



123B Central Avenue London

Flood Risk Assessment

Job Number: 1088.1

| Date | Version | Notes/Amendments |
|-----------|---------|------------------------|
| June 2024 | 1 | Issued for Information |
| | | |
| | | |

| Contents | Page |
|--|------|
| Executive Summary | 2 |
| Introduction | 3 |
| Site Description and Location | 4 |
| Development Proposal | 5 |
| Flood Risk Assessment | 6 |
| Flood Risk from Watercourses | 6 |
| Flood Risk from Groundwater | 7 |
| Flood Risk from Surface Water and Overland Flows | 9 |
| Flood Risk from Reservoir and Infrastructure Failure | 11 |
| Flood Mitigation Measures | 13 |
| Conclusions | 14 |

| | |
|---|----|
| Figure 1. Site Location | 4 |
| Figure 2. Existing Site & Proposed Building (Hatched) | 5 |
| Figure 3. Environment Agency Flood Risk from Rivers or Sea Map (gov.uk, 2024) | 6 |
| Figure 4. EA/SFRA's Susceptibility to Groundwater Flooding Map (West London SFRA, 2024) | 7 |
| Figure 5. SFRA's Increased Potential for Elevated Groundwater Flooding Map (West London SFRA, 2024) | 8 |
| Figure 6. Environment Agency Flood Risk from Surface Water Map (gov.uk, 2024) | 9 |
| Figure 7. SFRA's Flood Risk from Surface Water Map (West London SFRA, 2024) | 10 |
| Figure 8. Environment Agency Flood Risk from Reservoirs Map (gov.uk, 2024) | 11 |
| Figure 9. SFRA's Historic Sewer Flooding (Thames Water, 2017) | 12 |

| Acronyms | |
|--------------|--|
| AOD | Above Ordnance Datum |
| CIRIA | Construction Industry Research and Information Association |
| EA | Environment Agency |
| FRA | Flood Risk Assessment |
| NPPF | National Planning Policy Framework |
| PPG | Planning Practice Guidance |
| SFRA | Strategic Flood Risk Assessment |

Executive Summary

Flume Consulting Engineers have been tasked with conducting a Flood Risk Assessment for the proposed development at 123B Central Avenue, Hayes, UB3 2BS. The site, a two-storey end of terrace dwelling with a garden and garage, fronts Central Avenue and is located in Flood Zone 1, indicating a low risk of flooding from rivers and seas. The development involves partial demolition of an existing extension to create a new attached dwelling, maintaining current ground floor levels and existing vehicular and pedestrian access, without increasing the site's drained areas.

Flood Risk Evaluation

- **Flood Risk from Watercourses:** The site is in Flood Zone 1, with less than 0.1% annual probability of river flooding. There are no restrictions on developments in this zone provided they do not increase flood risk elsewhere.
- **Flood Risk from Groundwater:** The area shows a medium risk of groundwater flooding (25-50%). However, since no basements are proposed, the risk of groundwater flooding at ground level is considered low.
- **Flood Risk from Surface Water and Overland Flows:** The site's surface water flood risk varies from very low to medium. Mitigation measures such as permeable paving, SuDS features, and grading external ground levels away from the building will be implemented to manage this risk. The overall risk of surface water flooding is considered low.
- **Flood Risk from Reservoir and Infrastructure Failure:** The risk of reservoir flooding is extremely low, and there have been no recorded incidents of sewer flooding in the postcode area, indicating a low risk from these sources.

Flood Mitigation Measures

Permeable paving, SuDS features, and appropriate grading of external ground levels will be integrated to minimise stormwater ingress. The Finished Floor Level (FFL) of the new building will match the existing side extension levels. Additional flood resilience measures will include damp proof membranes and routine maintenance of drainage systems.

Conclusions

The site is in Flood Zone 1 with a very low risk of river or sea flooding. The proposed development will not increase impermeable areas or surface water run-off, thus not elevating flood risk. The FRA confirms that the proposed development meets the flood risk requirements of the NPPF and its technical guidance, ensuring an acceptable level of flood risk management.

Introduction

Flume Consulting Engineers have been appointed to undertake a Flood Risk Assessment (FRA) for the proposed development at 123B Central Avenue, Hayes, UB3 2BS.

This FRA has been carried out in accordance with the National Planning Policy Framework (NPPF) and the Planning Practice Guidance 'Flood Risk and Coastal Change' (PPG). This FRA also incorporates advice and guidance from the Environment Agency (EA), the Strategic Flood Risk Assessment (SFRA) produced by the London Borough of Hillingdon (2008) and CIRIA documents.

The EA's indicative floodplain map shows that the site is located in Flood Zone 1. This assessment will therefore focus on the flood risk to the site from surface water, as well as from other sources.

Site Description and Location

The existing property comprises a two storey end of terrace dwelling which sits on a large corner plot with garden to the front, side and rear.

The existing dwelling fronts onto Central Avenue, occupied entirely by similar dwelling types. A single garage abuts the main building, with an existing vehicular entrance.

The site postcode is UB3 2BS and the OS grid reference is TQ 10096 80749.



FIGURE 1. SITE LOCATION

Development Proposal

The development proposals involve the partial demolition of the existing side extension and the creation of a new attached dwelling, designated as 123B. This includes associated bin storage, bicycle parking, and private amenity space. Notably, the proposed building will not increase the drained areas of the redevelopment.

The proposed building will be finished throughout to the same floor level as the existing ground floor, and will be accessed via main entrance. Vehicular access will be maintained and remain unchanged from the existing case (via Central Avenue). Pedestrian street access is also unaffected.

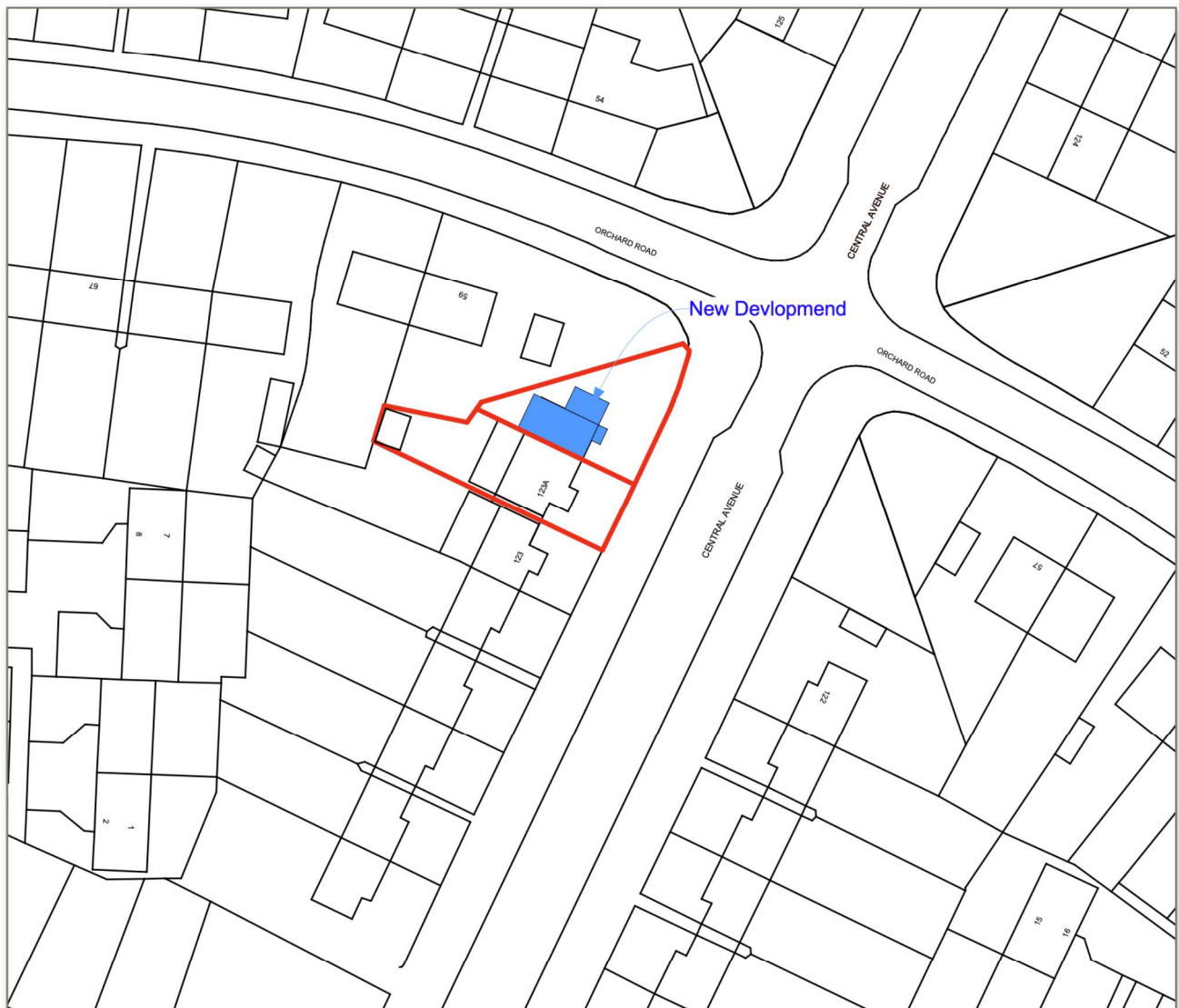


FIGURE 2. EXISTING SITE & PROPOSED BUILDING (HATCHED)

Flood Risk Assessment

Flood Risk from Watercourses

The EA's indicative floodplain map shows that the site is located in Flood Zone 1 and is not at risk of flooding from watercourses (Figure 3). Land in this flood zone is assessed as having annual probability of river flooding less than 0.1%. Developments in this flood zone do not have any restrictions, provided they do not increase the risk of flooding elsewhere.

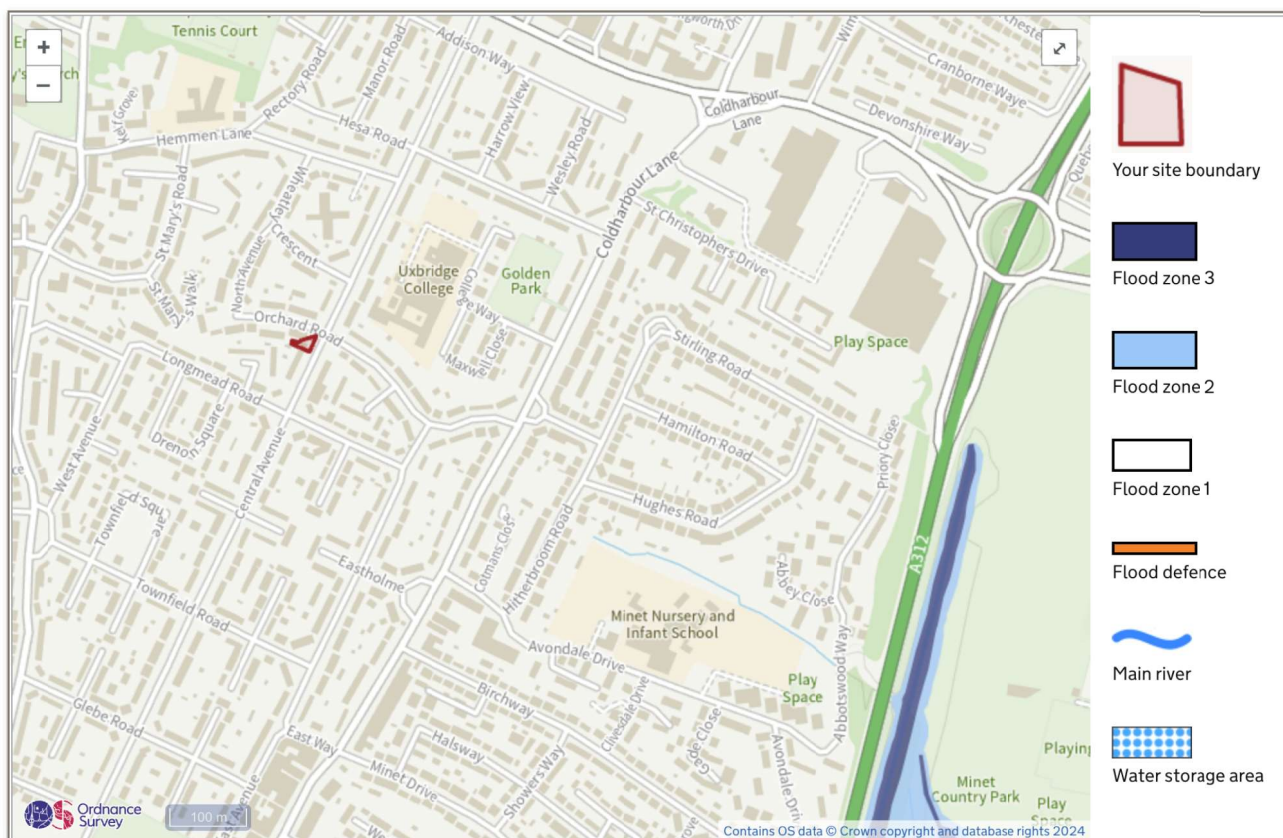


FIGURE 3. ENVIRONMENT AGENCY FLOOD RISK FROM RIVERS OR SEA MAP (GOV.UK, 2024)

Flood Risk from Groundwater

Flooding from groundwater typically occurs following prolonged periods of wet weather within low laying areas underlain by permeable aquifers. When aquifers are fully saturated, flooding at surface level can occur from the sub-surface strata.

The susceptibility or vulnerability of the particular area, is highlighted on the *susceptibility to groundwater map* (Figure 4), which indicates a medium risk (25-50%) of groundwater flooding in the area. It should be highlighted that these maps consider very large areas of the underlying geology, and ignore subtle shifts in local geology and ground levels.

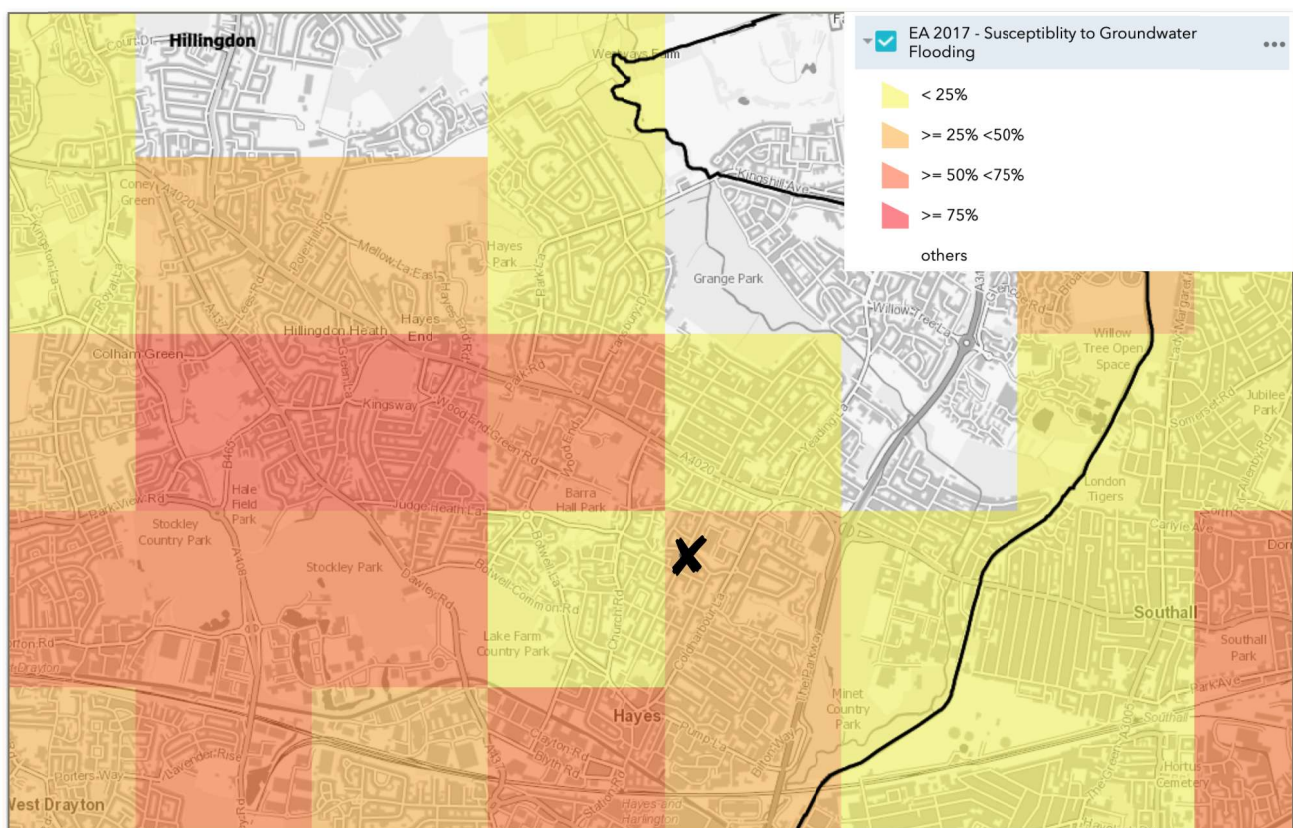


FIGURE 4. EA/SFRA'S SUSCEPTIBILITY TO GROUNDWATER FLOODING MAP (WEST LONDON SFRA, 2024)



FIGURE 5. SFRA'S INCREASED POTENTIAL FOR ELEVATED GROUNDWATER FLOODING MAP (WEST LONDON SFRA, 2024)

According to the SFRA's *potential for elevated groundwater flooding map*, Figure 5, the development is not in an area which is subject to elevated groundwater flooding.

Groundwater flooding is an important consideration for subterranean basements. However, no basements are proposed in this instance. Therefore, the likelihood of groundwater flooding at ground level is considered to be low risk.

Flood Risk from Surface Water and Overland Flows

Surface water flooding occurs when intense rainfall is unable to infiltrate into the ground or overwhelms the drainage system. This surface water runs across the surface of the ground causing flooding. The Environment Agency's Surface Water Flood Risk Map can also reflect surface water flooding along the line of small ordinary watercourses. Overland flows can also be generated by burst water mains, failed dams and any failure in a system storing or transferring water.

The EA's indicative Surface Water Flooding Map, Figure 6, shows that the site varies between *Very low* to *Medium risk* of surface water flooding.

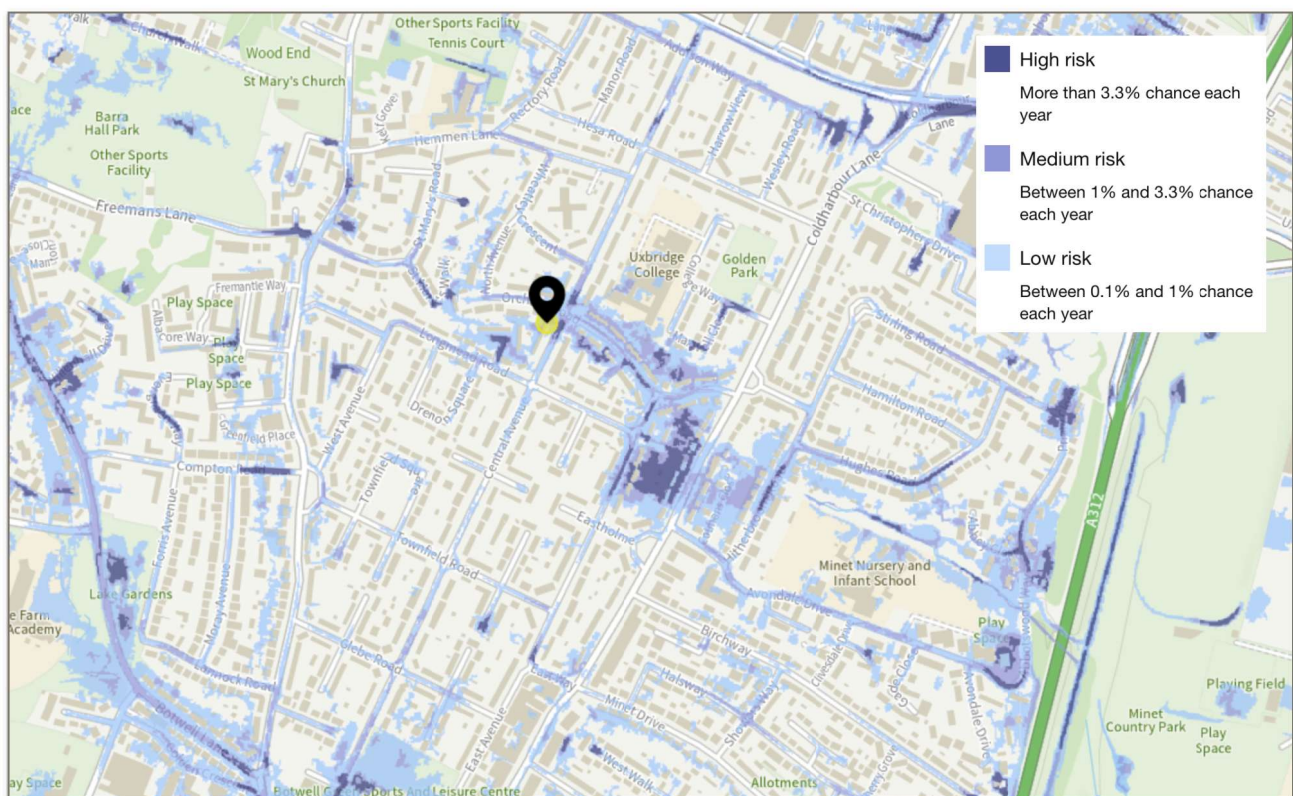


FIGURE 6. ENVIRONMENT AGENCY FLOOD RISK FROM SURFACE WATER MAP (GOV.UK, 2024)

The existing building resides in an area of *Very Low* surface water flood risk. *Very Low* risk means that each year this area has a chance of flooding of less than 0.1% Annual Exceedance Period (AEP).



FIGURE 7. SFRA'S FLOOD RISK FROM SURFACE WATER MAP (WEST LONDON SFRA, 2024)

Part of the development site is at risk of flooding during a 1 in 100-year (1%) storm event. To mitigate this risk, permeable paving and other SuDS features should be incorporated into the design. External ground levels immediately outside the building will be graded to fall away from the thresholds, minimising stormwater ingress. This can be achieved by either lowering the external ground levels below the internal floor levels or incorporating a channel drainage system at the building entrance to positively drain overland flows.

Flooding from surface water is difficult to predict, or indeed model accurately, as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.

The additional surface water drainage provisions will be utilised in the form of channel drainage to all thresholds and slopes away from the building from all hardstanding areas. Therefore, the risk from surface water flooding is considered low.

Flood Risk from Reservoir and Infrastructure Failure

The EA's information states that reservoir flooding is extremely unlikely to happen and there has been no loss of life in the UK from reservoir flooding since 1925. The Reservoir Act of 1975 ensures that reservoirs are inspected regularly and essential safety work is carried out.

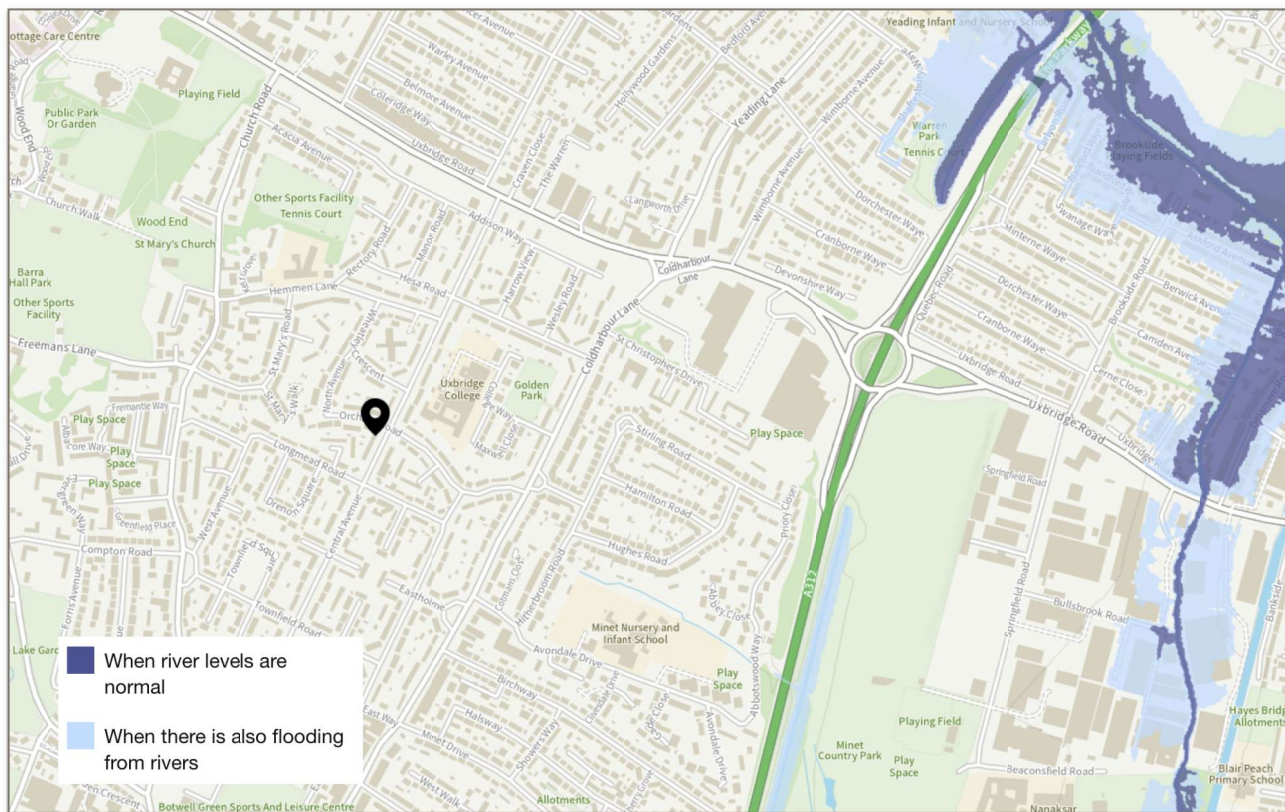


FIGURE 8. ENVIRONMENT AGENCY FLOOD RISK FROM RESERVOIRS MAP (GOV.UK, 2024)

Figure 8 shows that the development is not at risk of reservoir flooding.

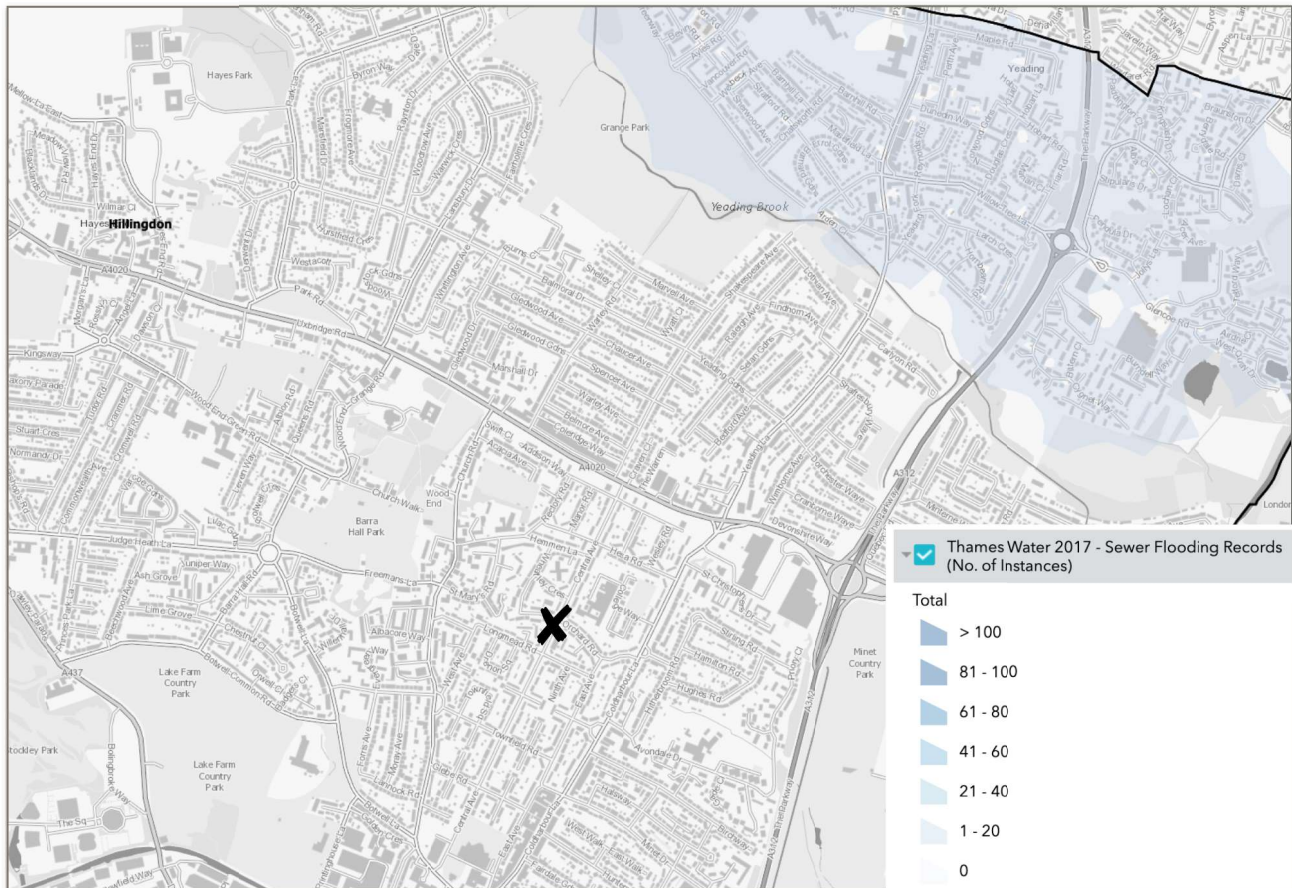


FIGURE 9. SFRA'S HISTORIC SEWER FLOODING (THAMES WATER, 2017)

The Thames Water historical sewer flooding dataset provides details on the number of reported sewer flood incidents within postcode areas. The site is located in postcode UB3. Figure 9 shows the site lays within an administrative boundary with between 0 reported sewer flooding events. As such, the risk of flooding from sewer sources could be considered low.

Flood Mitigation Measures

As part of the works, permeable paving and other SuDS features should be incorporated into the design. External ground levels immediately outside the building will be graded to fall away from the thresholds, minimising stormwater ingress. This can be achieved by either lowering the external ground levels below the internal floor levels or by incorporating a channel drainage system at the building entrance to positively drain overland flows.

The Finished Floor Level (FFL) of the new building's ground floor is proposed to remain the same as the existing ground floor FFLs. This aligns with the EA's Standing Advice, which states that floor levels within the proposed development should be set no lower than existing levels.

It is recommended that the building include flood resilience measures in the design, in accordance with the SFRA. To further reinforce the flood resilience of the building, any new construction works at ground level should include an appropriate damp proof membrane. Additionally, all drainage systems should be routinely maintained to reduce the risk of blockage and surface water flooding.

Conclusions

The site resides in Flood Zone 1 where there is less than 1 in 1000 annual probability of river or sea flooding (<0.1%). Developments in this flood zone have no restrictions other than ensuring surface water drainage proposals do not increase the flood risk on site and the surrounding areas.

The proposed development will not increase the impermeable areas on the site. It will therefore not increase the flood risk from surface water, as there will be no increase in the surface water run-off rate or volumes.

The FRA has further demonstrated that the proposed building has an acceptable flood risk within the terms and requirements of NPPF and accompanying technical guidance.