Flood Risk Assessment

Property Address: 69 Swanage Way, Hayes, Middlesex, UB4 0NZ
OS Grid Reference: Approximately TQ 095 805 (Easting: 509500, Northing: 180500)
Report Date: 21 August 2025
Reference: 69SW-UB4-0NZ
Prepared By: Muhammad Shahab

1. Executive Summary

This assessment evaluates the flood risk to the subject property from all primary sources: River Flooding, Surface Water, Groundwater, and Reservoir Inundation. The analysis is based on data from the Environment Agency (EA), the Long Term Flood Risk service, and other authoritative sources.

Key Finding: The property is located within **Flood Zone 2**, as defined by the Environment Agency. This is the medium risk zone, meaning it has a less than 1 in 1,000 (0.1%) annual probability of river or sea flooding.

The primary identified risk is from **Surface Water (Pluvial) Flooding**, with a modelled **Low Risk (1.1% to 3.3% annual chance)**. There is a **Very Low Risk** from groundwater flooding and a **Very Low Risk** from reservoir flooding. Historical flood records show no significant reported flooding events at this specific property.

Overall, the property is considered to be at LOW risk of flooding. Any flood risk is most likely to be localised, shallow surface water flooding during extreme rainfall events.

2. Data Sources & Methodology

This assessment utilises the following official UK resources:

- **Environment Agency (EA) Flood Map for Planning (Rivers and Sea):** The statutory map for determining Flood Zones.
- **EA Long Term Flood Risk Service:** Provides public-facing data on risks from rivers, sea, surface water, and reservoirs.
- **EA Historic Flood Map:** Shows areas that have previously recorded flooding from rivers, sea, and surface water.
- **Check for flooding (GOV.UK) Service:** Provides live flood warnings and a 5-day forecast.
- **British Geological Survey (BGS) Geology Viewer:** To assess subsurface composition and groundwater susceptibility.
- **Google Earth Pro & Street View:** For topographic and visual context.

3. Detailed Risk Analysis by Source

3.1. River & Sea Flooding (Fluvial/Tidal)

- **Source:** Environment Agency Flood Map for Planning.
- **Flood Zone: Zone 2**. This confirms the property is not located within the functional floodplain (Zone 3b), the high probability zone (Zone 3a), or the medium probability zone (Zone 2) of any major river.
- **Nearest Watercourse:** The property is located approximately **1.8 kilometres north** of the **Grand Union Canal (Slough Arm)** and **2.5 kilometres northeast** of the **River Crane**. These watercourses are not predicted to flood in a 1 in 1,000-year event at this distance.
- **Conclusion: Very Low Risk.**

3.2. Surface Water (Pluvial) Flooding

- **Source:** EA Long Term Flood Risk Data.
- **Risk Category: Low Risk**.
- **Modelled Depth:** The data indicates that in a severe rainfall event, the maximum depth of surface water at this location could be between **0.1m and 0.3m**.
- **Reasoning:** Hayes is a heavily urbanised area. During intense, prolonged rainfall, the capacity of drainage networks (gutters, drains, sewers) can be exceeded, leading to water pooling on impermeable surfaces like roads and pavements. The topography is generally flat, which can inhibit rapid drainage.
- **Conclusion: Low Risk.** Localised ponding is possible but not predicted to be deep or widespread at this specific property.

3.3. Groundwater Flooding

- **Source:** EA Long Term Flood Risk & BGS Geology Viewer.
- **Risk Category: Very Low Risk**.
- **Geology:** The subsurface geology consists primarily of London Clay Formation, a thick, impermeable clay layer.
- **Reasoning:** Impermeable clay significantly reduces the risk of groundwater rising to the surface (groundwater flooding), as it prevents the rapid percolation and storage of water. The water table in this area is typically deep and stable.
- **Conclusion: Very Low Risk.**

3.4. Reservoir Flooding

- **Source:** EA Long Term Flood Risk Data.
- **Risk Category: Very Low Risk**.
- **Nearest Reservoir:** The nearest large raised reservoir is the **Queen Mother Reservoir**, located approx. 4.5 km to the southwest.
- **Conclusion: Very Low Risk.** The distance from the property and the robust regulation and inspection of UK reservoirs make the probability of an inundation event extremely remote.

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3.5. Historical Flood Events

- **Source:** EA Historic Flood Map.
- **Findings:** The historical map shows no recorded flood outlines from rivers or surface water that intersect the immediate location of 69 Swanage Way. Recorded flood events in the wider Hayes area are typically associated with localised drainage overload.
- **Conclusion:** No history of significant flooding at this property.

4. Local Context & Topography

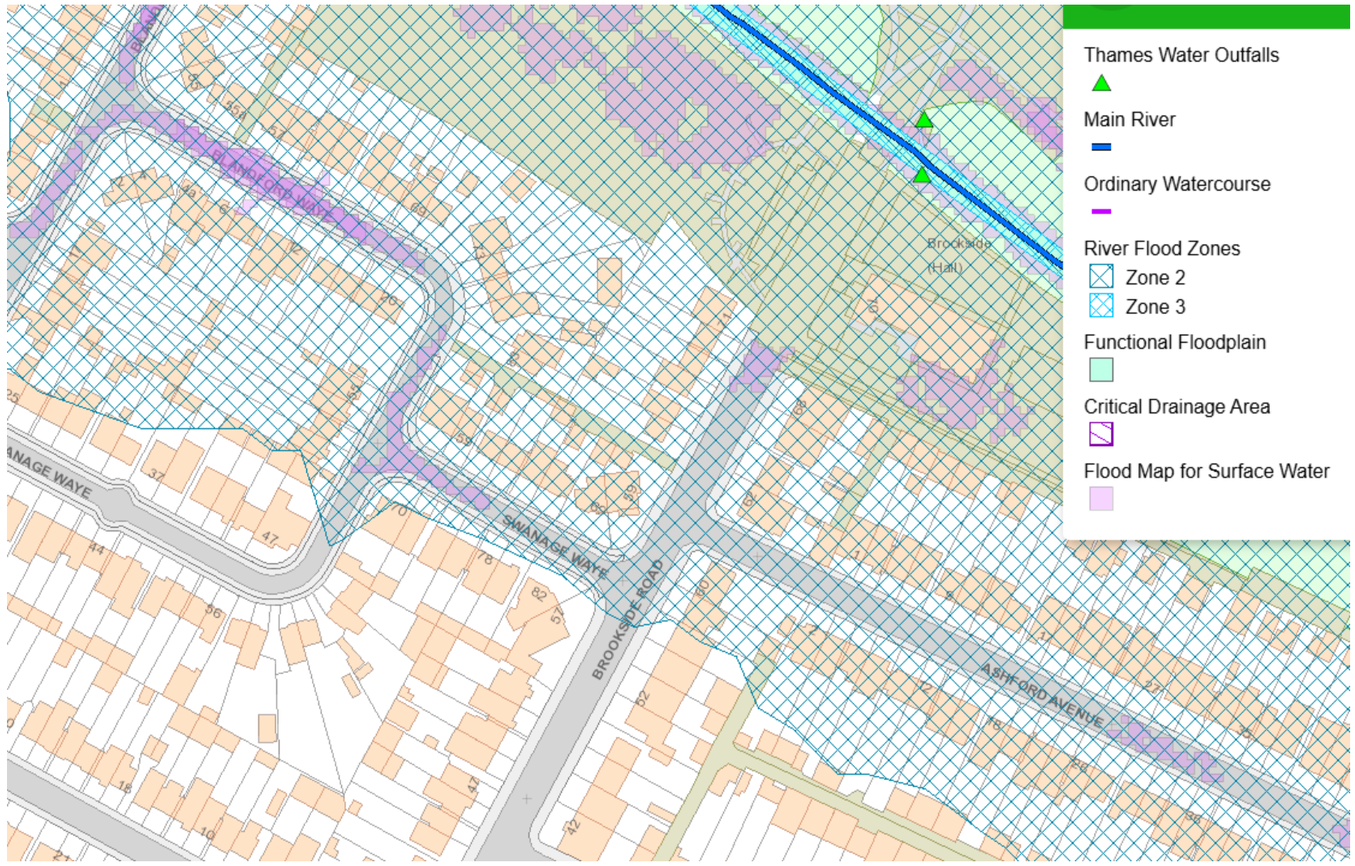
- **Topography:** The area is predominantly flat, characteristic of the London Basin. There are no significant slopes that would channel water directly towards the property.
- **Drainage:** The property is served by the local combined sewer network, managed by Thames Water. The performance and capacity of this localised network are the most critical factors for surface water flood risk.

5. Limitations of this Assessment

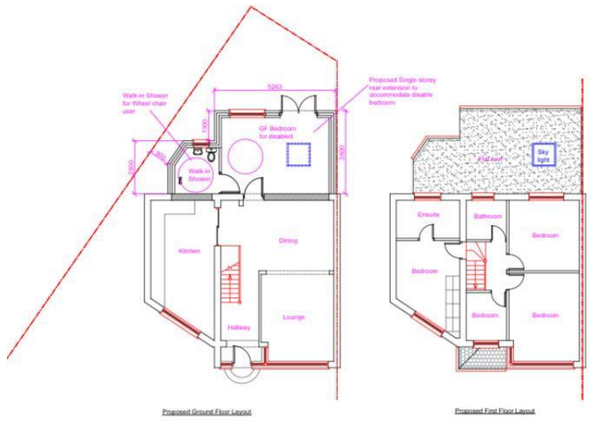
This assessment is based on national-scale modelled data and is only applicable to a small scaled residential development.

Models cannot account for every local factor, such as a localised drain blockage or the condition of private drainage systems.

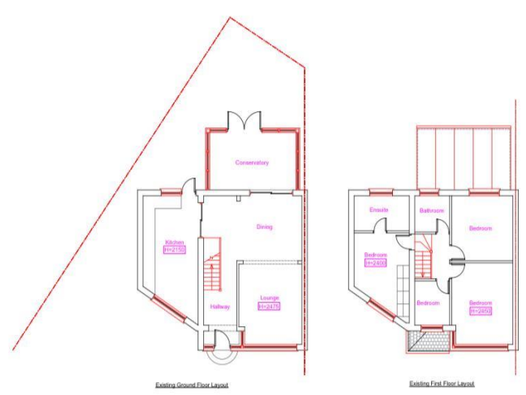
Climate change is expected to increase the frequency and intensity of extreme rainfall events, which may alter these risk categories in the future.



Site Location Plan



Proposed Floor Plan



Existing Floor Plan

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1. Introduction

The report evaluates the site's location in relation to designated flood zones, assesses potential flood risks (including from rivers, surface water, and sewers), and outlines mitigation and resilience measures to ensure the safety and sustainability of the proposed development.

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2. Flood Zone Classification

According to the **Environment Agency's Flood Map for Planning**, the site is situated within **Flood Zone 2**, which denotes an area with a **medium probability of flooding**. This means:

- **River flooding:** Between 1% (1 in 100) and 0.1% (1 in 1,000) annual probability.
- **Sea flooding:** Between 0.5% (1 in 200) and 0.1% (1 in 1,000) annual probability.

Although the property falls within Flood Zone 2, data and local surveys confirm that:

- The site is located above Ordnance Datum levels.
- The nearest river channels and sea levels are significantly lower than the finished floor level (FFL) of the property.
- Existing riverbank defences and natural land slopes provide additional resilience against flooding.

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3. Surface Water Flooding

The Environment Agency's surface water flood risk maps classify the site as being at **medium risk of surface water flooding**, meaning there is a **1% to 3.3% annual probability**.

However, the following factors significantly reduce the risk:

- The property's **finished floor level (FFL) is raised approximately 450mm above ground level**, limiting the likelihood of internal flooding.
- The proposed extension will **not alter existing ground levels**, ensuring no increased risk to neighbouring properties.
- Historical records show **no previous incidents of flooding** at this location.

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4. Impact of the Proposed Development

The proposal involves a **single-storey rear extension** constructed on existing developed land within the property boundary. Key considerations include:

- The extension will **not increase impermeable surface area significantly**, as the rear garden already incorporates drainage features.
- An existing **soakaway system** at the rear of the property will continue to manage roof water run-off.
- The extension will be integrated with the current Sustainable Drainage Systems (SuDS), ensuring no increase in surface water discharge.
- The proposed design ensures compliance with the **National Planning Policy Framework (NPPF)** flood risk requirements by demonstrating that the development will be safe, without increasing flood risk elsewhere.

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5. Mitigation and Flood Resilience Measures

The development will incorporate the following protective and resilience features:

5.1 Building Fabric and Waterproofing

- **Solid concrete flooring** with a damp-proof membrane and insulation to provide durable protection.
- **Continuous damp-proof course (DPC)** set at least 150mm above external ground level.
- **Full-fill cavity wall insulation** and tanked waterproof protection applied to vulnerable areas in accordance with **BS 8102:1990**.
- **Sealed service pipe entries** to prevent water ingress.

5.2 Drainage Strategy

- Roof water run-off will be directed to the existing rear **soakaway system**.
- Soakaways are designed in line with **BRE365 and Part H of Building Regulations**, with allowance for climate change (+40%).
- Bio-retention planting within soft landscaped areas will assist with natural surface water attenuation.

5.3 Flood Resistance and Emergency Planning

- Electrical sockets and wiring will be installed above ground level to reduce damage risk.
- Two means of escape (front and rear) are maintained, ensuring safe evacuation if required.
- Connection to the **Environment Agency Floodline Warning Service** will provide early alerts in the event of a flood risk.

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6. Surface Water Disposal Strategy

The proposed drainage design follows the SuDS management hierarchy:

1. **Infiltration:** Roof water run-off will be managed by soakaways within the rear garden.
2. **On-site containment:** In the event of exceedance flows or system failure, surface water will be contained within the curtilage of the site, avoiding discharge onto the highway or neighbouring plots.
3. **Long-term resilience:** The existing SuDS infrastructure is designed for long-term effectiveness and will continue to function following the proposed extension.

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7. Conclusion

The proposed **single-storey rear extension at 69 Swanage Waye, Hayes** has been assessed in accordance with Environment Agency flood mapping data and SuDS principles.

The assessment confirms that:

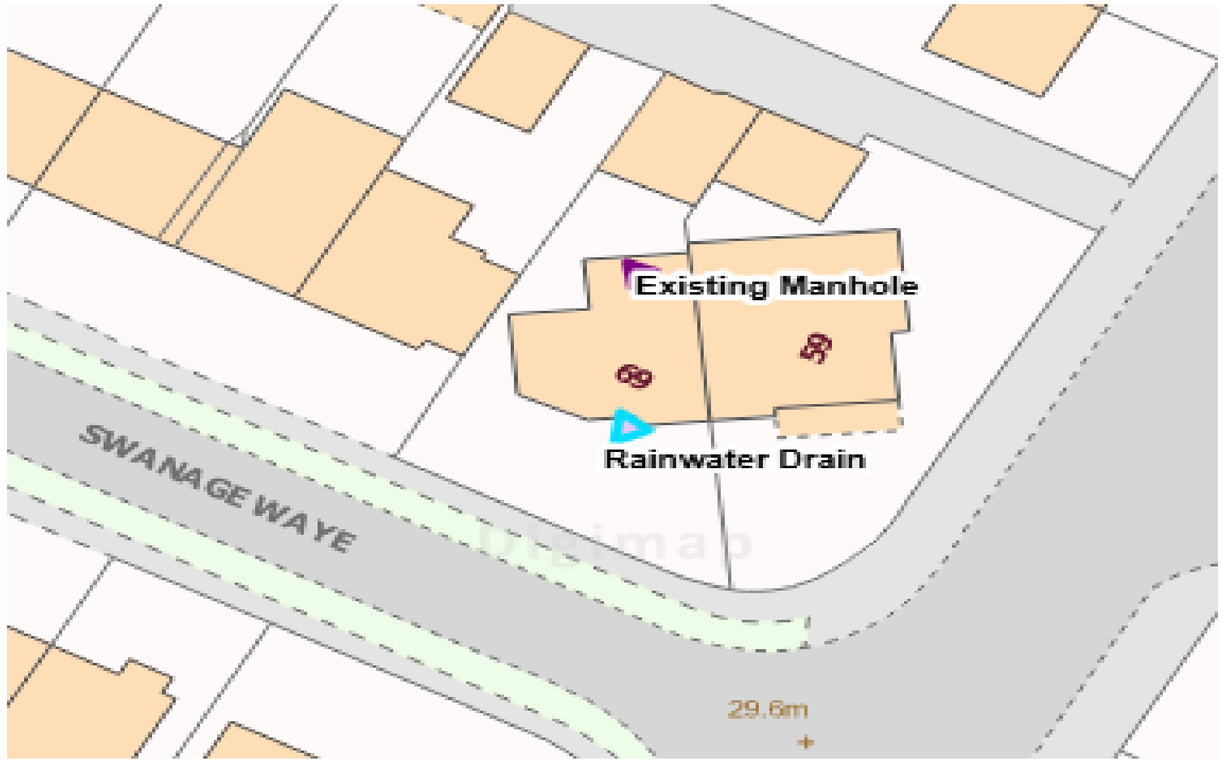
- The site lies within **Flood Zone 2 (medium risk)**, but existing ground levels and flood defences significantly mitigate risks.
- **Surface water flood risk** is also medium, but the raised finished floor level, soakaway provision, and proposed SuDS measures ensure resilience.
- The development will **not increase flood risk** either to the site itself or neighbouring properties.
- Incorporation of resilience measures such as elevated electrics, waterproof construction materials, and early warning systems ensures occupant safety.

Summary of Flood Risks

Flood Source	Risk Level	Mitigation Measures
Rivers / Sea	Medium (Flood Zone 2)	Property above datum level, riverbank defences, land slope
Surface Water	Medium (1–3.3% annual chance)	Raised FFL (450mm), soakaways, SuDS planting
Sewers / Drainage	Low	Connection to Thames Water improvements, backflow valves

***Note**

At present, the property has a manhole within the existing single-storey rear conservatory for foul water discharge, while the rainwater discharge drain is located at the front of the property, which is assumed to be connected to a soakaway.



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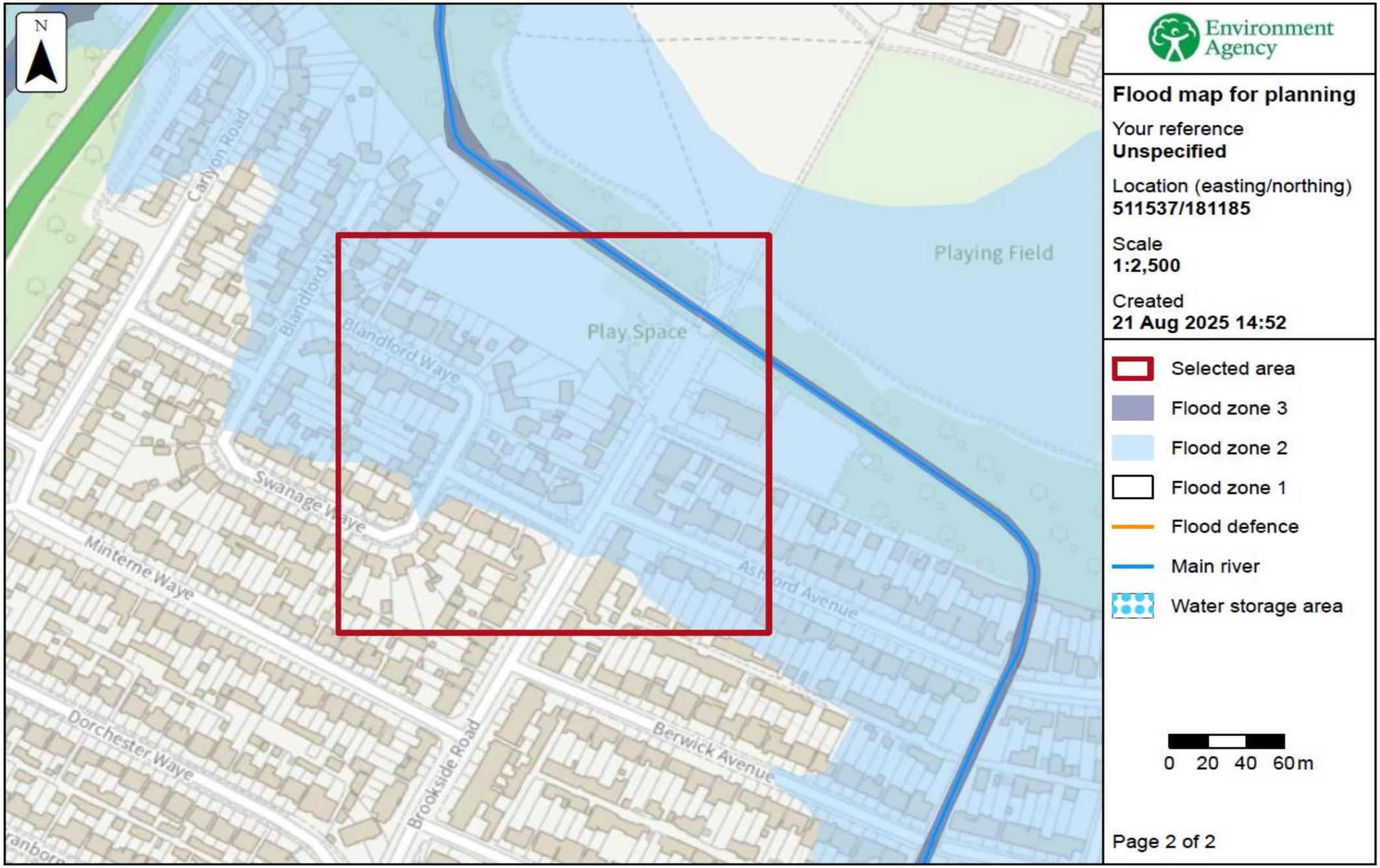

Flood Plan (Environment Agency)

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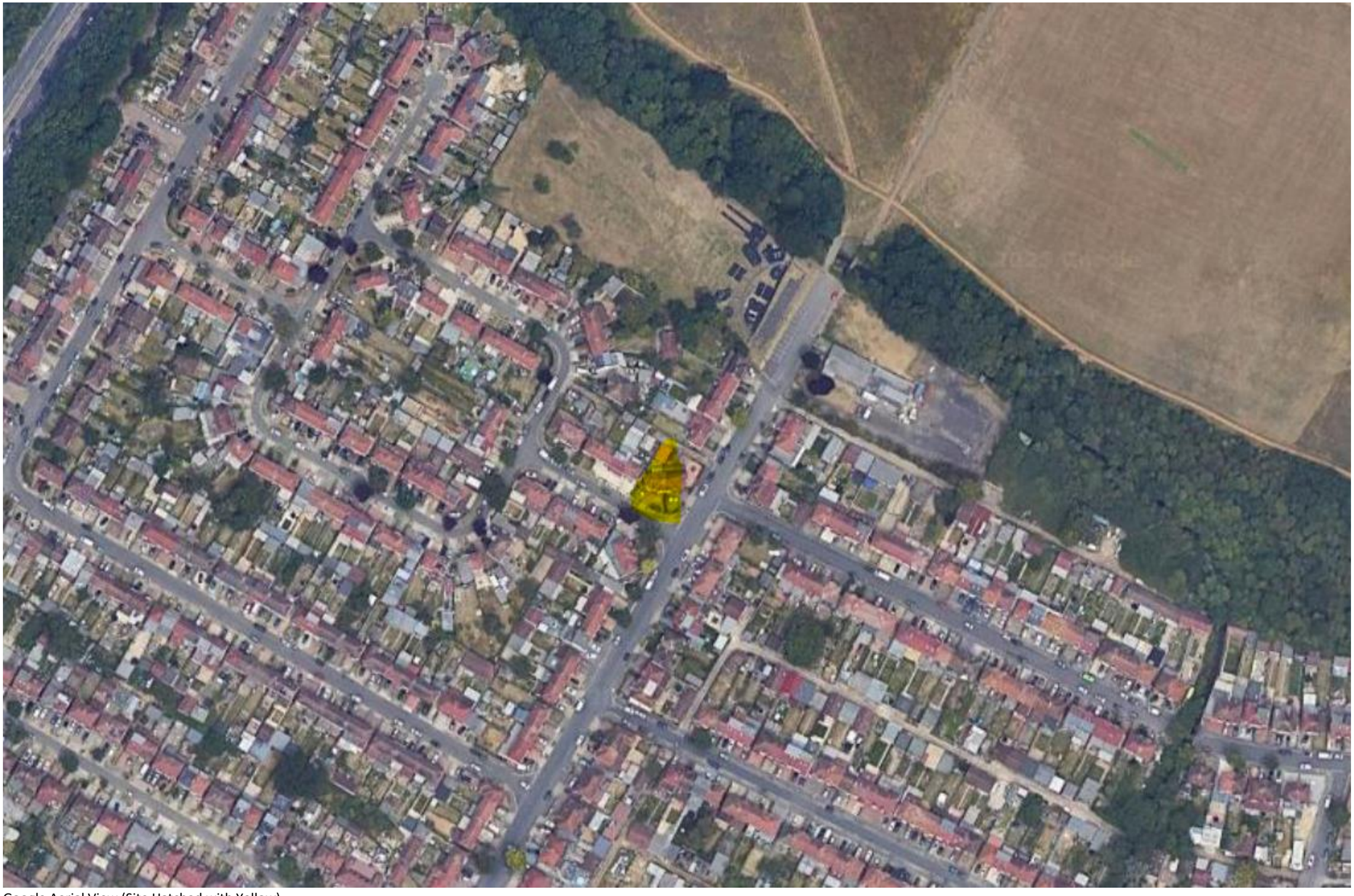

Google Aerial View (Site Hatched with Yellow)

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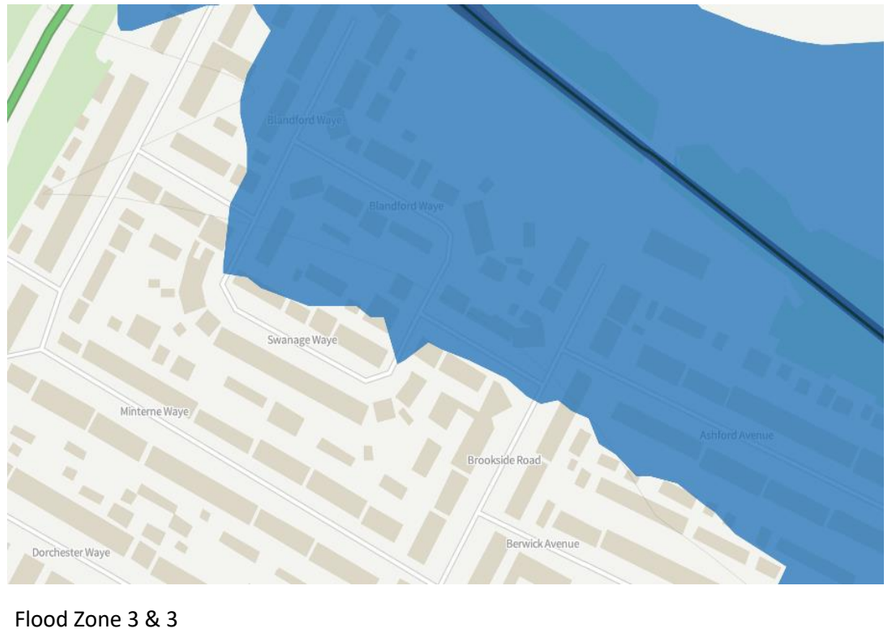
Surface Water



Flood Zone 3 & 3

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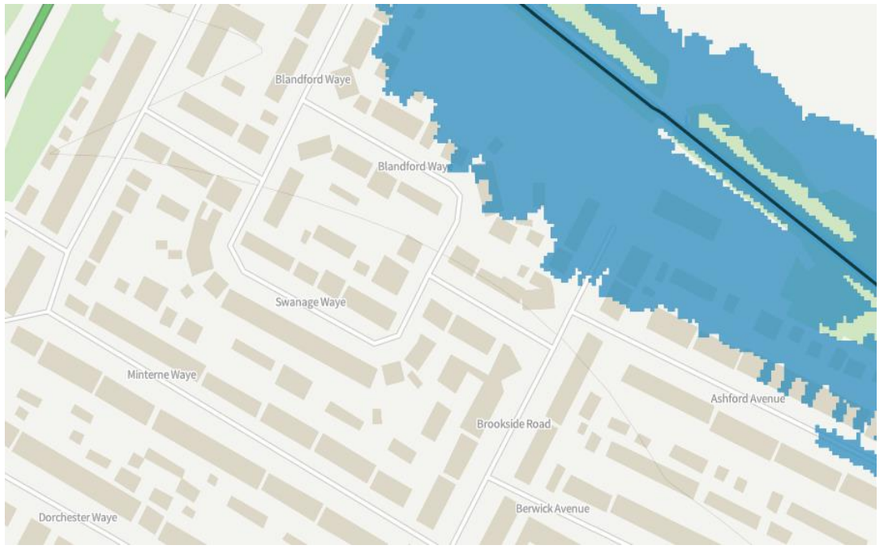
River & Sea with Defences



River & Sea without Defences

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