  
 1 Bedroom/2 bedspaces



REV.	DATE	DESCRIPTION
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B	21.03.2022	Proposed Drawings following meeting with client

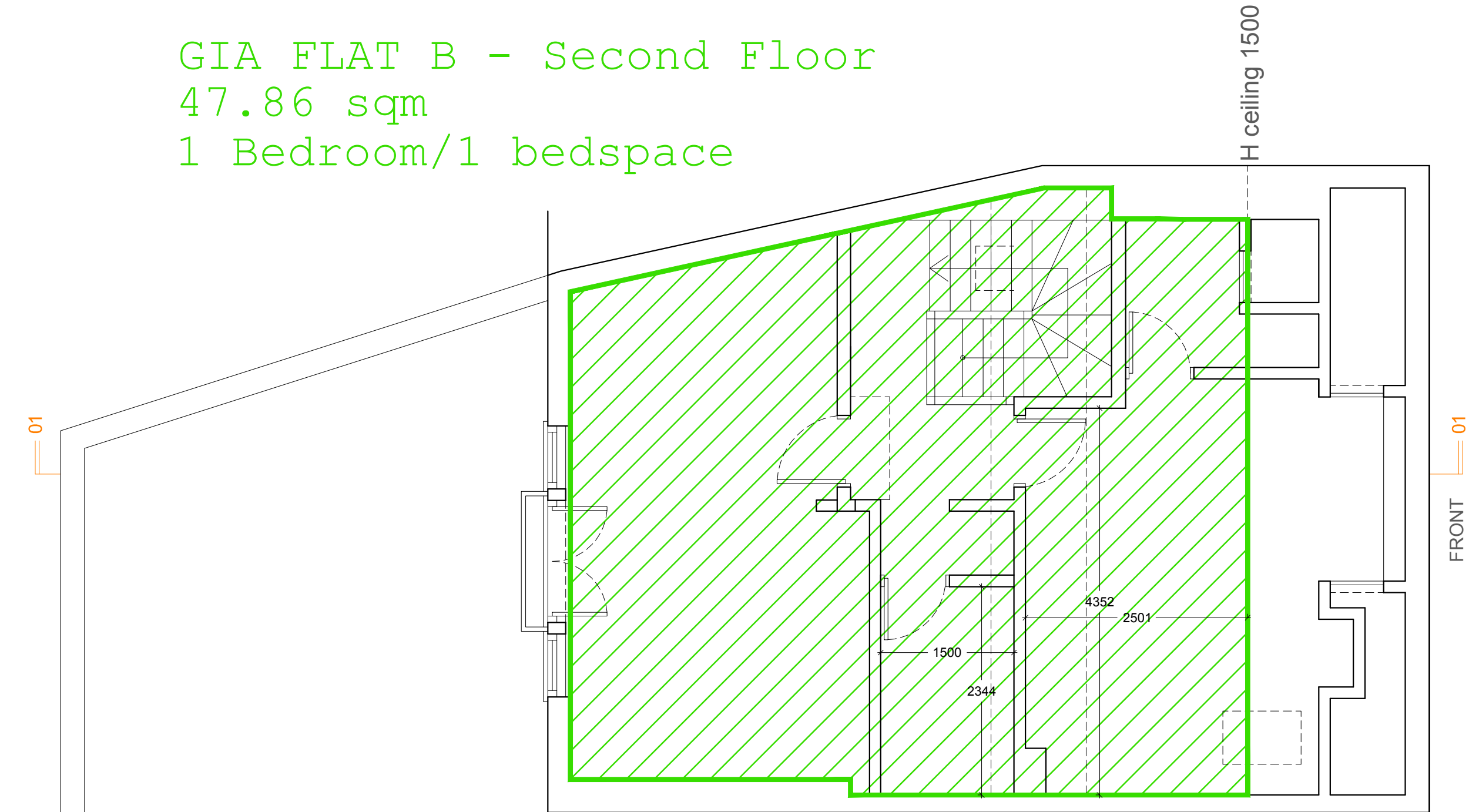
Proposed Second Floor - FLAT B 47.86 sq m.

Existing Proposed Alterations



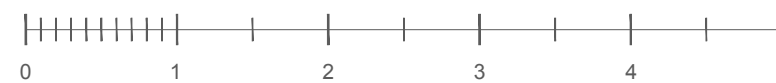
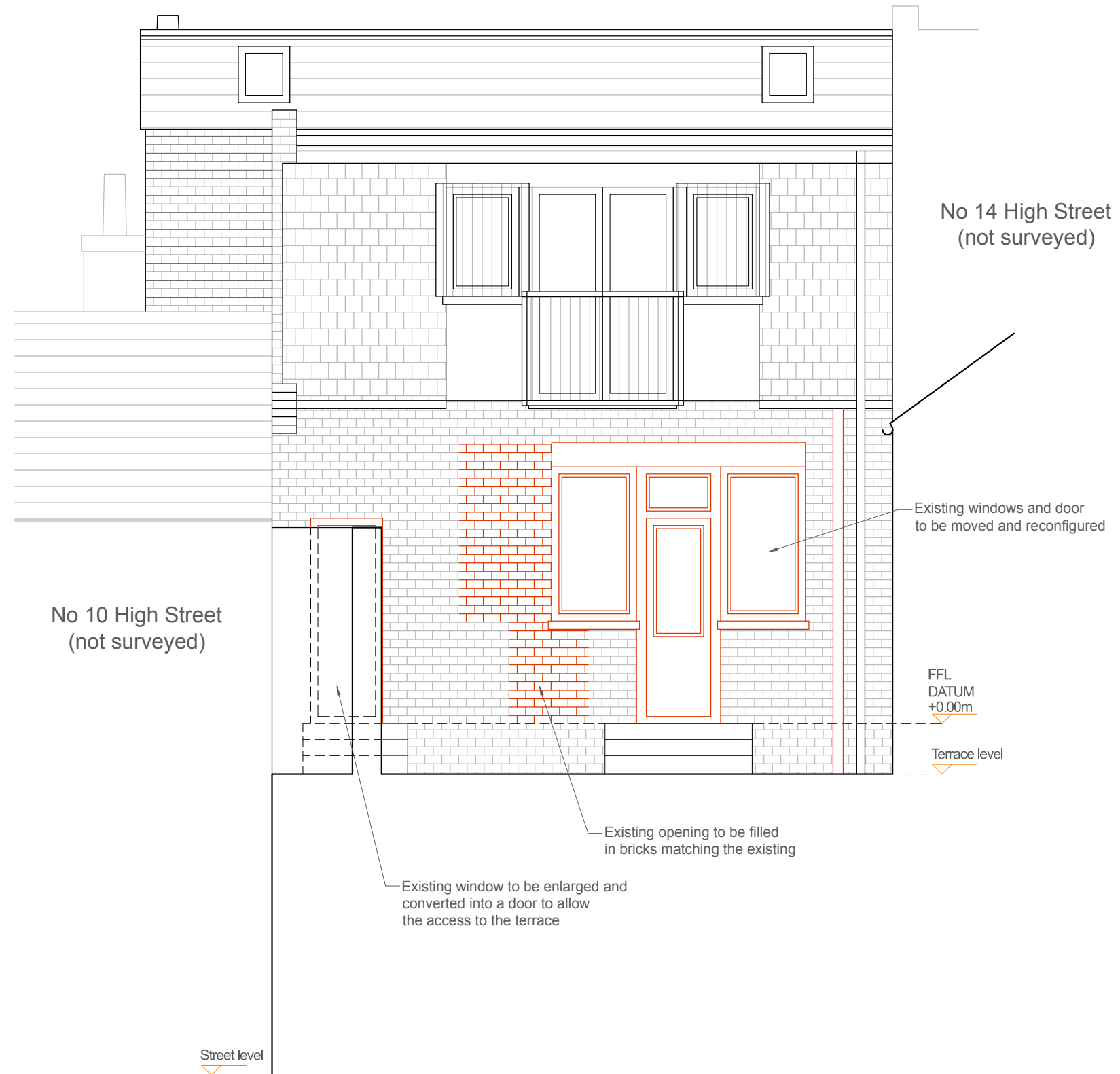
REV.	DATE	DESCRIPTION
A	14.02.2022	Proposed Drawings
B	21.03.2022	Proposed Drawings following meeting with client

GIA FLAT B - Second Floor  
 47.86 sqm  
 1 Bedroom/1 bedspace



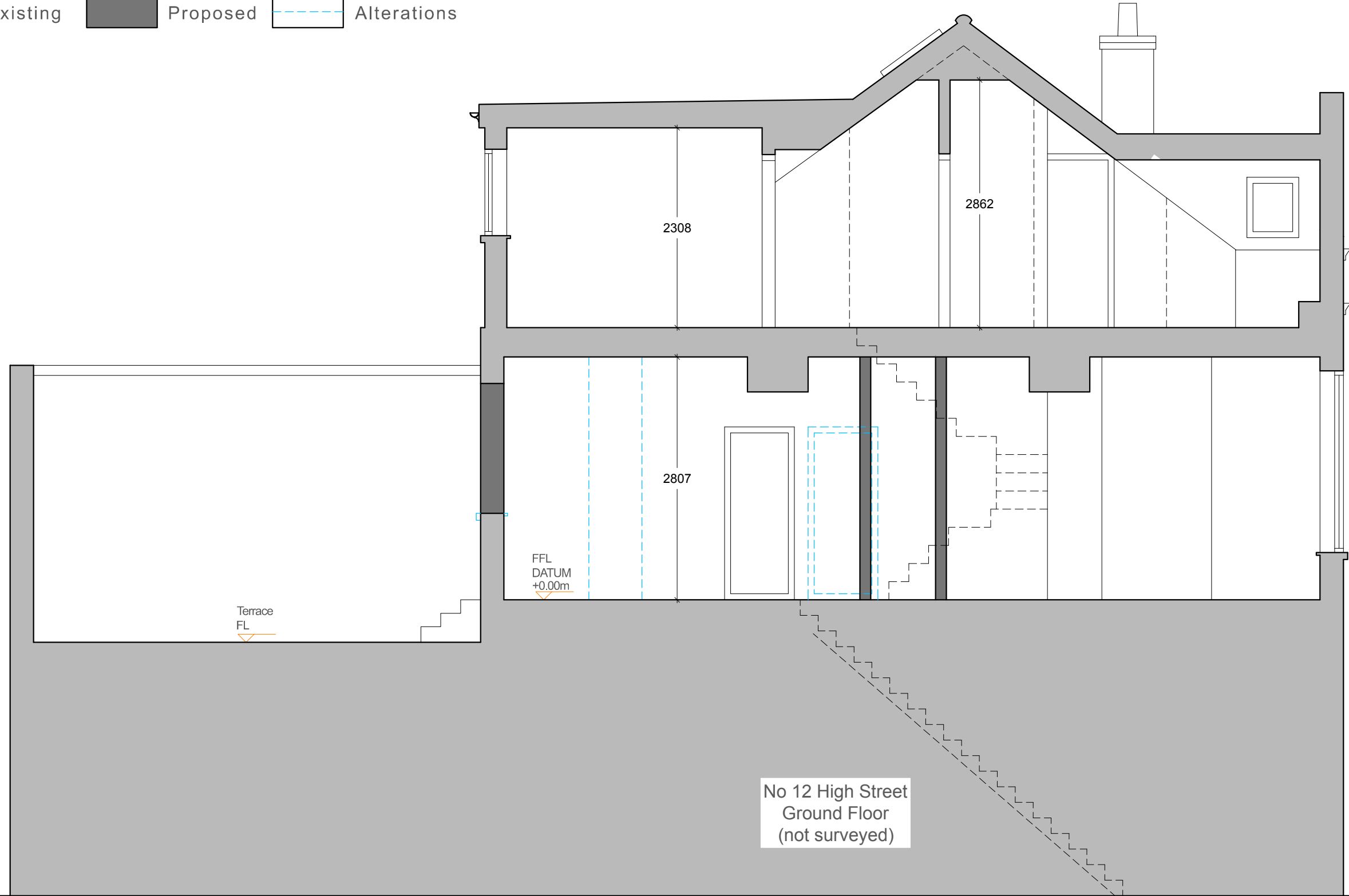
Proposed Rear Elevation

 Alterations



Proposed Section 01

Existing Proposed Alterations



Architecture  
100



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Project:  
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KT1 4DB

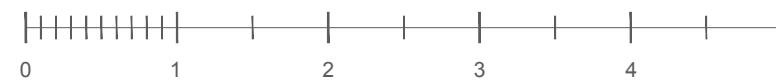
Client:  
City Loft London

Drawing ID:  
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Drawing Description:  
Proposed First Floor

Drawn by:  
MG

Drawing Scale:  
1:50 @ A3



REV.	DATE	DESCRIPTION
A	14.02.2022	Proposed Drawings
B	21.03.2022	Proposed Drawings following meeting with client



## APPENDIX C

### Environment Agency Flood Risk Data

## Product 4 (Detailed Flood Risk) for High Street, KT1 4BY

Our Ref: THM362116

Product 4 is designed for developers where Flood Risk Standing Advice FRA (Flood Risk Assessment) Guidance Note 3 Applies. This is:

- i) "all applications in Flood Zone 3, other than non-domestic extensions less than 250 sq metres; and all domestic extensions", and
- ii) "all applications with a site area greater than 1 ha" in Flood Zone 2.

### Product 4 includes the following information:

Ordnance Survey 1:25k colour raster base mapping;  
Flood Zone 2 and Flood Zone 3;  
Relevant model node locations and unique identifiers (for cross referencing to the water levels, depths and flows table);  
Model extents showing *defended* scenarios;  
FRA site boundary (where a suitable GIS layer is supplied);  
Flood defence locations (where available/relevant) and unique identifiers; (supplied separately)  
Flood Map flood storage areas (where available/relevant);  
Historic flood events outlines (where available/relevant, not the Historic Flood Map) and unique identifiers;

Statutory (Sealed) Main River (where available within map extents);

A table showing:

- i) Model node X/Y coordinate locations, unique identifiers, and levels and flows for *defended* scenarios.
- ii) Flood defence locations unique identifiers and attributes; (supplied separately)
- iii) Historic flood events outlines unique identifiers and attributes; and
- iv) Local flood history data (where available/relevant).

### Please note:

If you will be carrying out computer modelling as part of your Flood Risk Assessment, please request our guidance which sets out the requirements and best practice for computer river modelling.

This information is based on that currently available as of the date of this letter. You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements have been made. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

This information is provided subject to the enclosed notice which you should read.

This letter is not a Flood Risk Assessment. The information supplied can be used to form part of your Flood Risk Assessment. Further advice and guidance regarding Flood Risk Assessments can be found on our website at:

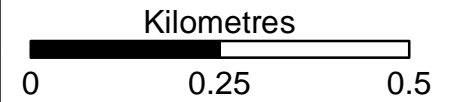
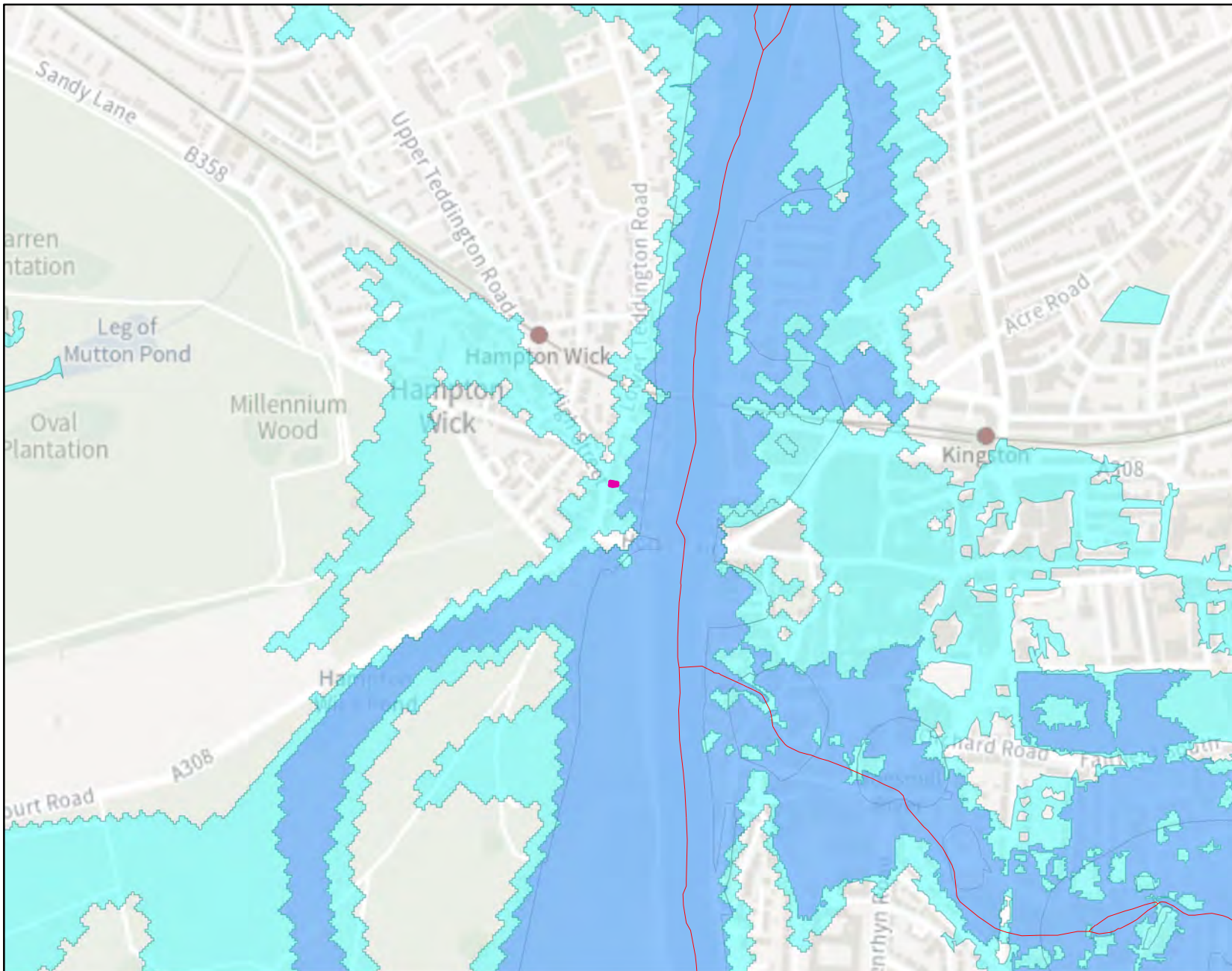
<https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities>

If you would like advice from us regarding your development proposals you can complete our pre application enquiry form which can be found at:

<https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion>

# Flood Map for Planning centred on High Street, KT1 4BY

Created on 14/06/2024 REF: THM362116



## Legend

- Site
- Statutory Main Rivers
- Flood Map - Flood defences
- Flood Map - Flood Storage Areas
- Flooding from rivers or sea (FZ3)
- Extent of extreme flood (FZ2)

Flooding from rivers or sea without defences (Flood Zone 3) shows the area that could be affected by flooding:  
- from the sea with a 1 in 200 or greater chance of happening each year  
- or from a river with a 1 in 100 or greater chance of happening each year.

The Extent of an extreme flood (Flood Zone 2) shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

## Defence information

Defence Location:

Description: The Environment Agency and Surrey County Council are developing the River Thames Scheme to reduce the flood risk for 11,000 properties and 1,600 businesses in Surrey and South West London. The scheme will consist of 2 new flood channels between Egham and Chertsey. Capacity improvements are also planned for Desborough Cut and Sunbury, Molesey and Teddington weirs.

For more information please visit our website: [www.gov.uk/riverthamesscheme](http://www.gov.uk/riverthamesscheme).

## Model information

Model: Thames (Datchet to Teddington) 2023

Description: The information provided is taken from the Lower River Thames Modelling Report which was completed in November 2023. The model was developed using Flood Modeller-TUFLOW modelling software.

This modelling has built on the Lower River Thames Modelling Study from December 2019 (previously known as the Thames (Hurley to Teddington) 2019 model). The two modelling reports (2019 and 2023) should be read in conjunction to gain a full understanding of the latest Lower Thames flood model.

This model partially supersedes the Thames (Bourne End to Datchet) 2019 model, previously known as Thames (Hurley to Teddington) 2019 model.

There are several points along the Lower Thames where there are interactions between the main river and tributaries. At these points, the Thames (Datchet to Teddington) 2023 – Tribes domain will need to be additionally assessed to ensure the correct site-specific values are being used. These locations include Battle Bourne in Old Windsor, Wraysbury, Horton, Egham Hythe, Thorpe, Thorpe Green, Chertsey, Staines-upon-Thames, Littleton and Molesey. The River Ash has a separate model which should be used to assess the flood risk from this river. The worst-case scenario should be used from these models.

Throughout the majority of the catchment, the model has replicated the flow and level variations observed from gauges during flood events with a high degree of accuracy ( $\pm 150\text{mm}$ ), however at some sites this was not possible across the whole event. This reflects local variations rather than a fundamental issue with the model (e.g., Bray, Romney and Penton Hook Lock).

Defended model design runs and mapped outputs: 1 in 2 / 50% Annual Exceedance Probability (AEP); 1 in 5 / 20% AEP; 1 in 10; 10% AEP; 1 in 20 / 5% AEP; 1 in 30 / 3.3% AEP; 1 in 50 / 2% AEP; 1 in 75% / 1.33% AEP; 1 in 100 / 1% AEP; 1 in 100+10% / 1% AEP plus 10%; 1 in 100+20% / 1% AEP plus 20%; 1 in 100+25% / 1% AEP plus 25%; 1 in 100+35% / 1% AEP plus 35%; 1 in 100+81% / 1% AEP plus 81%; 1 in 1000 / 0.1% AEP

Undefended model design runs and mapped outputs: 1 in 100 / 1% AEP; 1 in 1000 / 0.1% AEP

Model accuracy: Levels  $\pm 150\text{mm}$

## Modelled in-channel flood flows and levels

THM362116

The modelled flood levels and flows for the closest most appropriate model node points for your site that are within the river channel are provided below:

Node label	Model	Easting	Northing	Flood Levels (mAOD)									
				20% AEP	5% AEP	3.3% AEP	1% AEP	1% AEP (+10% increase in flows)	1% AEP (+20% increase in flows)	1% AEP (+25% increase in flows)	1% AEP (+35% increase in flows)	1% AEP (+81% increase in flows)	0.1% AEP
061_00_2023_01_16.061D	Thames (Datchet to Teddington) 2023	517730	169644	5.70	6.21	6.42	6.96	7.21	7.47	7.60	8.01	8.61	7.32
061_00_2023_01_16.061U	Thames (Datchet to Teddington) 2023	517731	169630	5.72	6.24	6.45	7.01	7.28	7.56	7.70	8.14	8.75	7.39
061_00_2023_01_16.063	Thames (Datchet to Teddington) 2023	517735	169564	5.75	6.29	6.50	7.06	7.31	7.59	7.72	8.11	8.68	7.42
061_00_2023_01_16.065	Thames (Datchet to Teddington) 2023	517725	169469	5.76	6.31	6.52	7.08	7.33	7.60	7.73	8.11	8.68	7.44
061_00_2023_01_16.067D	Thames (Datchet to Teddington) 2023	517715	169385	5.77	6.34	6.56	7.13	7.39	7.67	7.81	8.19	8.79	7.51
061_00_2023_01_16.067U	Thames (Datchet to Teddington) 2023	517714	169366	5.80	6.38	6.61	7.21	7.49	7.79	7.94	8.32	8.92	7.61
061_00_2023_01_16.069D	Thames (Datchet to Teddington) 2023	517703	169191	5.81	6.38	6.61	7.20	7.48	7.79	7.94	8.32	8.93	7.61
061_00_2023_01_16.069	Thames (Datchet to Teddington) 2023	517703	169170	5.81	6.38	6.61	7.20	7.48	7.79	7.94	8.32	8.93	7.61

Node label	Model	Easting	Northing	Flood Flows (m3/s)									
				20% AEP	5% AEP	3.3% AEP	1% AEP	1% AEP (+10% increase in flows)	1% AEP (+20% increase in flows)	1% AEP (+25% increase in flows)	1% AEP (+35% increase in flows)	1% AEP (+81% increase in flows)	0.1% AEP
061_00_2023_01_16.061D	Thames (Datchet to Teddington) 2023	517730	169644	446.53	593.29	649.54	786.95	857.38	918.13	948.23	1051.75	1241.17	1075.10
061_00_2023_01_16.061U	Thames (Datchet to Teddington) 2023	517731	169630	446.53	593.29	649.54	786.95	857.38	918.13	948.23	1051.75	1241.17	1075.10
061_00_2023_01_16.063	Thames (Datchet to Teddington) 2023	517735	169564	446.66	593.06	648.41	794.03	866.15	935.27	970.65	1070.38	1257.95	1097.57
061_00_2023_01_16.065	Thames (Datchet to Teddington) 2023	517725	169469	446.09	593.21	647.92	793.59	864.89	932.86	966.22	1054.09	1206.49	1076.25
061_00_2023_01_16.067D	Thames (Datchet to Teddington) 2023	517715	169385	445.98	589.29	641.03	773.32	838.48	898.33	929.40	1008.53	1115.48	1028.34
061_00_2023_01_16.067U	Thames (Datchet to Teddington) 2023	517714	169366	445.98	589.29	641.03	773.32	838.48	898.33	929.40	1008.53	1115.48	1028.34
061_00_2023_01_16.069D	Thames (Datchet to Teddington) 2023	517703	169191	445.89	592.51	640.67	754.20	807.70	848.90	868.88	910.61	989.37	925.44
061_00_2023_01_16.069	Thames (Datchet to Teddington) 2023	517703	169170	445.89	592.51	640.67	754.20	807.70	848.90	868.88	910.61	989.37	925.44

Note:  
Due to changes in guidance on the allowances for climate change, the percentage increase in river flows above should no longer be used for development design purposes. The data included in this Product can be used for interpolation of levels as part of an intermediate level assessment.

For further advice on the new allowances please visit  
<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>.

## Modelled floodplain flood levels

THM362116

The modelled flood levels for the closest most appropriate model grid cells for your site are provided below:

2D grid cell reference	Model	Easting	Northing	flood levels (mAOD)										
				20% AEP	5% AEP	3.3% AEP	1% AEP	1% AEP (+10% increase in flows)	1% AEP (+20% increase in flows)	1% AEP (+25% increase in flows)	1% AEP (+35% increase in flows)	1% AEP (+81% increase in flows)	0.1% AEP	
Flood Point No 1	Thames (Datchet to Teddington) 2023	517559	169522	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	8.19	8.73	8.21
Flood Point No 2	Thames (Datchet to Teddington) 2023	517581	169487	No Data	No Data	No Data	No Data	No Data	No Data	7.83	8.19	8.74	8.24	
Flood Point No 3	Thames (Datchet to Teddington) 2023	517591	169486	No Data	No Data	No Data	No Data	No Data	7.61	7.80	8.16	8.73	8.22	
Flood Point No 4	Thames (Datchet to Teddington) 2023	517563	169439	No Data	No Data	No Data	No Data	No Data	7.66	7.89	8.22	8.80	8.28	
Flood Point No 5	Thames (Datchet to Teddington) 2023	517632	169380	No Data	6.35	6.58	7.18	7.45	7.74	7.88	8.23	8.85	8.31	

This flood model has represented the floodplain as a grid.  
The flood water levels have been calculated for each grid cell.

**Note:**

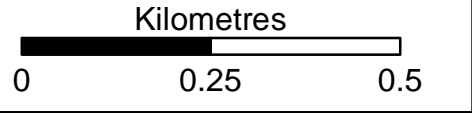
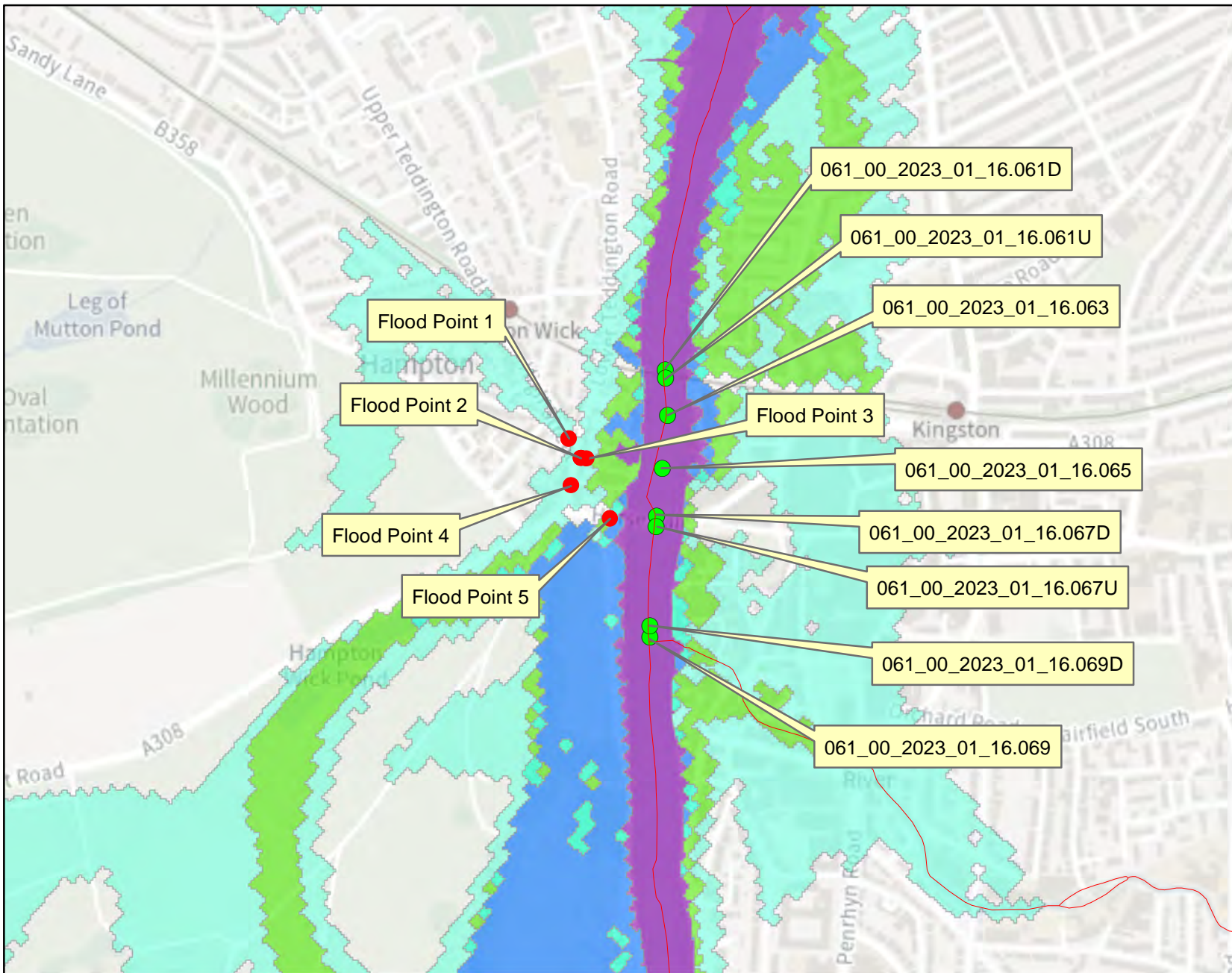
Due to changes in guidance on the allowances for climate change, the percentage increase in river flows above should no longer be used for development design purposes. The data included in this Product can be used for interpolation of levels as part of an intermediate level assessment.

For further advice on the new allowances please visit

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

# Detailed FRA Map No 1 centred on High Street, KT1 4BY

Created on 14/06/2024 REF: THM362116



### Legend

- Site
- Statutory Main Rivers
- Model Nodes
- 20% AEP Flood Outline
- 5% AEP Flood Outline
- 3.3% AEP Flood Outline
- 1% AEP Flood Outline
- 0.1% AEP Flood Outline

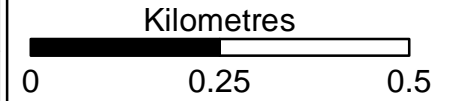
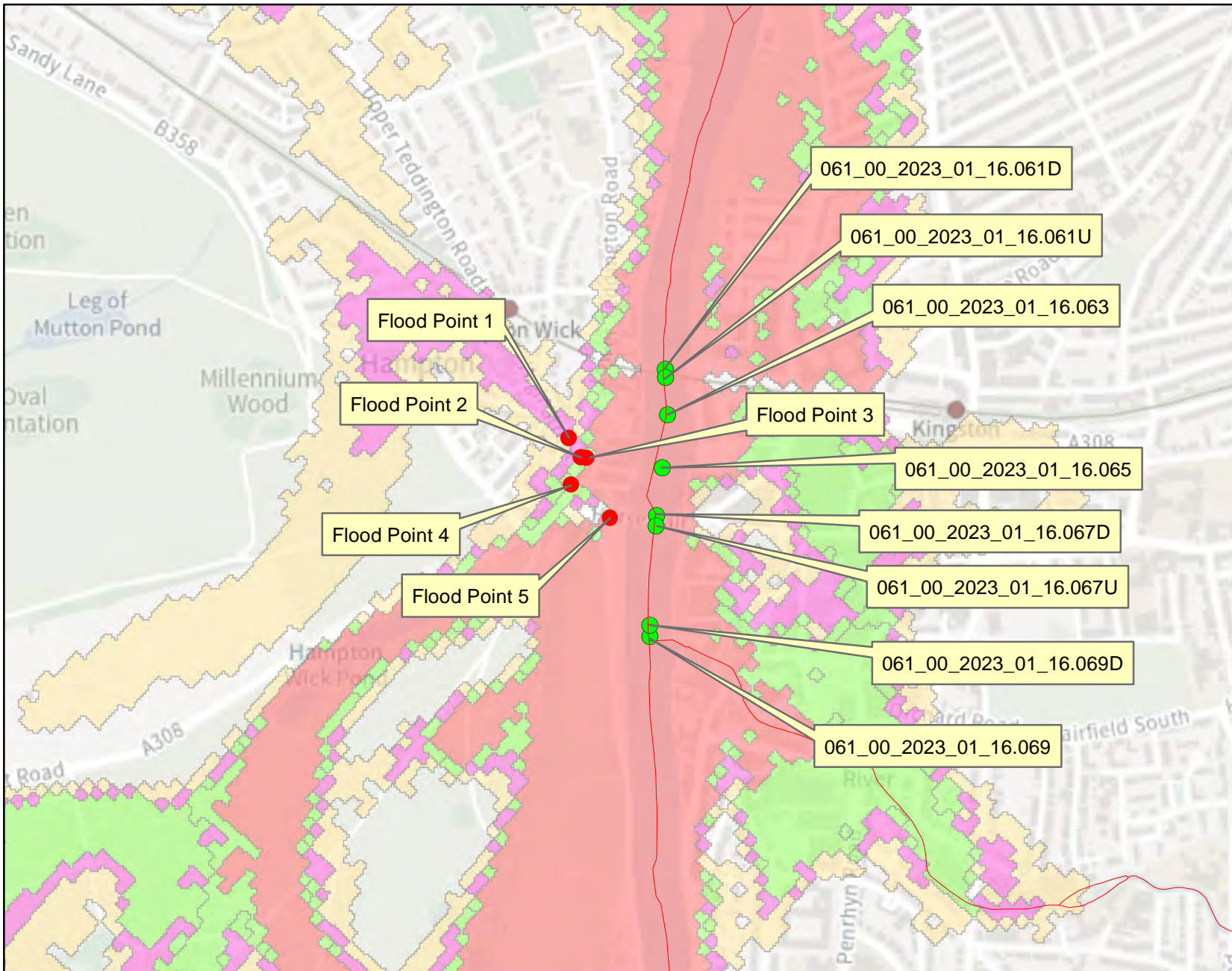
AEP = Annual Exceedance Probability  
The probability of a flood of a particular magnitude, or greater, occurring in any given year

Where available climate change extents have been calculated with an additional flow added to an AEP event. An example of how this is written is 1%+20% AEP.



# Detailed FRA Map No 2 centred on High Street, KT1 4BY

Created on 14/06/2024 REF: THM362116



## Legend

- Site
- Statutory Main Rivers
- Model Nodes
- 1%+10% AEP Flood Outline
- 1%+20% AEP Flood Outline
- 1%+25% AEP Flood Outline
- 1%+35% AEP Flood Outline
- 1%+81% AEP Flood Outline

AEP = Annual Exceedance Probability  
The probability of a flood of a particular magnitude, or greater, occurring in any given year

Where available climate change extents have been calculated with an additional flow added to an AEP event. An example of how this is written is 1%+20% AEP.

## Historic flood data

THM362116

Our records show that the area of your site has been affected by flooding.  
Information on the floods that have affected your site is provided in the table below:

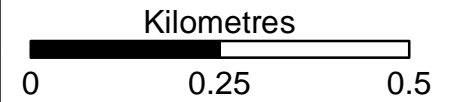
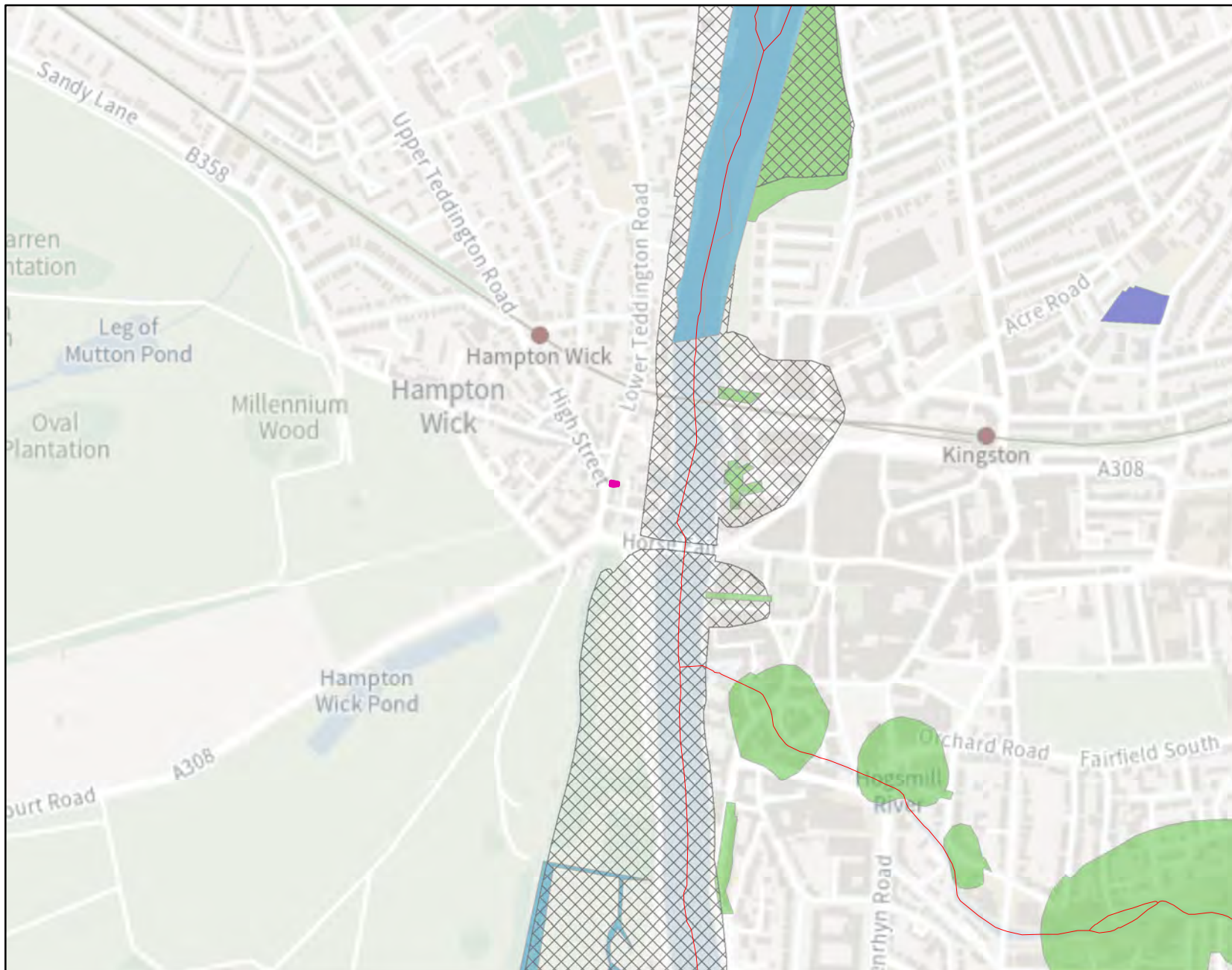
Flood Event Code	Flood Event Name	Start Date	End Date	Source of Flooding	Cause of Flooding
No Historical Information					

Please note the Environment Agency maps flooding to land not individual properties. Floodplain extents are an indication of the geographical extent of a historic flood. They do not provide information regarding levels of individual properties, nor do they imply that a property has flooded internally.

Start and End Dates shown above may represent a wider range where the exact dates are not available.

# Historical Flood Map No 1 centred on High Street, KT1 4BY

Created on 14/06/2024 REF: THM362116



## Legend

- Site
- Statutory Main Rivers

### year

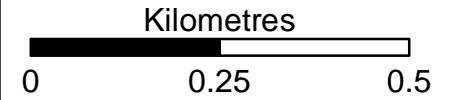
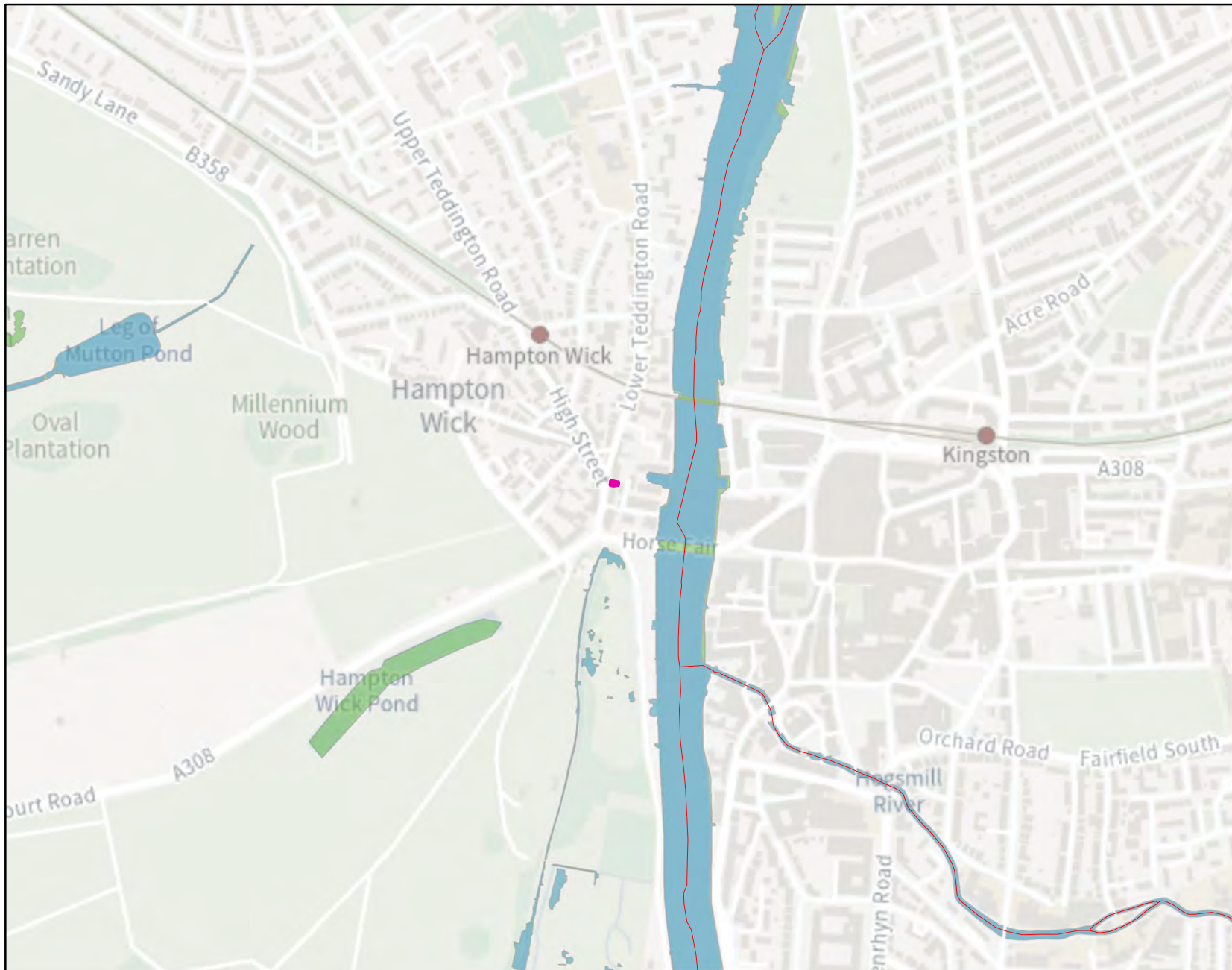
- 1947
- 1968
- 1974
- 1988

Flooding from rivers or sea without defences (Flood Zone 3) shows the area that could be affected by flooding:  
- from the sea with a 1 in 200 or greater chance of happening each year  
- or from a river with a 1 in 100 or greater chance of happening each year.

The Extent of an extreme flood (Flood Zone 2) shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

# Historical Flood Map No 2 centred on High Street, KT1 4BY

Created on 14/06/2024 REF: THM362116



### Legend

- Site
- Statutory Main Rivers

- year**
- 2000
  - 2002/3
  - 2014

Flooding from rivers or sea without defences (Flood Zone 3) shows the area that could be affected by flooding:  
- from the sea with a 1 in 200 or greater chance of happening each year  
- or from a river with a 1 in 100 or greater chance of happening each year.

The Extent of an extreme flood (Flood Zone 2) shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

## Hazard Mapping

### Hazard Mapping methodology:

To calculate flood hazard with the debris factor we have used the supplementary note to Flood Risk to People Methodology (see below).

The following calculation is used:

$$HR = d \times (v+0.5) + DF$$





Where HR = flood hazard rating

d = depth of flooding (m)

v = velocity of floodwaters (m/sec)

DF = debris factor calculated (0, 0.5, 1 depending on probability that debris will lead to a hazard)

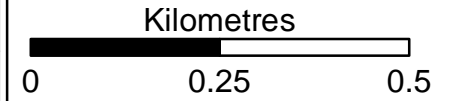
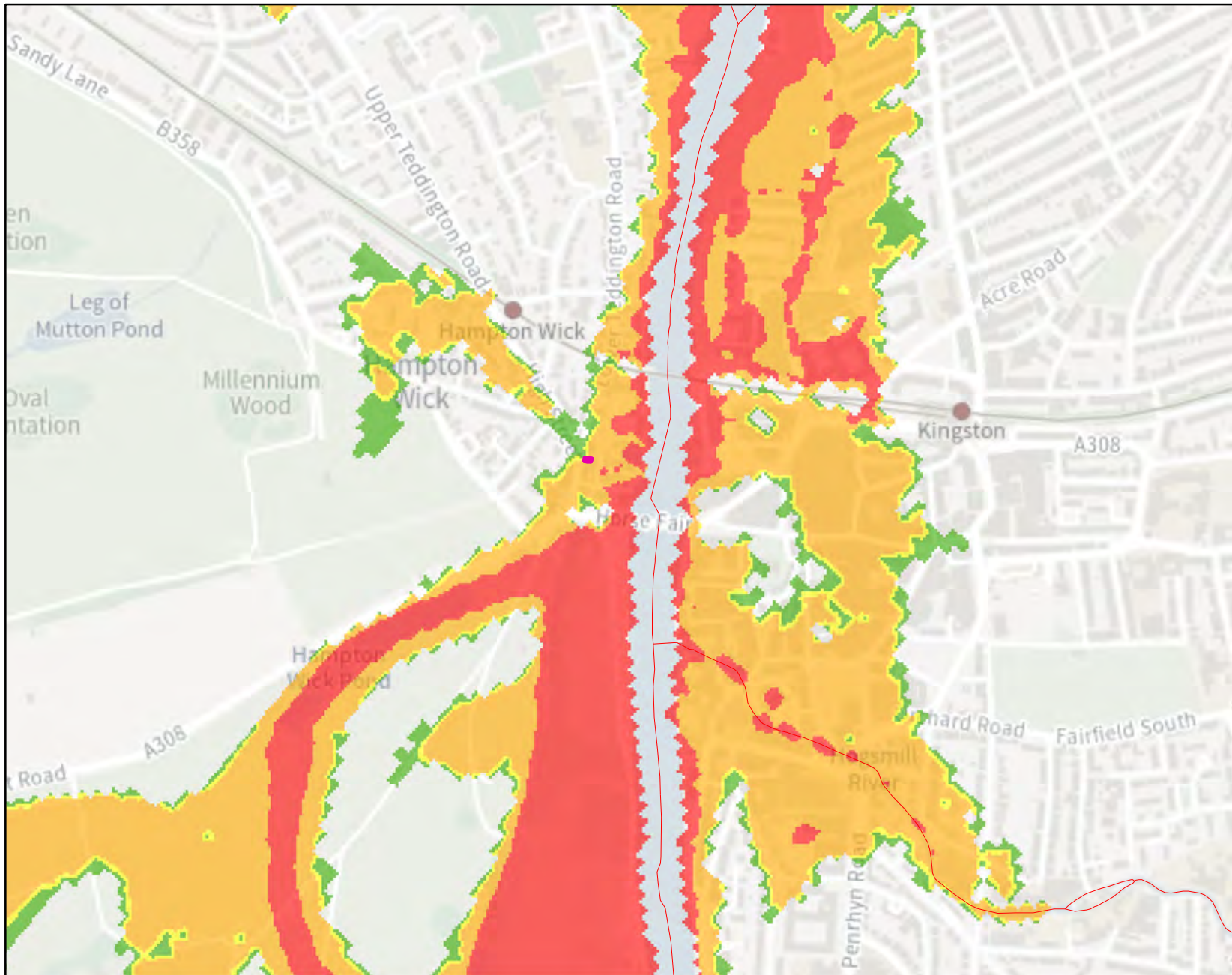
The resultant hazard rating is then classified according to:

Flood Hazard	Colour	Hazard to People Classification
Less than 0.75		Very low hazard - Caution
0.75 to 1.25		Danger for some - includes children, the elderly and the infirm
1.25 to 2.0		Danger for most - includes the general public
More than 2.0		Danger for all - includes the emergency services

REF: HR Wallingford and Environment Agency (May 2008) Supplementary note of flood hazard ratings and thresholds for development planning and control purpose – Clarification of the Table 113.1 of FD2320/TR2 and Figure 3.2 of FD2321/TR1

# Hazard Map 1% + 35% CC AEP centred on High Street, KT1 4BY

Created on 14/06/2024 REF: THM362116



## Legend

- Site
- Statutory Main Rivers
- Low hazard
- Hazard to some
- Hazard to most
- Hazard to all

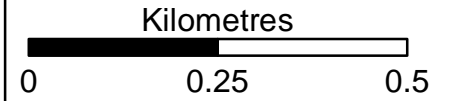
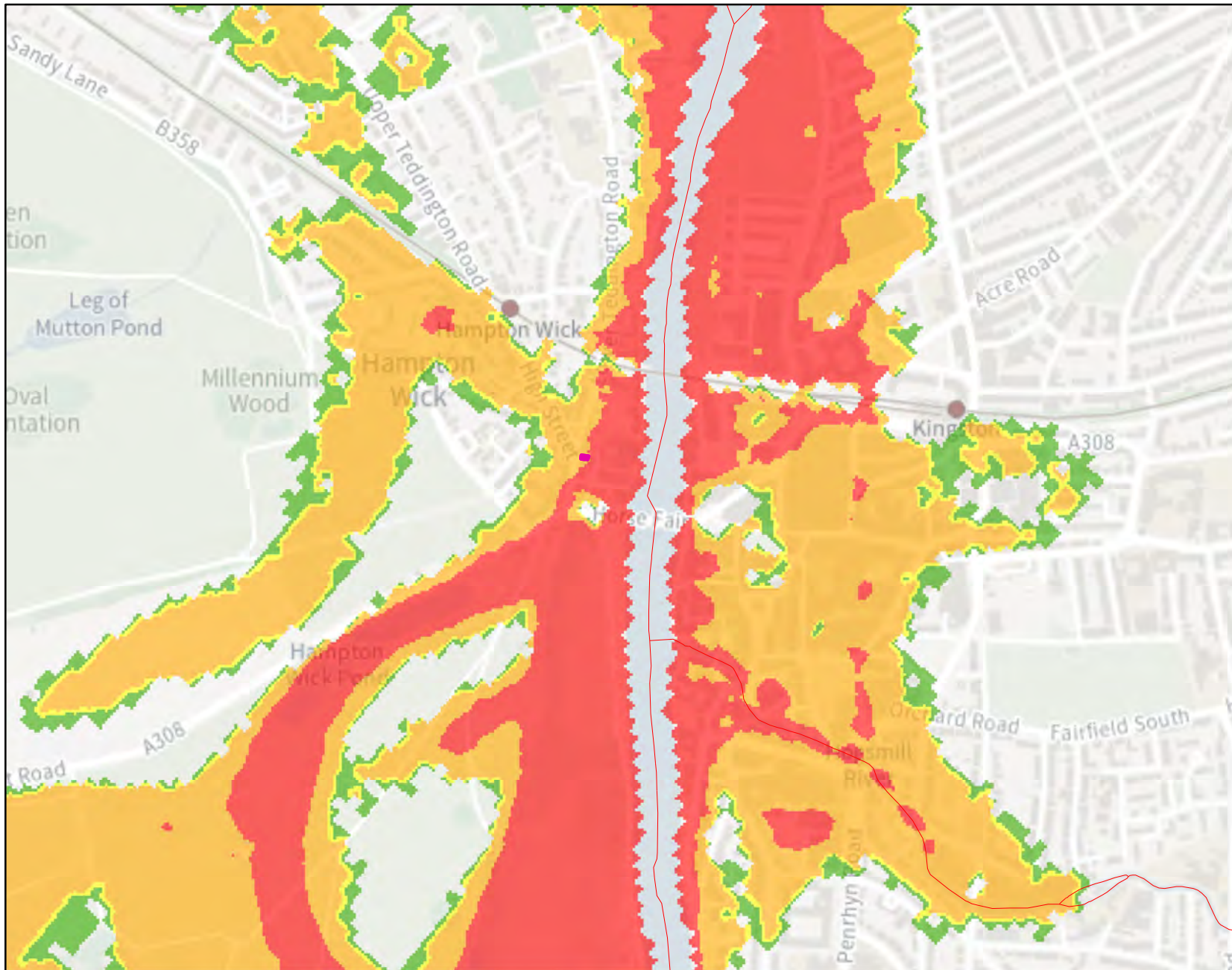
For hazard and debris factor we used HR Wallingford and Environment Agency (May 2008) supplementary note on flood hazard ratings and thresholds for development planning and control purpose. The following calculation is used:

$$HR = d \times (v+0.5) + DF$$

HR = flood hazard rating  
d = depth of flooding (m)  
v = velocity of floodwaters (m/sec)  
DF = debris factor calculated (0, 0.5, 1 depending on probability that debris will lead to a hazard)

# Hazard Map 1% + 81% CC AEP centred on High Street, KT1 4BY

Created on 14/06/2024 REF: THM362116



## Legend

- Site
- Statutory Main Rivers
- Low hazard
- Hazard to some
- Hazard to most
- Hazard to all

For hazard and debris factor we used HR Wallingford and Environment Agency (May 2008) supplementary note on flood hazard ratings and thresholds for development planning and control purpose. The following calculation is used:

$$HR = d \times (v+0.5) + DF$$

HR = flood hazard rating  
d = depth of flooding (m)  
v = velocity of floodwaters (m/sec)  
DF = debris factor calculated (0, 0.5, 1 depending on probability that debris will lead to a hazard)

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