

# Memo



**SUBJECT**  
London Borough of Croydon Level 2 SFRA Update

**TO**  
London Borough of Croydon

**DATE**  
14 March 2024

**OUR REF**

**DEPARTMENT**  
Flood Risk and Hydrology

**PROJECT NUMBER**  
10054792

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## Introduction

Arcadis Consulting (UK) Limited (Arcadis) were commissioned by Croydon Council to produce an assessment of a single new sites flood risk from all sources for an updated addendum of the published 2021 Level 1 Strategic Flood Risk Assessment (SFRA). The site is classified as mixed use (business and residential) with a retail ground floor.

Throughout the tables below the terminology Annual Exceedance Probability and 1 in X year events are used interchangeably to classify the risk of flooding. The surface water hazard mapping is informed by a Hazard Rating (HR). The HR denotes the degree of hazard a flood may have on individuals and is included in the risk to people equation which considers the number of people and vulnerabilities (area and people). The HR is a function of flood depth (m), velocity of floodwaters (m/s), a debris factor (0,0.5 or 1 depending on probability that debris will lead to a hazard) and a constant of 0.5 (n). The HR denotes four different degrees of flood hazard, as shown in Table 1 below.

Table 1: Hazard to people table taken from supplementary note on Flood Hazard ratings and thresholds.

Hazard Rating	Degree of Flood Hazard	Description
<0.75	Low	<b>Caution</b> – “Flood zone with shallow flowing water or deep standing water”
0.75 – 1.25	Moderate	<b>Dangerous for some (i.e. children)</b> - “Danger: Flood zone with deep or fast flowing water”
1.25 – 2.0	Significant	<b>Dangerous for most people</b> - “Danger: flood zone with deep fast flowing water”
>2.0	Extreme	<b>Dangerous for all</b> - “Extreme danger: flood zone with deep fast flowing water”

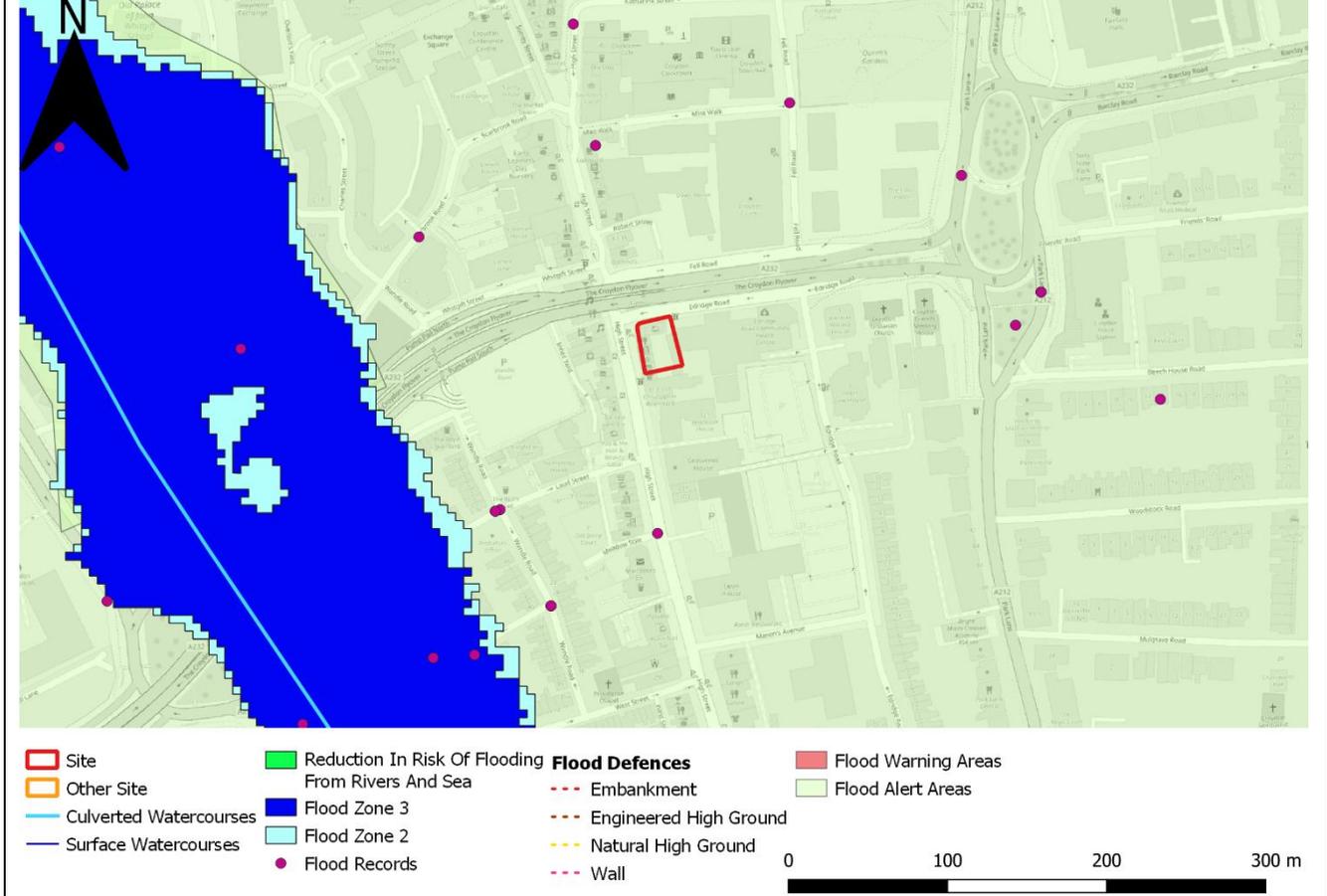
**Site Name: 103 - 111A High Street**

Site ID:	New5	Area (ha):	0.073
Proposed Use:	Business	Vulnerability Classification:	Less Vulnerable

**Flood Zones and Historic Flooding**

Flood Zone 1 (<0.1% AEP): 100%	Flood Zone 2 (<0.1% AEP): 0%	Flood Zone 3 (<0.1% AEP): 0%	Area Benefitting from Defences: 0%
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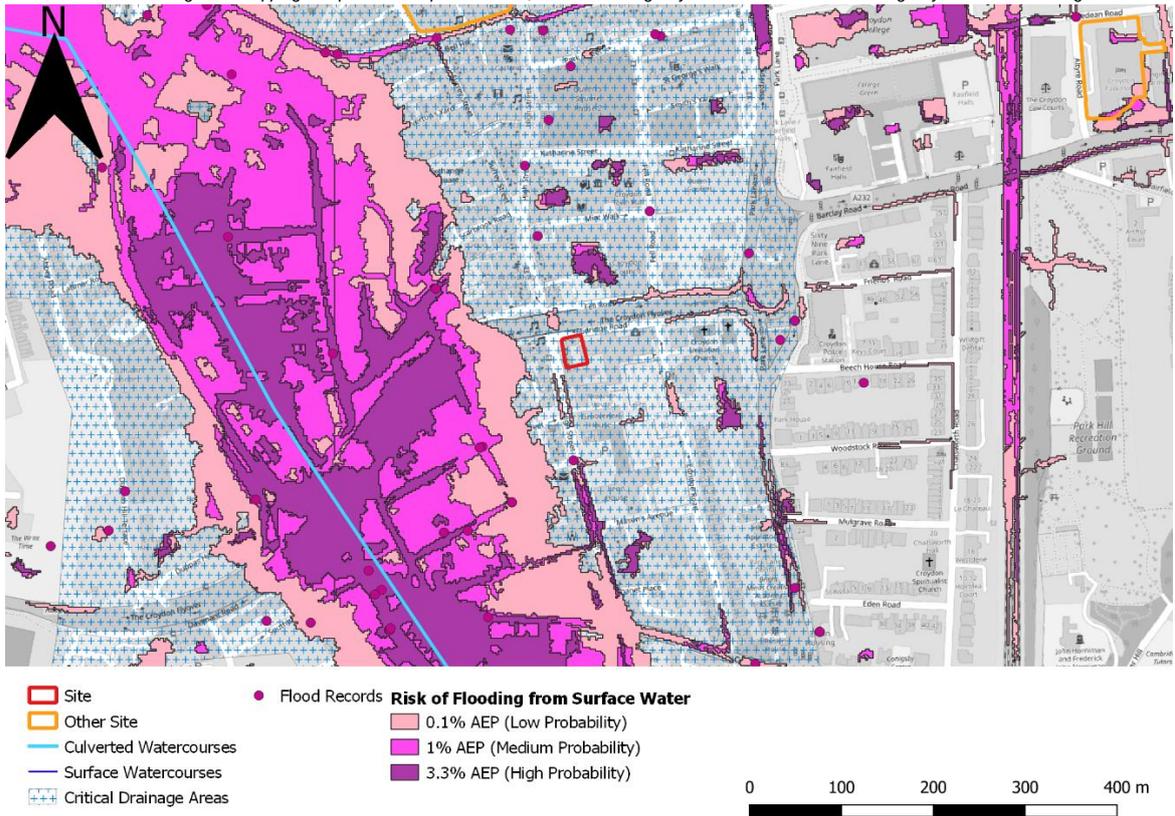


**Figure 1: Flood Zones, Flood Records and Flood Warning and Alert Areas**

Flood Warning Area	None. The site is located within the Kent, South London and East Sussex groundwater flooding in South East London flood alert area.
Flood Records within 500m of the site:	No records of flooding within the site boundary. An additional 76 instances of flooding located within 500m of the site. With 30 instances attributed to surface water flooding, 12 instances attributed to sewer flooding, eight instances of foul water flooding, four instances of blocked gullies, eight instances attributed to (and by) road flooding, one instance of groundwater flooding, eight instances of unknown flooding and 13 instances of unknown flooding.
<b>River Flooding</b>	
Please Note: the site is not at risk of river flooding and so no data is present.	
<b>Surface Water Flooding</b>	
Critical Drainage Area	Group8_042 – South & Central Croydon
Drainage Catchment	DC39

**Site Name: 103 - 111A High Street**

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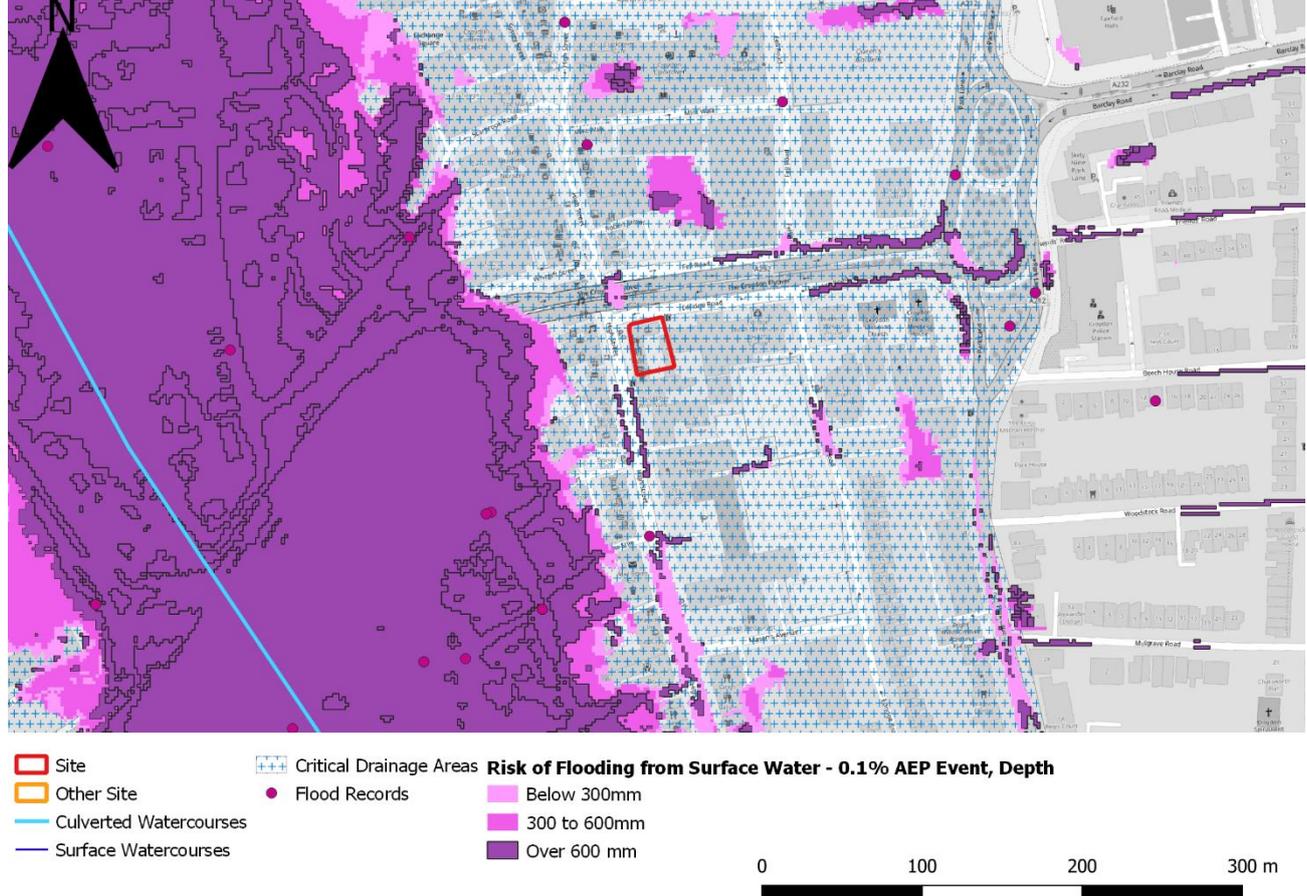
**Figure 2: Risk of Flooding from Surface Water (RoFSW) Flood Extents.**

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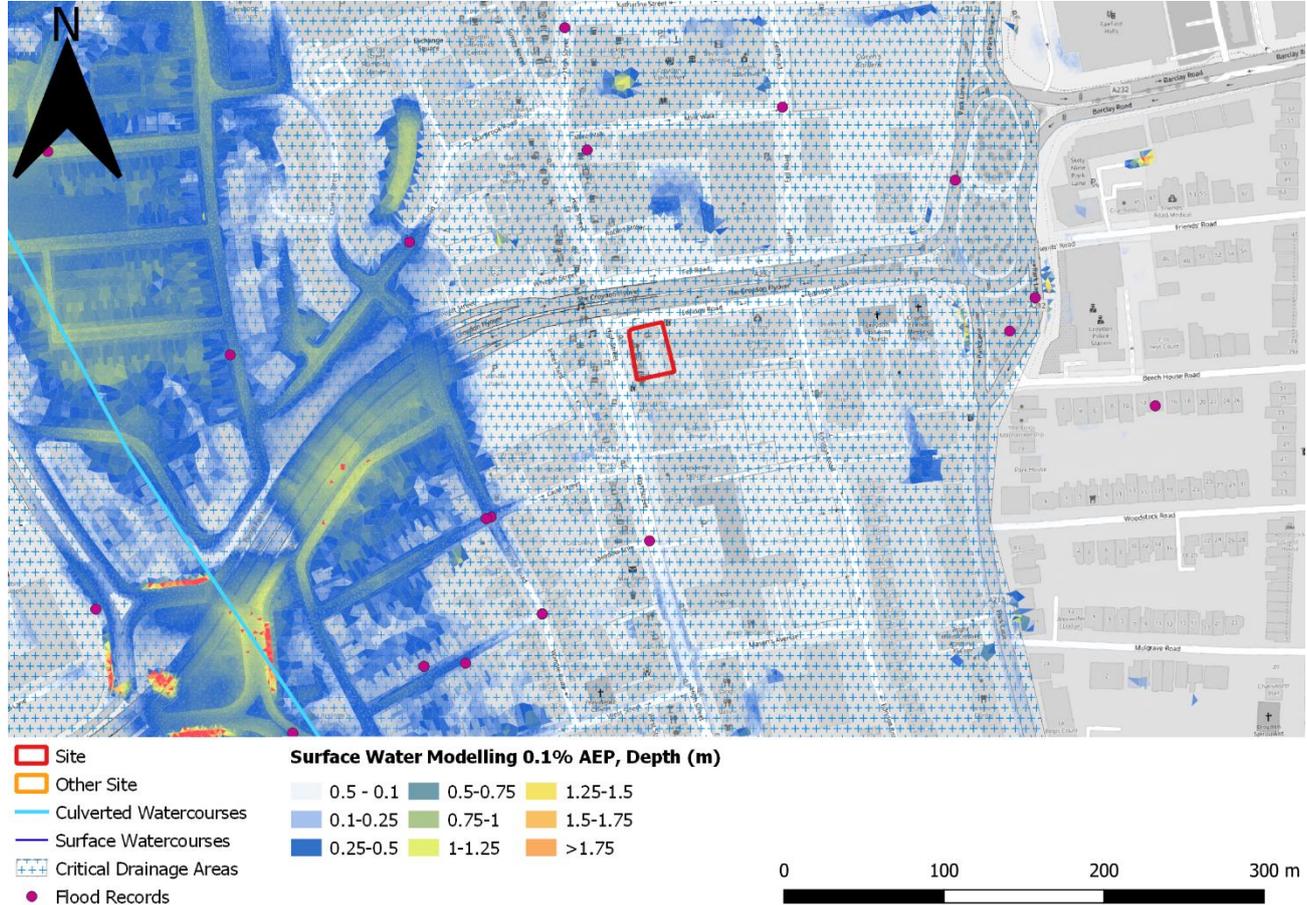
**Figure 3: Risk of Flooding from Surface Water (RoFSW) 1% AEP Flood Depth.**

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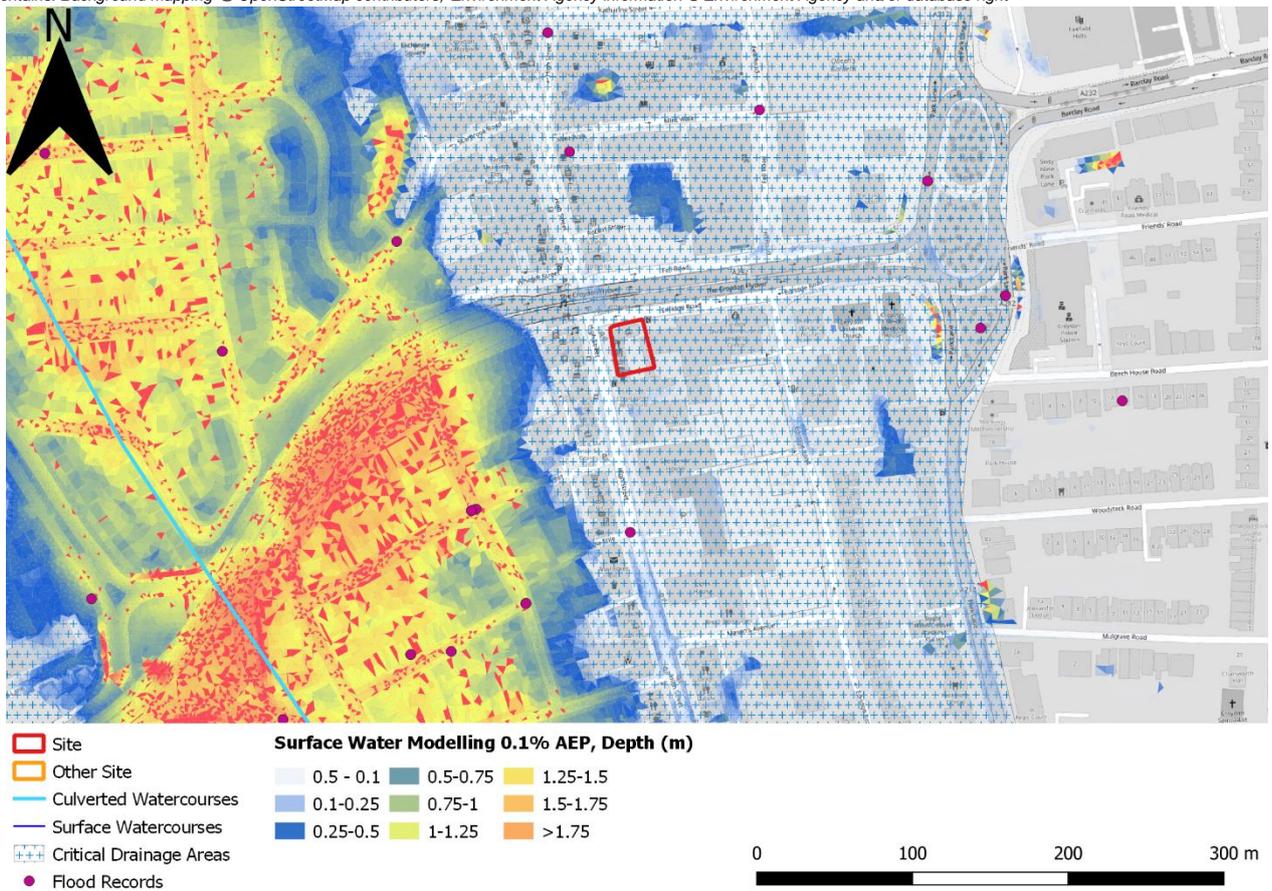
**Figure 4: Risk of Flooding from Surface Water (RoFSW) 0.1% AEP Flood Depth.**

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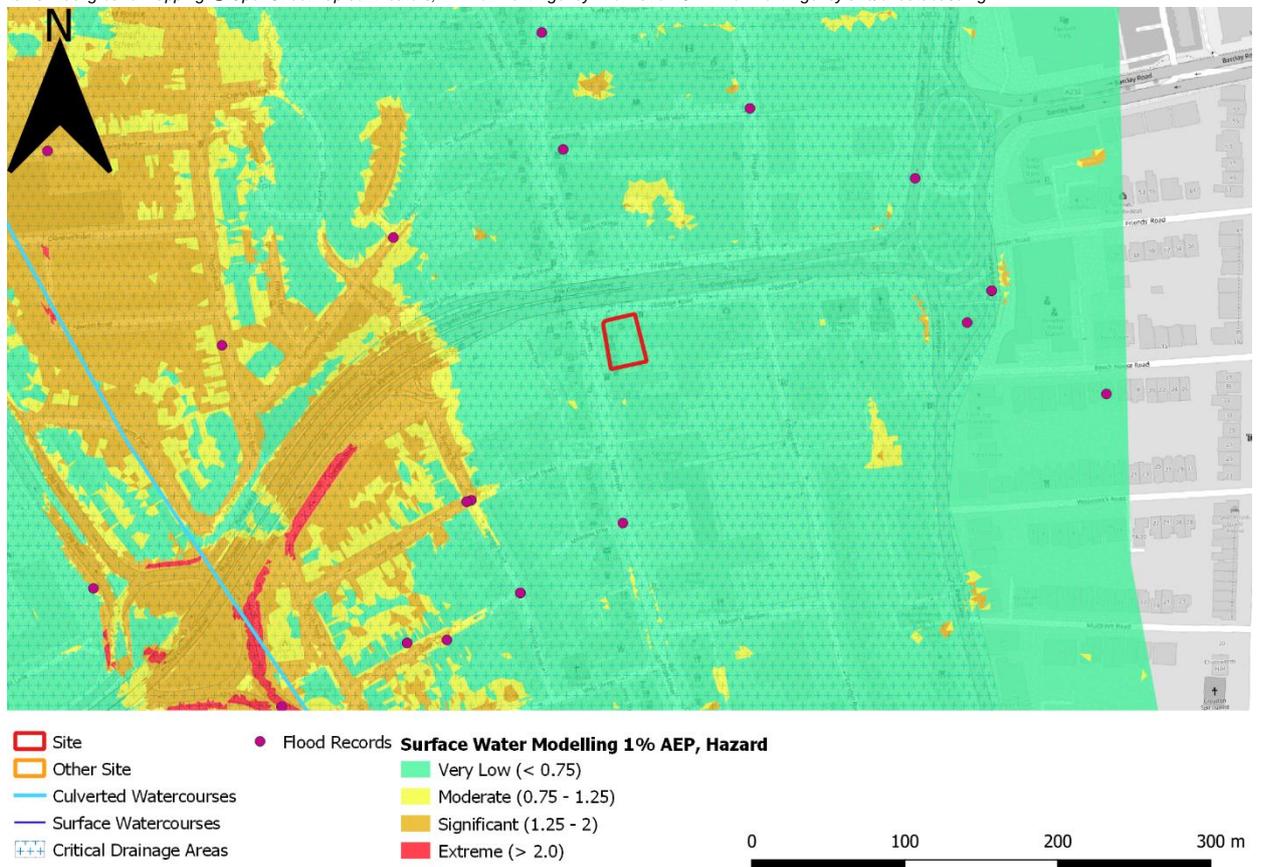
**Figure 5: Surface Water Modelling 1% AEP Flood Depth.**

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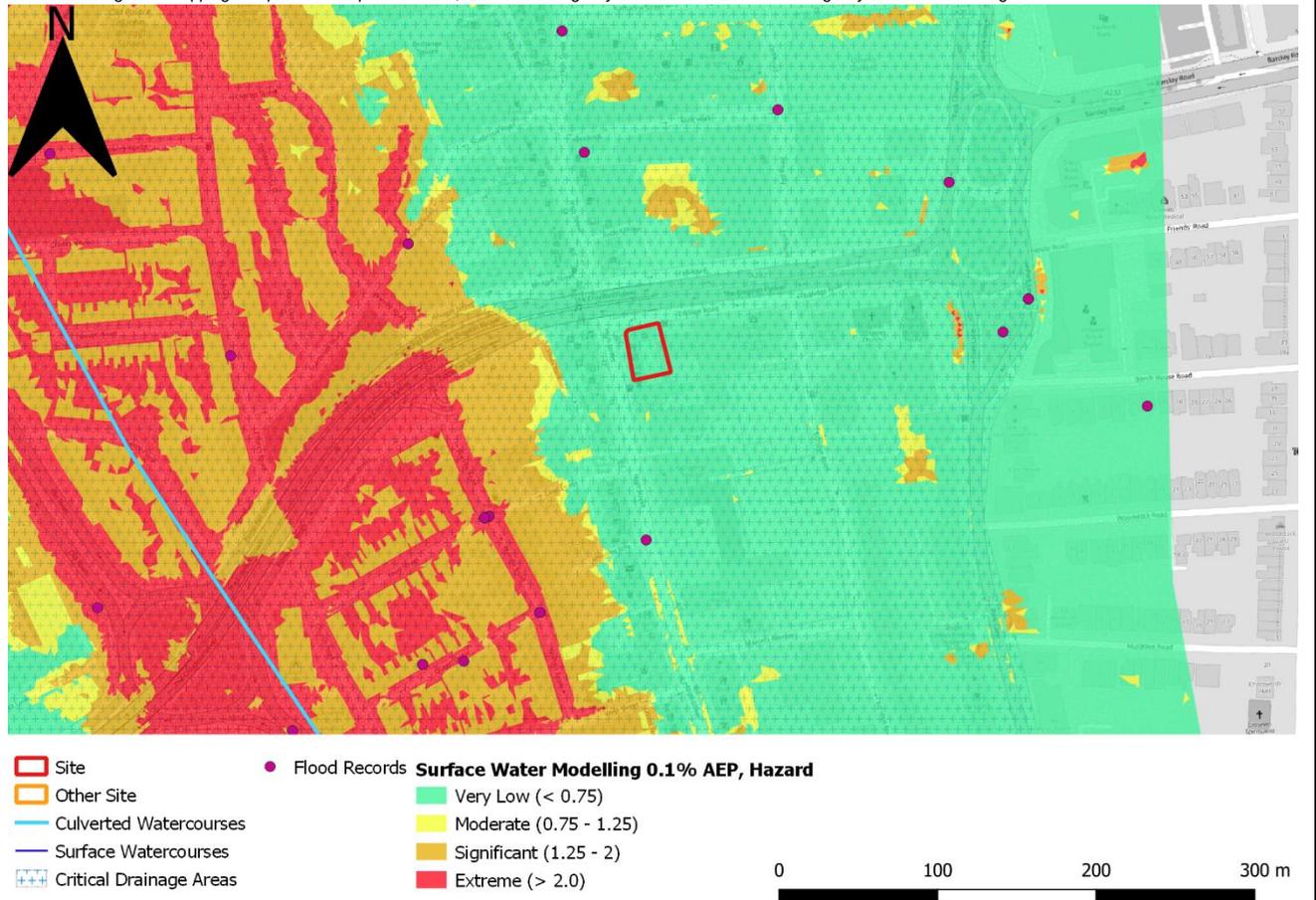
**Figure 6: Surface Water Modelling 0.1% AEP Flood Depth.**

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**Figure 7: Surface Water Modelling 1% AEP Flood Hazard**

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**Figure 8: Surface Water Modelling 0.1% AEP Flood Hazard**

**Groundwater Flooding**

Bedrock Geology	The Site consist of Thanet Formation – Sand	Superficial Geology	Hackney Gravel Member - Sand and gravel.
Increased Potential for Elevated Groundwater		Data not available	
Susceptibility to Groundwater Flooding (BGS)		Potential for groundwater flooding to occur at surface	

**Other Sources**

Risk of flooding from reservoirs	The EA Risk of Flooding from Reservoirs Map shows that the potential flood extent if large, embanked reservoirs were to fail and release the water they hold. The site is outside of the zone of flooding from this source.
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**Summary**

The site lies entirely (100%) within Flood Zone 1, which is classified with a low probability of river flooding. The site lies within the South & Central Croydon Critical Drainage Area. There are no records of flooding within the site boundary. There are 76 instances of flooding located along the boundary and within 500m of the site centroid. With 30 instances attributed to surface water flooding, 12 instances attributed to sewer flooding, eight instances of foul water flooding, four instances of block gullies, another eight instances attributed to (and by) road floodings (likely also blocked drains), one instance of groundwater flooding, 13 instances of unknown flooding of which 3 are considered severe. The nearest watercourse to the site is located 285m southwest of the site and is a culverted below surface watercourse.

Surface water modelling extents which included the 103 – 111A high Street site was available. The surface water modelling has a finer spatial resolution than the RoFSW mapping and so will be used alongside the RoFSW mapping to determine the risks of surface water flooding.

The RoFSW mapping shows that the site boundary is not at risk of surface water flooding. During the event, the site remains

unaffected by the high risk of flooding, which is classified as a 1 in 30 chance of annual occurrence. The closest areas affected to the site are located across several streets (Mainly A236 and nearby streets) located 100m west of site, and a small area near Croydon Council property located 60m north. The Medium risk, classified as a 1 in 100 chance of annual occurrence, increases the previous extent locations, but the site remains flood free. Areas at Low risk, classified as a 1 in 1000 chance of annual occurrence, are located at the same locations but with larger extents, in addition some patches of road flooding appear in High Street at a distance from site of approximately 15m.

The surface water modelling shows that the site boundary is not at widespread risk of flooding. Depths for the risk of surface water with a 1 in 100 annual chance of occurrence, range between 0. m and 0.65m along Wandle Street approximately 120m west of the site. The hazard category for low, moderate or high risk events is considered to be very low for the site and its surroundings.

Depths for the risk of surface water with a 1 in 1000 annual chance of occurrence, range between 0 m and 0.1m adjacent to the site.

#### **Site Specific Recommendations**

The site is draft allocated as being a primary shopping area within Croydon Metropolitan Centre. Given the location within Flood Zone 1, development is not subject to the application of the Exception Test. The site is not susceptible to flooding, eliminating the need for flood risk precautions within its boundaries. However, considering the potential for surface water accumulation in the surrounding area, steps should be taken to ensure the safety and longevity of the surrounding infrastructure, particularly in light of climate change. This includes focusing on the drainage systems of the adjacent streets, High Street and Edrige Road, to prevent an increase in flood risk elsewhere, where possible, to reduce overall flood risk. Accordingly, the following recommendations are made for these surrounding areas:

- Development options should consider methods to restrict surface water runoff rates, this could be through SuDS such as rainwater harvesting on buildings, green spaces, permeable car parks.
- This area is covered by the Environment Agency Flood Alert Area for Groundwater flooding in South East London and so the owner should sign up for the alerts.
- A proactive approach on the strategic planning that incorporates a regular biannual inspection of road gullies, ensuring the removal of any obstruction. This task could be efficiently executed by a dedicated team equipped with specialised machinery.