

Flood Mitigation Strategy

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Property Lets Reading (PLR) Limited
58 Kings Road, Reading, RG1 3AA

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1. Introduction

The following document is a Flood Mitigation Strategy carried out by Oakshire Environmental, and includes details of the site, previous investigations, an evaluation of mitigation options and an assessment of further investigations.

1.1 Project Overview

The client's proposed project involves the erection of a 4-storey building comprising 3 x 2-bed flats and 1 x 1-bed flat. Single storey rear extension, third storey extension with associated internal alterations at 58 Kings Road, Reading, RG1 3AA. Following the identification of flood linkages at the site, mitigation has been recommended. Oakshire Environmental have carried out a Flood Mitigation Options Appraisal & Strategy, as described below.

1.2 Purpose of Investigation

The objectives of the Flood Mitigation Strategy were to:

- Assess the nature and extent of flood risk at the site.
- Identify suitable flood mitigation option(s).
- Outline a strategy for the implementation of suitable mitigation option(s).
- Determine the requirement or scope of further investigations or monitoring.

1.3 Scope of Work

- Assessed the nature and extent of flood risk, identified as part of previous investigations.
- Initial feasible options for mitigation at the site have been identified, including assessment of potential constraints and generic mitigation objectives, based on the estimated cost, practicality and regulatory implications of their application.
- An evaluation of mitigation options has been conducted and site-specific mitigation objectives have been developed, utilising Environment Agency modelling and LiDAR topographical data, in order to determine which option(s) are most appropriate for the site.
- A strategy for the implementation of suitable mitigation option(s) has been outlined.
- Recommended mitigation option(s) were assessed to determine the requirement or scope of further investigations or monitoring at the site.
- Supporting appendix includes photographs, maps and plans of the site.
- Flood mitigation options appraisal carried out by professional Environmental Consultants, with BSc (Hons) in Environmental Science or above, in accordance with Environment Agency technical guidance and utilising industry leading quantitative flood modelling.

1.4 Limitations

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This report excludes consideration of potential hazards arising from any activities at the site other than normal use and occupancy for the intended land uses. Hazards associated with any other activities have not been assessed and must be subject to a specific risk assessment by the parties responsible for those activities. Oakshire Environmental does not warrant or guarantee that the site is free of hazardous or potentially hazardous materials or conditions. It should be noted that this report has been produced for environmental purposes only.

2. Site

The following section provides a description of the site, location and previous investigations, utilising information obtained from the client and publicly available sources.

2.1 Site Description and Location

The site is located on Kings Road in Reading and covers an area of approximately 330m². The site is comprised of a four-storey building at the north fronting Kings Road with a three-storey rear extension and an asphalt car park at the south. The site slopes from north to south with ground levels ranging from 38.3mAOD at the north fronting Kings Road to 37.3mAOD at the south boundary.

The site is bordered by Kings Road to the north, retail units and apartments to the east and west and Crane Wharf to the south with the River Kennet beyond.

National Grid Reference: SU 71944 73345

2.2 Proposed Development

The proposed development involves the construction of a four-storey apartment building to the rear of the existing building fronting Kings Road.

The proposed building will have a finished floor level of approximately 38mAOD.

2.3 Previous Investigations

A Flood Risk Assessment was carried out by Creative Design & Structure in December 2021 which concluded that the site is situated within Flood Zone 1 and 2 and is at medium risk of river and surface water flooding.

Reading Borough Council have requested details of flood resistant materials to a minimum height of at least 300mm above the estimated flood level and details of flood resilience measures through a condition to the planning application. Oakshire Environmental have, therefore, carried out a Flood Mitigation Strategy to include these details.

3. Background

The following section outlines the site-specific mitigation objectives for the site, taking into account potential constraints. These are based on the findings of previous investigations.

3.1 Site Context

The proposed development involves the construction of a residential apartment building and is potentially at risk of flooding, therefore, this report considers the feasibility of implementing suitable mitigation measures to ensure that the proposed development is safe from flooding for its lifetime.

The south of the site is within Flood Zone 2 and Environment Agency flood mapping, taking into account the impact of flood defences, shows that the south of the existing car park area would be impacted in a 1% AEP event, taking into account the central climate change allowance for the 2080s epoch (i.e. design flood event). Based on existing ground levels at the furthest extent of flooding in a design flood event, the site would flood to a maximum of 37.5mAOD resulting in a maximum flood depth of 0.2m at the south of the site. This would not result in internal flooding of the building.

In an extreme flood event (0.1% AEP), including an allowance for climate change, the site would flood to a maximum of 37.7mAOD, resulting in flood depths up to 0.4m and no internal flooding.

3.2 Potential Constraints

Given the relatively narrow access to the site from Crane Wharf, there may be limitations with regards to space and access for large vehicles and machinery, however, this is not likely to be required. There are no specific time constraints with regards to the implementation of flood mitigation measures, however, there is considered to be a risk of flooding at the site so it would be prudent to implement mitigation measures prior to occupation of the building.

3.3 Mitigation Objectives

The following table outlines the site-specific objectives of mitigation at the site.

Table 1: Summary of Site-Specific Objectives

Mitigation Objective	Objective Type	Evaluation Criteria
Ensure that the site is safe from flooding for its lifetime	General/Technical	Implement mitigation measures to protect the site from the design flood event
Ensure that flood risk off-site is not increased	General/Technical	Mitigation measures to protect the site from flooding while not increasing flood risk off-site
Enable development of a mitigation strategy that meets regulatory requirements	Management	Mitigation strategy to be agreed with Local Authority and carried out in accordance with relevant regulations
Enable development of a mitigation strategy that meets the owner's requirements	Management	Mitigation strategy to be agreed with site owner
Avoid unacceptable impacts from implementation of mitigation strategy	Management	Mitigate the risk of flooding at the site without negatively impacting the residential amenity of neighbouring properties

4. Mitigation Strategy

In order to mitigate the risk to the development from shallow river flooding, a water exclusion strategy will be implemented including the incorporation of flood resistance measures. The finished floor level of the proposed building will be more than 300mm above the design flood level (37.5mAOD), therefore, the floor level will not need to be raised and resistance measures will be implemented to the finished floor level as a precaution.

Foundations

Foundation design should include a ground supported floor, where possible, and Damp Proof Membranes (d.p.m.) should be incorporated to minimise the passage of water through the ground floor. Impermeable polythene membranes should be at least 1200 gauge to minimise ripping and should include overlaps of 300mm or taping with mastic tape with an overlap of 50mm minimum. Care should be taken not to stretch the membrane in order to retain a waterproof layer.

Concrete blocks used in foundations should also be sealed with an impermeable material or encased in concrete to prevent water movement from the ground to the wall construction.

Self-sealing (automatic) airbricks should be installed to allow ventilation under normal conditions but block the entry of floodwater in a design flood event.

Flooring

Floor insulation should be of the closed-cell type to minimise the impact of flood water and floor finishes should be comprised of ceramic or concrete-based floor tiles, stone or sand/cement screeds. All tiles should be set bedded on a cement-based adhesive/bedding compound and water resistant grout should be used.

Concrete screeds above polystyrene or polyurethane insulation should be avoided as they hinder drying of the insulation material.

Suitable materials for skirting boards include ceramic tiles and PVC, however, ceramic tiles are likely to be more economically viable and environmentally acceptable.

Walls

Mortar joints should be thoroughly filled and engineering bricks should be used up to the finished floor level to increase resistance to water penetration.

Doors and Windows

All doors and windows will be situated above the design flood level, therefore, no mitigation measures will be required for proposed doors and windows.

Services

Closed cell insulation should be used for pipework below the ground floor level and anti-backflow valves for sewer pipes and non-return valves (NRVs) for any appliance waste-pipes should be implemented. These will need to meet BS EN 13564 standards - 'Anti-flooding devices for buildings'.

Wiring for telephone, TV, Internet and other services should be protected by suitable insulation in the distribution ducts to prevent damage.

4.1 Flood Resilience

Safe access and egress along Crane Wharf may be restricted in a design flood event, however, no internal flooding of the proposed building is anticipated and safe refuge will be available within the building. As a result, there will be no requirement to evacuate prior to a flood, however, the decision to evacuate is ultimately for the resident to make and it would be prudent for residents to sign up to receive Environment Agency Flood Warnings so that they are adequately informed of a potential flood event.

It is also recommended that construction workers (or a designated project manager) sign up to receive these warnings during the development.

The site is situated within the Environment Agency's 'River Kennet from Theale down to Reading' Flood Warning Area.

5. References

CIRIA, 2020. *Guidance on the code of practice for property flood resilience, C790B*. CIRIA, London. ISBN: 978-0-86017-895-8).

Communities and Local Government, 2007. *Improving the Flood Performance of New Buildings*.

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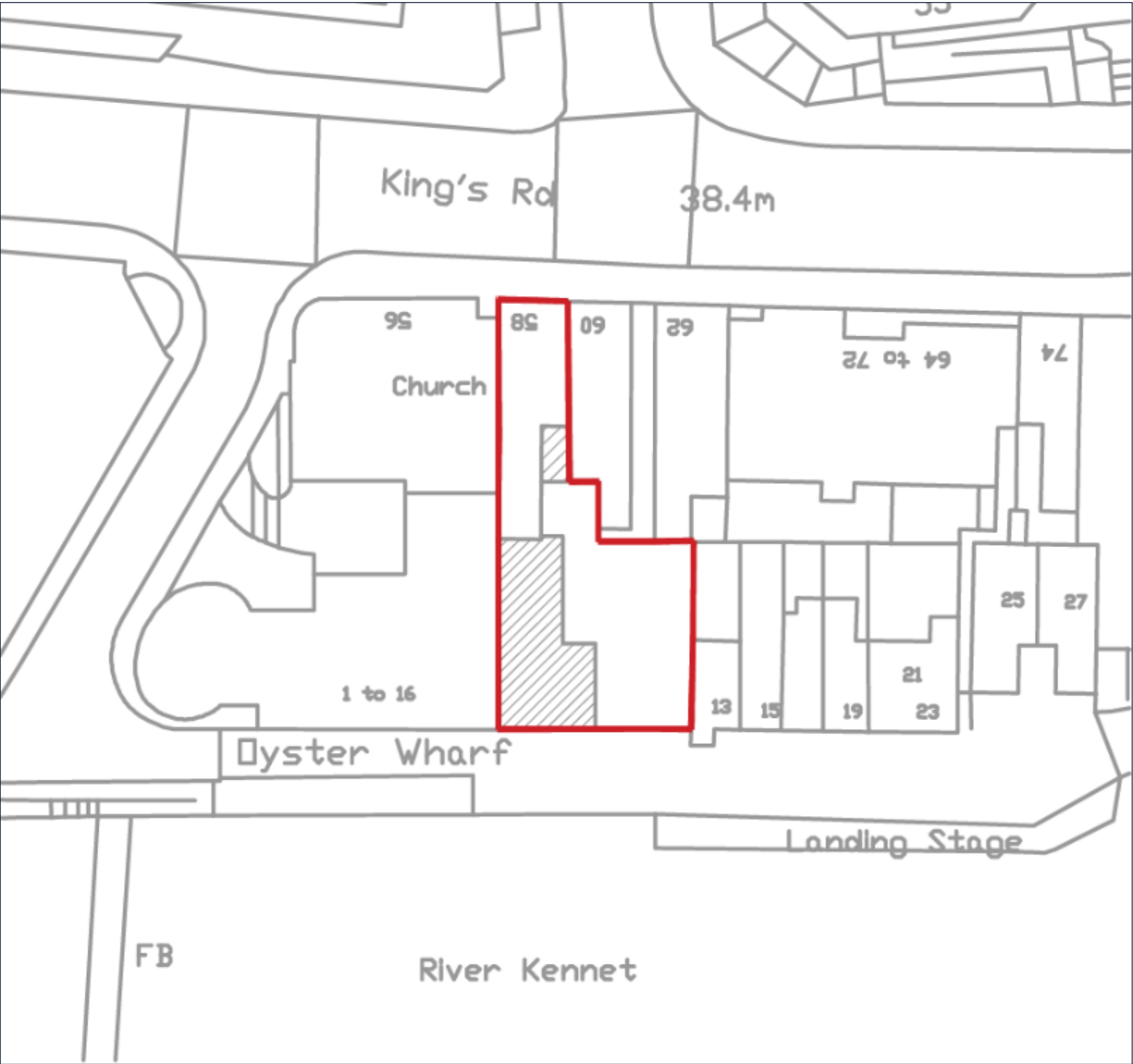
Environment Agency, 2025. *Flood map for planning*. [online] Available at: <flood-map-for-planning.service.gov.uk>

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Oakshire Environmental Available at: <oakshireenvironmental.co.uk>



Appendix - Site Maps & Plans

Description

Site location plan

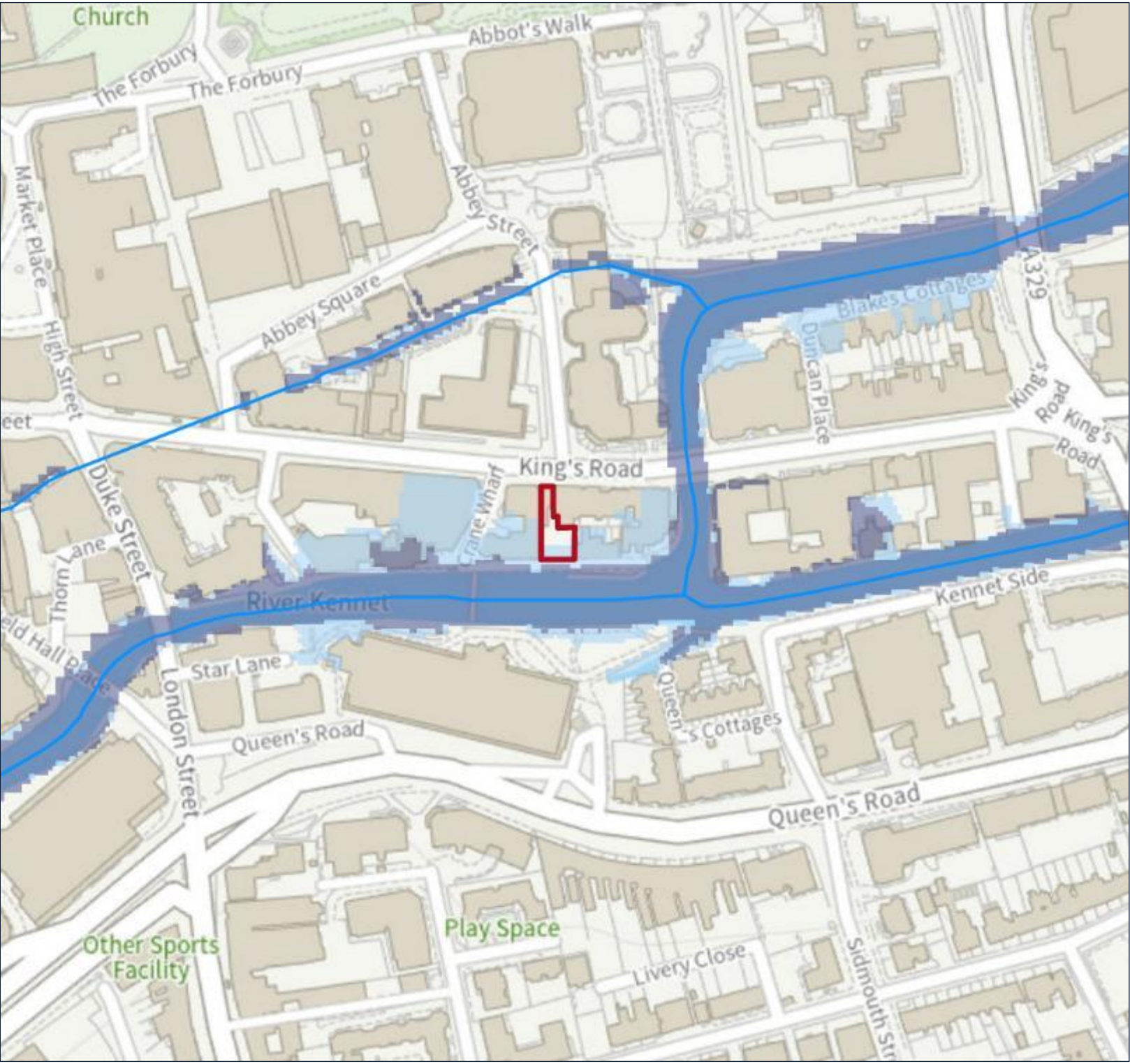
Sources

Creative Design and Structure

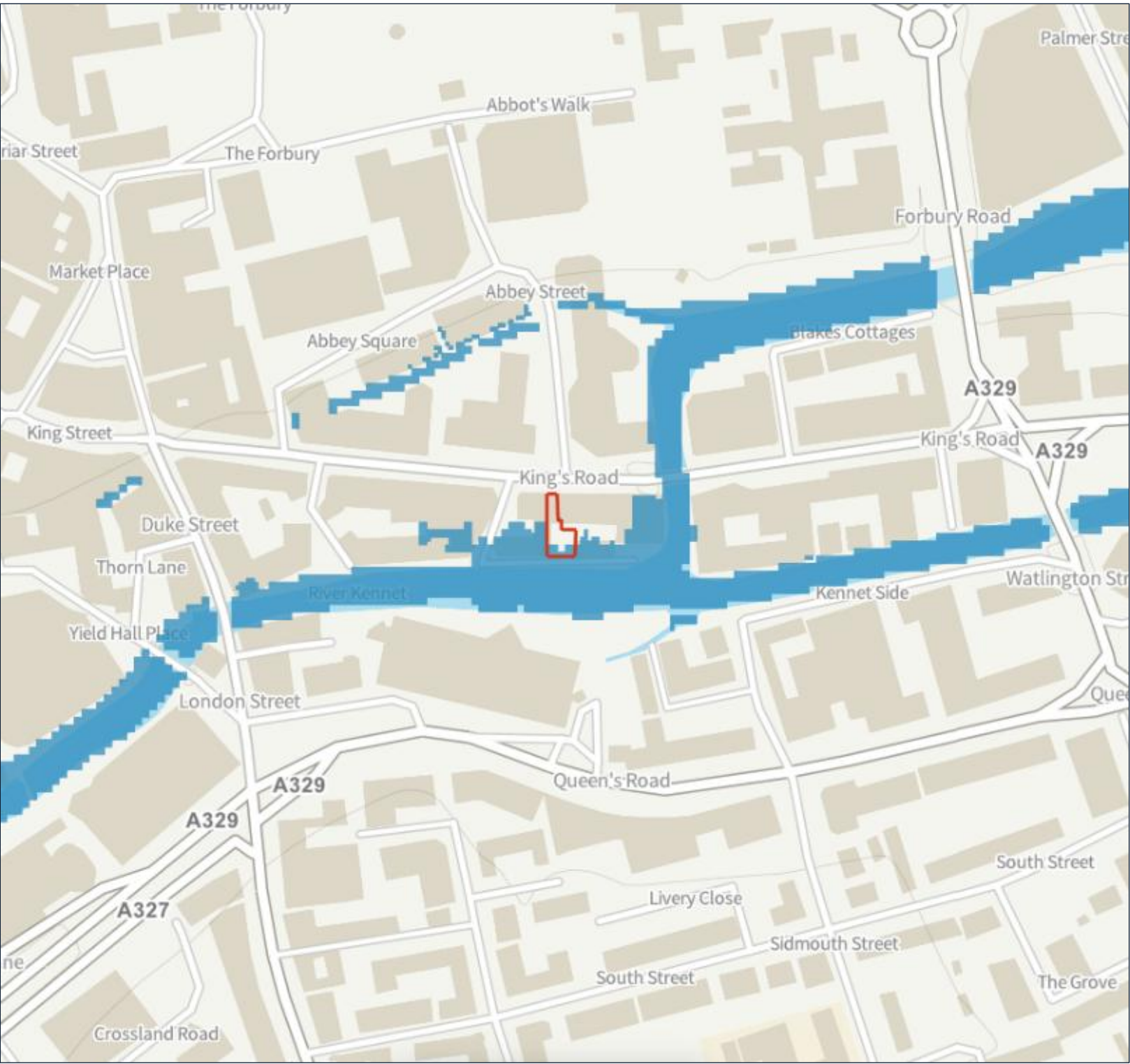
Key

Site boundary

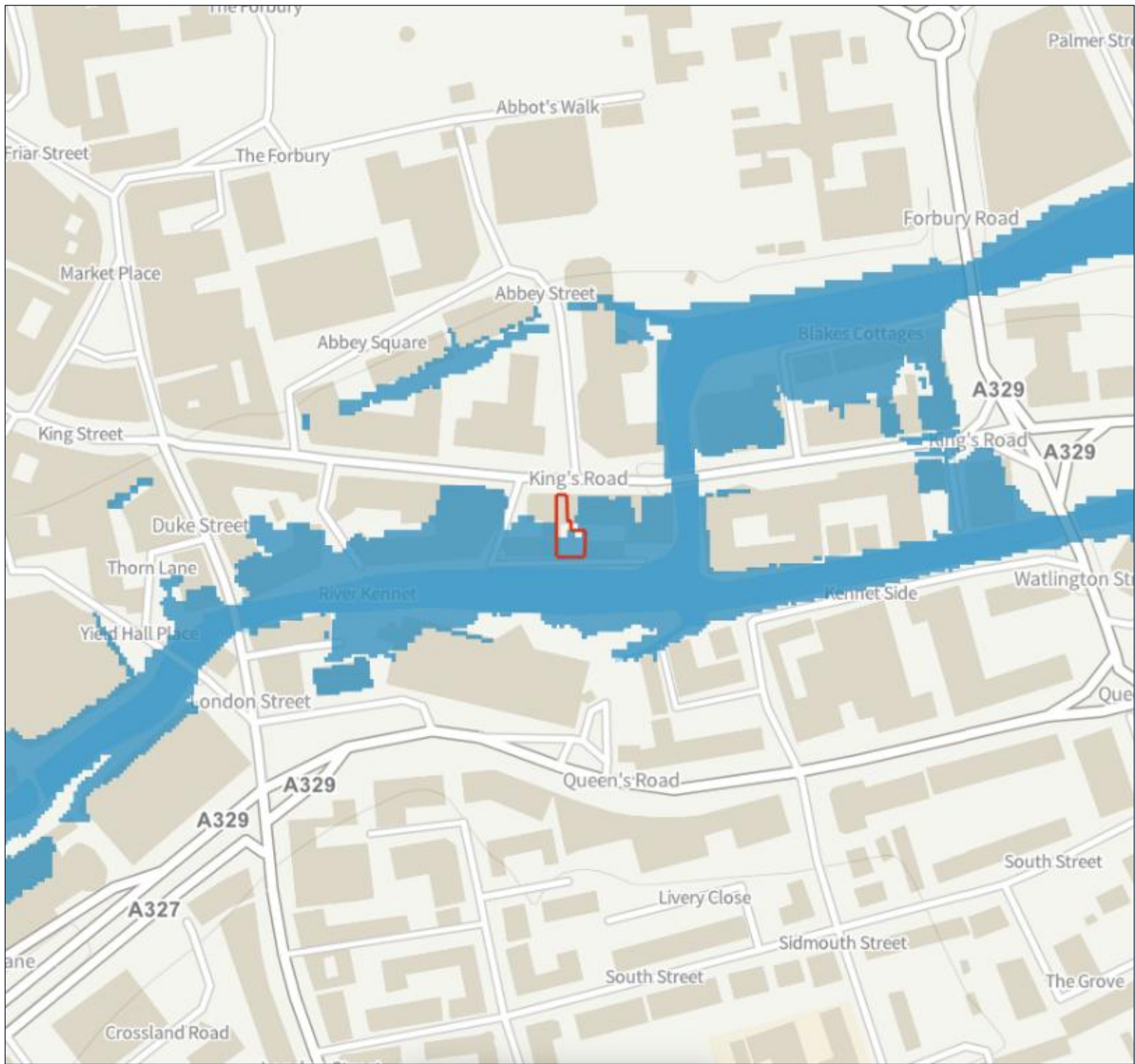
North



Appendix – Flood Risk Maps	
Description	
Flood map for planning	
Sources	
Environment Agency OS data © Crown copyright and database rights	
Key	
	Site boundary
	Flood Zone 1
	Flood Zone 2
	Flood Zone 3
	Main river
	North



Appendix - Site Maps & Plans	
Description	
Environment Agency map showing the 1% AEP event, taking into account the central climate change allowance for the 2080s epoch (i.e. design flood event)	
Sources	
Environment Agency	
Key	
	Site boundary
	1% AEP (+CC) flood extent
	North



Appendix - Site Maps & Plans

Description

Environment Agency map showing the 0.1% AEP event, taking into account the central climate change allowance for the 2080s epoch

Sources

Environment Agency

Key

	Site boundary
	0.1% AEP (+CC) flood extent
	North