

Flood Risk Assessment

Angola House, Angola Road, Worthing, BN14 8DU





Project: CBY
Revision: 01

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1 Introduction

1.1 Summary

This Flood Risk Assessment (FRA) has been undertaken in accordance with the National Planning Policy Framework on behalf of SB Architectural Design for the applicant Pumpkin Patch Nursery, in support of a planning application for a single-storey rear extension at Angola House, Angola Road, Worthing, BN14 8DU.

This Assessment is to be read in conjunction with the documents that accompany the planning application. The site is located in Flood Zone 1. Based on Environment Agency mapping and local strategic assessments, the risk to the site of flooding from tidal or fluvial sources, surface water flows, or groundwater is very low. In terms of flood risk, and with a SuDS-led drainage strategy prioritising infiltration to ground, the proposed development is considered suitable for this location.

1.2 Planning Policy

This section sets out the national and local policy framework relevant to flood risk and drainage for the proposed development. The following policies are relevant:

1.2.1 National Planning Policy Framework

The current version of the National Planning Policy Framework (NPPF), dated December 2024, is relevant to this report.

- The NPPF requires a sequential test to be used in areas known to be at risk now or in the future from any form of flooding, except where a site-specific FRA demonstrates no built development (including access/escape routes or land raising) would be located on land at risk from any source now or in the future.

- When determining planning applications, local planning authorities should ensure flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific FRA. Development should only be allowed in areas at risk of flooding where, in light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:

'Within the site, the most vulnerable development is located in areas of lowest flood risk unless overriding reasons apply; The development is appropriately flood resistant and resilient such that, in the event of a flood, it could be quickly brought back into use without significant refurbishment; It incorporates sustainable drainage systems unless there is clear evidence that this would be inappropriate; Any residual risk can be safely managed; and Safe access and escape routes are included where appropriate, as part of an agreed emergency plan.'

- The NPPF states that an FRA should be provided for all development in Flood Zones 2/3, and in Flood Zone 1 for sites of 1 hectare or more; land with critical drainage problems identified by the EA; land identified in a SFRA as being at increased flood risk in future; or land that may be subject to other sources of flooding where development would introduce a more vulnerable use.
- The NPPF notes that some minor development and changes of use should not be subject to the sequential or exception tests but should still meet site-specific FRA requirements (Footnote 62: includes householder development, small non-residential extensions under 250 m², and changes of use—except to caravan/camping/mobile/park home sites).

1.2.2 Lead Local Flood Authority (LLFA)

West Sussex County Council (WSCC) is the Lead Local Flood Authority under the Flood and Water Management Act 2010, responsible for coordinating local flood risk management. Key documents include:

- Preliminary Flood Risk Assessment (May 2011)
- Local Flood Risk Management Strategy (July 2025)

1.2.3 Adur & Worthing Council

- Level 1 Strategic Flood Risk Assessment (SFRA) – July 2024
- Level 2 Strategic Flood Risk Assessment – July 2020 (under review)
- The Worthing Local Plan (adopted March 2023), Policy DM20:

‘Development should be directed away from highest flood risk areas from any source; Requires site-specific FRAs for specified circumstances; Requires demonstration that sequential/exception tests are met where applicable; Requires SuDS and natural flood management to reduce flood risk and deliver multi-functional benefits; Requires safe access/egress, no increase in flood risk elsewhere, and appropriate flood resistance/resilience so development can be quickly brought back into use after a flood event.’

2 Existing Site

2.1 Site Location

Address: Angola House, Angola Road, Worthing, West Sussex, BN14 8DU.

National Grid Reference: TQ 155 039.

The site lies within an established urban area of Worthing. Primary access/egress is via Angola Road.

2.2 Site Description

Site Area: approximately 533 m².

Existing use: Class E(f) nursery operating year-round, no sleeping accommodation.

Existing ground levels: specific m AOD unknown; levels assumed to be broadly consistent with surrounding residential plots.

2.3 Existing Drainage

Surface water is presumed to drain via a mix of infiltration to ground and to existing gullies connected to local surface water systems typical of the area. No formal restrictions known at present. **Foul drainage** is connected to the public foul sewer; new alteration or connections will be confirmed with Building Control at a later stage.

2.4 Geology and Groundwater

- Regional mapping indicates superficial deposits over chalk strata are common in Worthing. Borehole information from British Geological Survey (BGS) data confirms nearby that the site is within an area composed of 2m topsoil over silty, sandy clay to a depth of approximately 4m beneath ground level. This overlies a substrate of sand, gravel and flint to around 6m below ground level.
- Ingress of water was recorded at 4m below ground level in January 1999. This suggests a good unsaturated capacity for infiltration SuDS.
- Groundwater vulnerability is classified as medium, with a soluble rock risk.

3 Flood Zone & History

3.1 Flood Zone

The Environment Agency Flood Map for Planning confirms the site is located in Flood Zone 1 (land with less than 0.1% annual probability of flooding from rivers or the sea) and as such, is at low risk from tidal or fluvial flooding.

- According to the Environment Agency's online flood risk mapping, the site is not at risk of tidal flooding from the sea under any scenario less severe than the climate change projections for the year 2125.
- Flood risk mapping also indicates that the site is not at risk of fluvial flooding from rivers under any scenario less severe than the climate change projections for the period between 2070 and 2125.
- Flood risk maps show the site has a low annual probability of surface water flooding, with risks only arising in scenarios more extreme than a 1-in-1000-year flood event.
- The site does not lie within or immediately adjacent to Flood Zones 2 or 3.

Copies of available flood maps are located in the Appendix of this report.

3.2 Flood Defences

The Beachy Head to Selsey Bill Shoreline Management Plan (SMP, 2006; under review) sets the coastal policy framework. The preferred policy for the coastline in the Adur & Worthing area is “Hold the Line,” maintaining or upgrading defences.

The Rivers Arun to Adur flood and erosion management strategy (2010–2020) details works and approaches to achieve “Hold the Line” at locations including Worthing and Shoreham-by-Sea. The EA has implemented recommended options in phases.

3.3 Flood History

Environment Agency: Online mapping of historic flood incidents does not identify records affecting the site or its immediate vicinity.

West Sussex County Council: Neither the Preliminary Flood Risk Assessment (2011) nor the Local Flood Risk Management Strategy (2025) identifies historic incidents affecting the site.

Adur & Worthing Councils: The Level 1 SFRA (July 2024) does not identify historic flooding incidents at or immediately around the site.

4 Proposed Development

4.1 Description

Proposed development: Single-storey extension to existing Class E(f) day nursery.

Occupancy: Up to approximately 100 persons (staff and children; no sleeping accommodation).

Floor levels: The proposed extension is designed to maintain the existing internal finished floor levels (FFL) of the host building to ensure safe, level access between the existing and new nursery spaces. The FFL is set at approximately +390mm above the adjacent external ground level.

Anticipated Lifetime: 70-100 years.

4.2 Surface Water Drainage

Risk: Potential increase in surface water intensity due to climate change over the development's lifetime.

Mitigation: Evaluate finished floor levels and resilience measures.

Strategy: Infiltration to ground in accordance with the SuDS hierarchy (BRE365).

Measures: Soakaways and/or permeable paving and other infiltration features (e.g., rain gardens or soft landscaping) suitably sized to attenuate runoff from the extension, with climate change associated rainfall intensity factored.

Discharge: No proposed connection to surface water sewer for rainwater. Should infiltration be found non-viable, a fallback restricted discharge route would be explored if necessary and subject to agreement with BCO.

Foul drainage: Existing connection to public foul sewer system to be utilised; details to be agreed with Building Control.

5 Flood Risk Control, Mitigation & Management

5.1 Vulnerability classification & compatibility

With reference to Annex 3 of the NPPF the site's vulnerability classification is:

- **"More Vulnerable"** for nurseries and educational establishments (non-residential uses for health services, nurseries and educational establishments).
- In accordance with Table 2: Flood risk vulnerability and flood zone 'incompatibility', development classified as **"More Vulnerable"** is **appropriate** in Flood Zone 1 (and 2 with sequential test).

5.2 Sequential and Exception Test Risk

The site is located in Flood Zone 1; sequential and exception tests are not typically required for small extensions (below 250m²) in Zone 1 flood risk areas.

It is possible that the site and surrounding area may become Zone 2 in the future. The strategies and mitigation measures presented are intended to be suitably flood-resilient and resistant as appropriate based on guidance from the Environmental Agency.

5.3 Risk to People

The day nursery will serve young children, including those who may have limited mobility due to age, requiring support. Staff are to ensure safety and manage risks during operating hours, abiding to evacuation procedures. Access will primarily occur on weekdays for childcare, with occasional entry for maintenance or cleaning. The design will incorporate safe routes and appropriate floor levels to reduce flood risk.

5.4 Property & Structure

The proposed extension will match the existing floor levels of the host property. The resulting finished floor level (FFL) of **+390mm** above ground level provides a robust freeboard that exceeds the 300mm minimum requirement set out in the **Adur & Worthing Level 1 SFRA (July 2024)** for areas with residual flood risk.

Given the site's location in **Flood Zone 1**, the floor level is considered appropriate to protect the property while ensuring internal accessibility.

To provide additional protection beyond the raised floor level, the following resilience measures are proposed:

- **Construction:** Use of screw pile and ring beam techniques with a steel frame structure to enhance structural resilience.
- **Raised Electrics:** All new electrical sockets and telecommunications points will be positioned at least **400mm above the new FFL** (approximately 790mm above external ground level) to reduce the risk of damage to electrical systems.
- **Materials:** Flood-resilient materials (such as **closed-cell insulation** and **water-resistant wall finishes**) will be used to ensure the building can be promptly returned to functionality following any local drainage failure.
- **SuDS-led Drainage:** No loss of floodplain storage will occur. The structure is positioned on existing hardscaping, and any new landscaping will utilize permeable surfaces. The design incorporates infiltration features and on-plot attenuation to reduce peak runoff. Surface water will be discharged in accordance with the SuDS hierarchy.
- **Maintenance:** Periodic inspection of soakaways and permeable surfaces will be carried out to ensure long-term function and minimize residual risk to downstream networks.

6 Conclusion

In conclusion, the site is located in Flood Zone 1, with a very low risk of flooding from tidal, fluvial, and surface water sources. The proposed single-storey rear extension (within the 250m² limit) is a minor development that maintains existing floor levels for practical and safety reasons, resulting in a Finished Floor Level (FFL) of around **+390mm** above ground. This strategy is fully compliant with the **Adur & Worthing Level 1 SFRA (July 2024)**, which suggest a minimum 300mm freeboard.

Residual risks are further mitigated through an infiltration-based SuDS strategy and permeable landscaping, ensuring no increase in flood risk elsewhere. By employing resilient construction methods—including screw piles, ring beams, and raised electrical points—the building is designed to be both flood-resistant and durable. Consequently, safe access and egress are maintained, and the development is considered sustainable and safe for its lifetime.



7 Appendix

Get a boundary report

Edit

Delete

Datasets

☒ Flood zones 2 and 3

☐ Surface water

☐ None

Climate change

☒ Present day

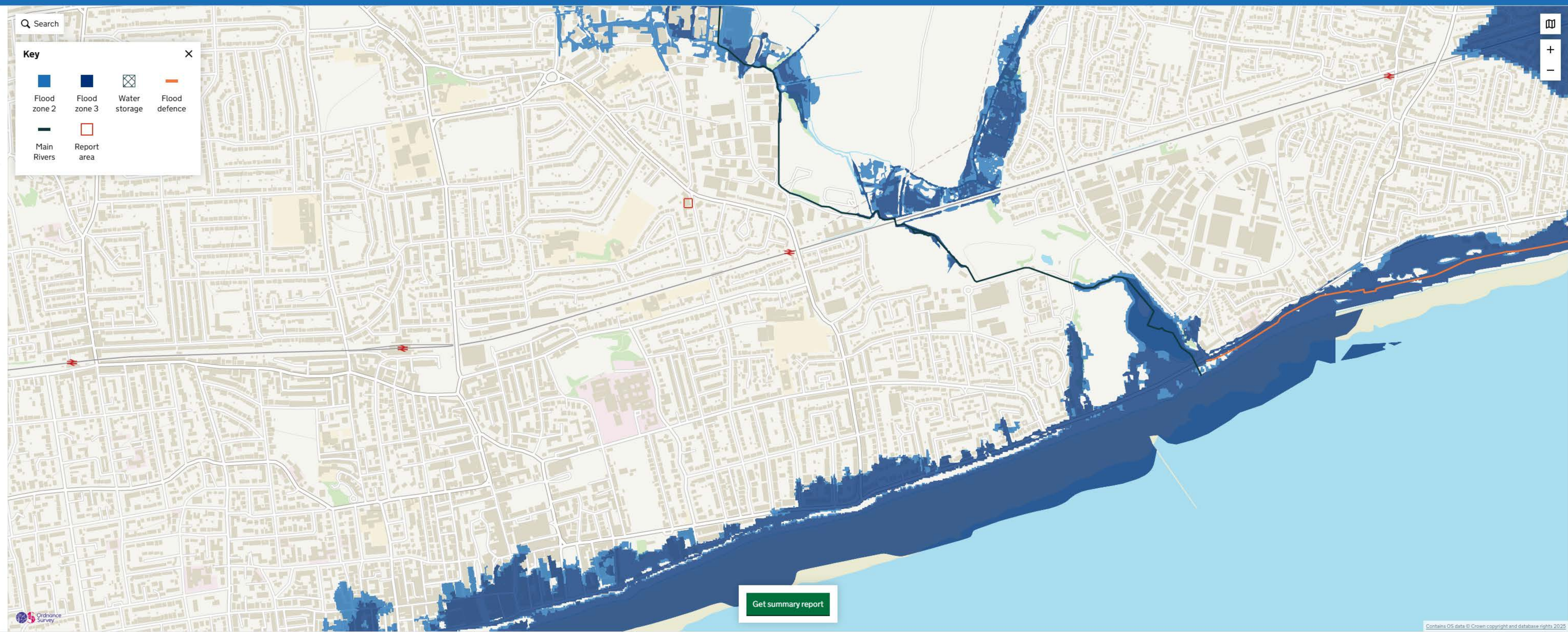
☐ 2070 to 2125

Map features

☒ Water storage

☒ Flood defence

☒ Main Rivers



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Datasets

☒ Flood zones 2 and 3

☐ Surface water

☐ None

Climate change

☐ Present day

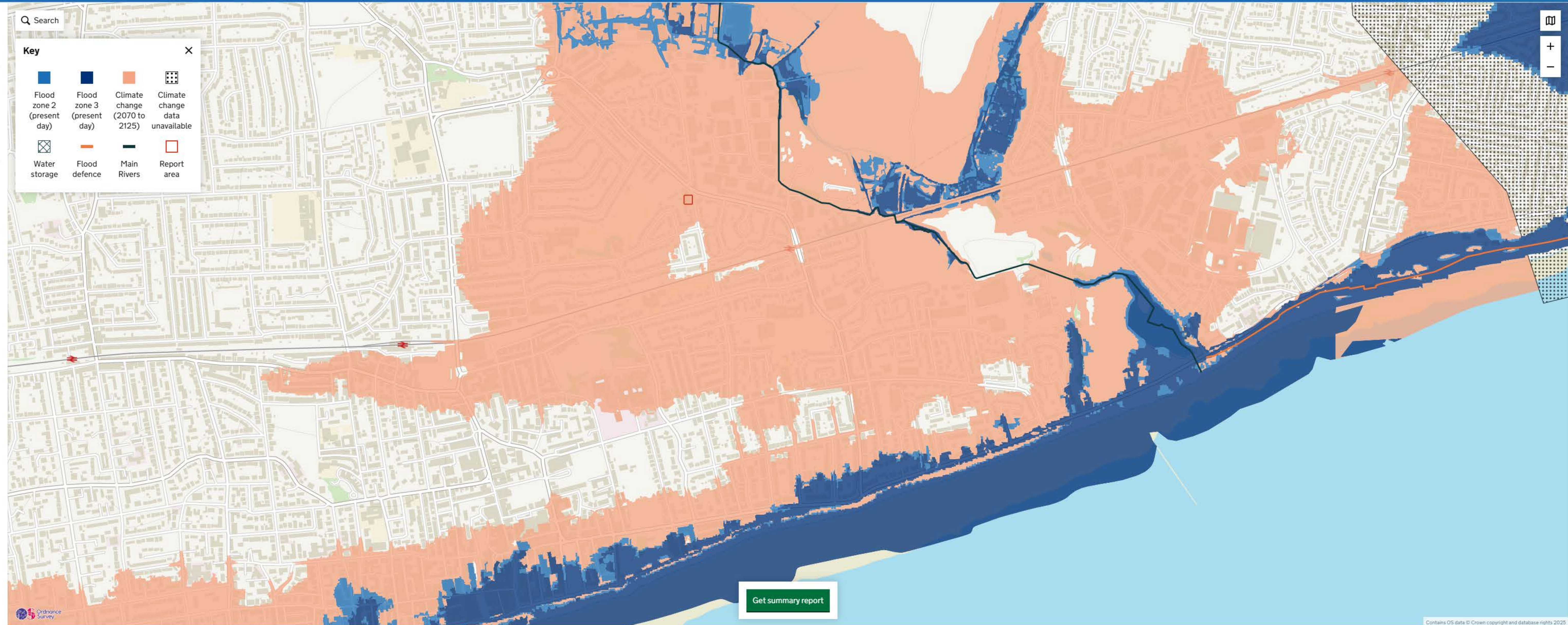
☒ 2070 to 2125

Map features

☒ Water storage

☒ Flood defence

☒ Main Rivers



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Datasets

- ☐ Flood zones 2 and 3
- ☒ Surface water
- ☐ None

Annual likelihood of flooding

- ☒ 1 in 30
- ☐ 1 in 100
- ☐ 1 in 1000

Map features

- ☒ Water storage
- ☒ Flood defence
- ☒ Main Rivers

Search

Key

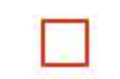
X

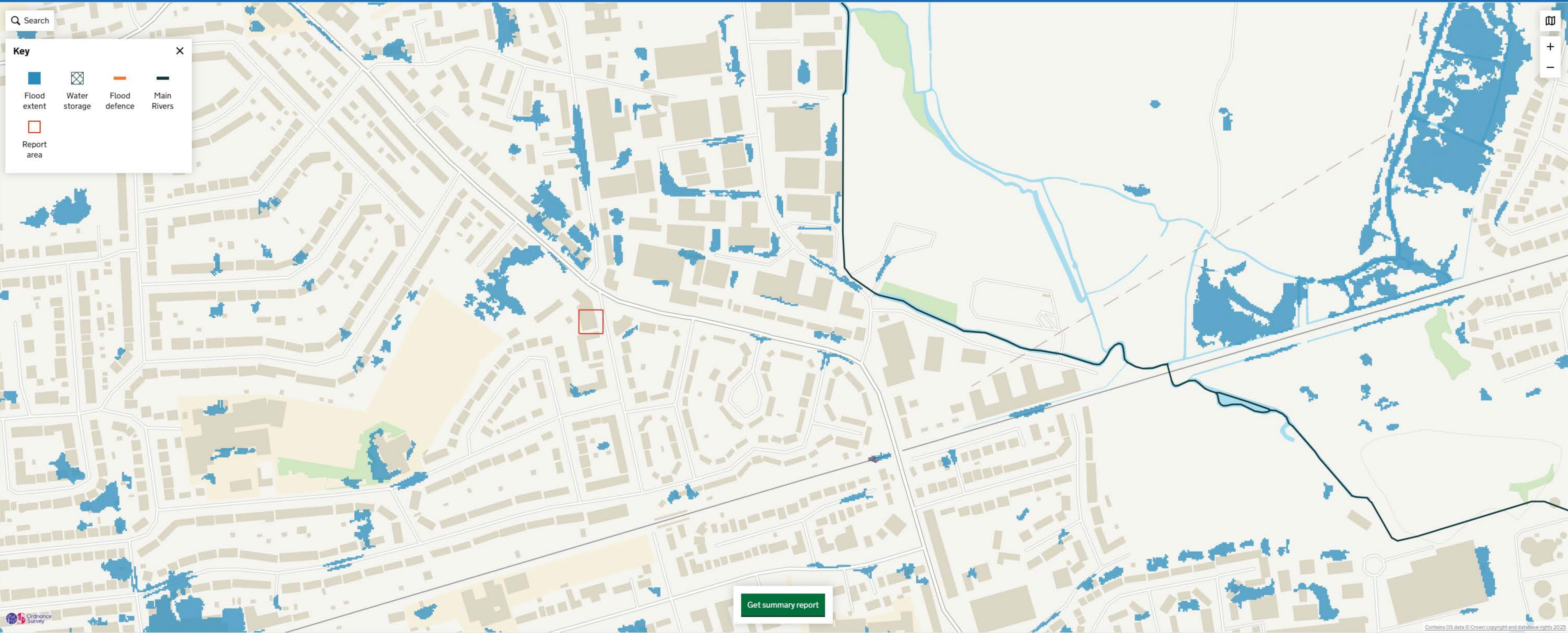
 Flood extent

 Water storage

 Flood defence

 Main Rivers

 Report area



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Datasets

☐ Flood zones 2 and 3

☒ Surface water

☐ None

Annual likelihood of flooding

☐ 1 in 30

☒ 1 in 100

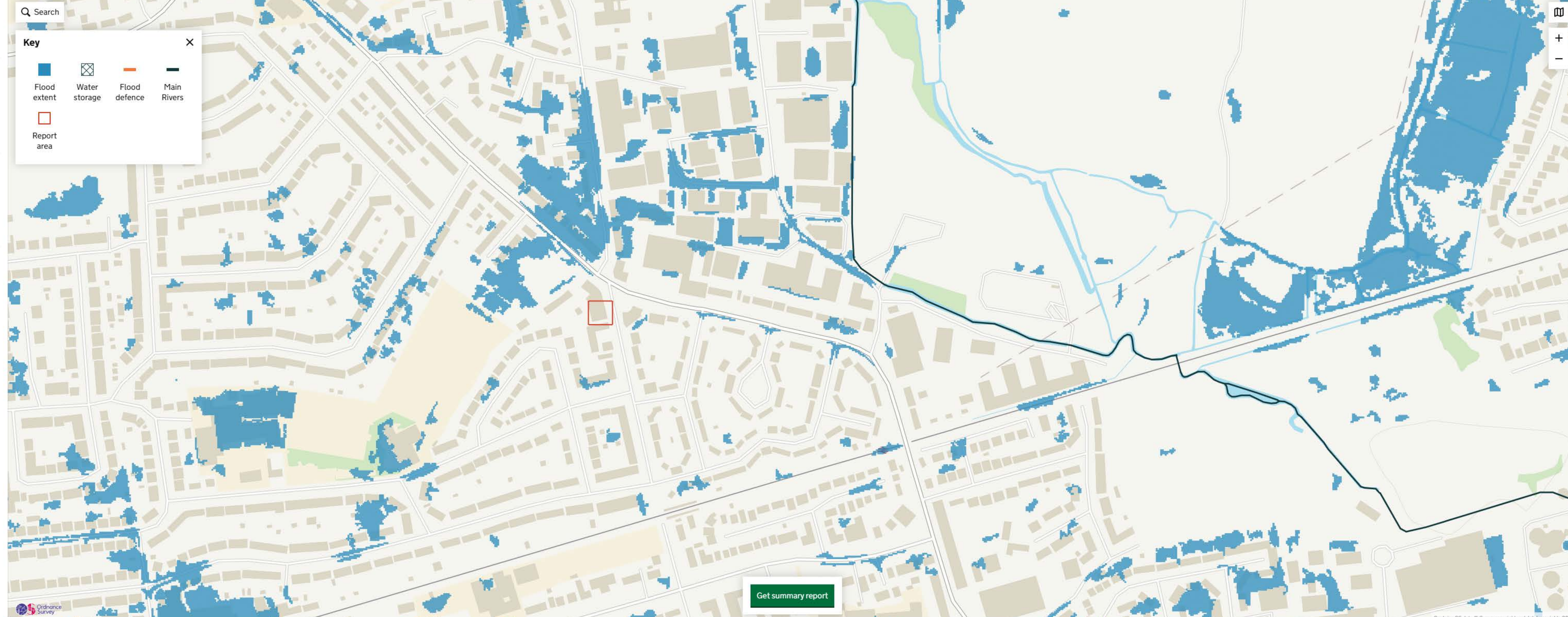
☐ 1 in 1000

Map features

☒ Water storage

☒ Flood defence

☒ Main Rivers



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Datasets

☐ Flood zones 2 and 3

☒ Surface water

☐ None

Annual likelihood of flooding

☐ 1 in 30

☐ 1 in 100

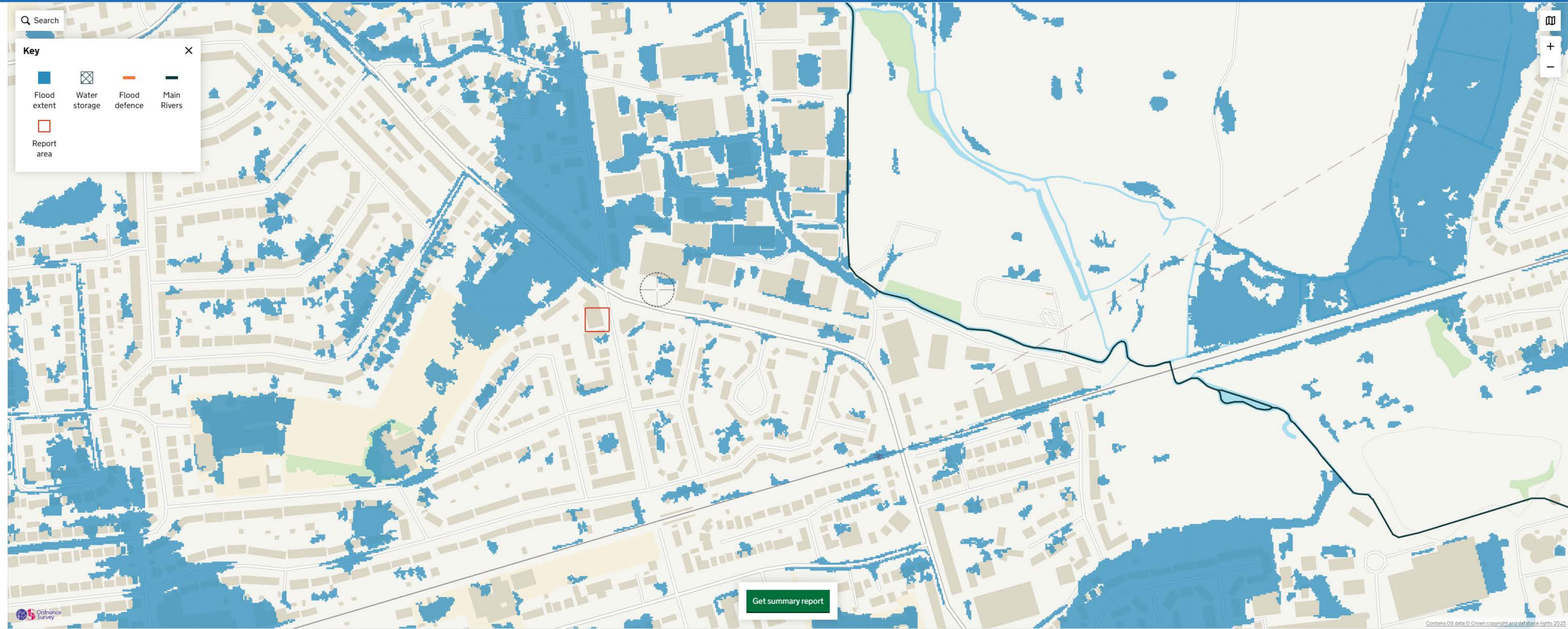
☒ 1 in 1000

Map features

☒ Water storage

☒ Flood defence

☒ Main Rivers



CLIENT JOHN ALLEN ASSOCIATES		JOB NO C9955	LOCATION WSS 0132, HAM BRIDGE ESTATES		BOREHOLE NO BH2	
DATE JANUARY 1999		SCALE 1 to 50	BORING METHOD DYNAMIC SAMPLING		Sheet: 1	
Drilling & Casing Progress	SAMPLE/TEST		SPT N - value or COHESION	DESCRIPTION	O D LEVEL	LEGEND
	Type & No.	Depth(M)				
22ND	U	0.50	128.00	MADE GROUND - Grass overlying dark brown sandy subsoil.		
				MADE GROUND - Stiff medium to dark brown very sandy clay with some fine to coarse gravel and occasional fragments of concrete and brick.		
	U	2.00	116.00	MADE GROUND - Medium to dark brown, slightly clayey/silty sand with some fine to coarse gravel and fragments of concrete and brick.		
				MADE GROUND - Stiff dark brown/black slightly sandy silty soil? clay with some fine gravel and occasional decaying rootlets		
	U	2.50	60.00			
	U	3.00	40.00			
	U	3.50	28.00			
	U	4.00	24.00			
U	4.50	20.00				
22ND				Initially firm, becoming soft, dark blue/grey, occasionally brown, very silty slightly sandy CLAY.		
				Visually very moist, medium brown fine to coarse SAND and GRAVEL with numerous large fragments of flint		
DUNELM DRILLING CO 0191 626 2634 FAX 0191 617 0086				BOREHOLE LOGSHEET		
Water Observations, Remarks, Etc Ingress of water noted at 4.70m. No actual standing level as borehole backfilled to 4.30m.						