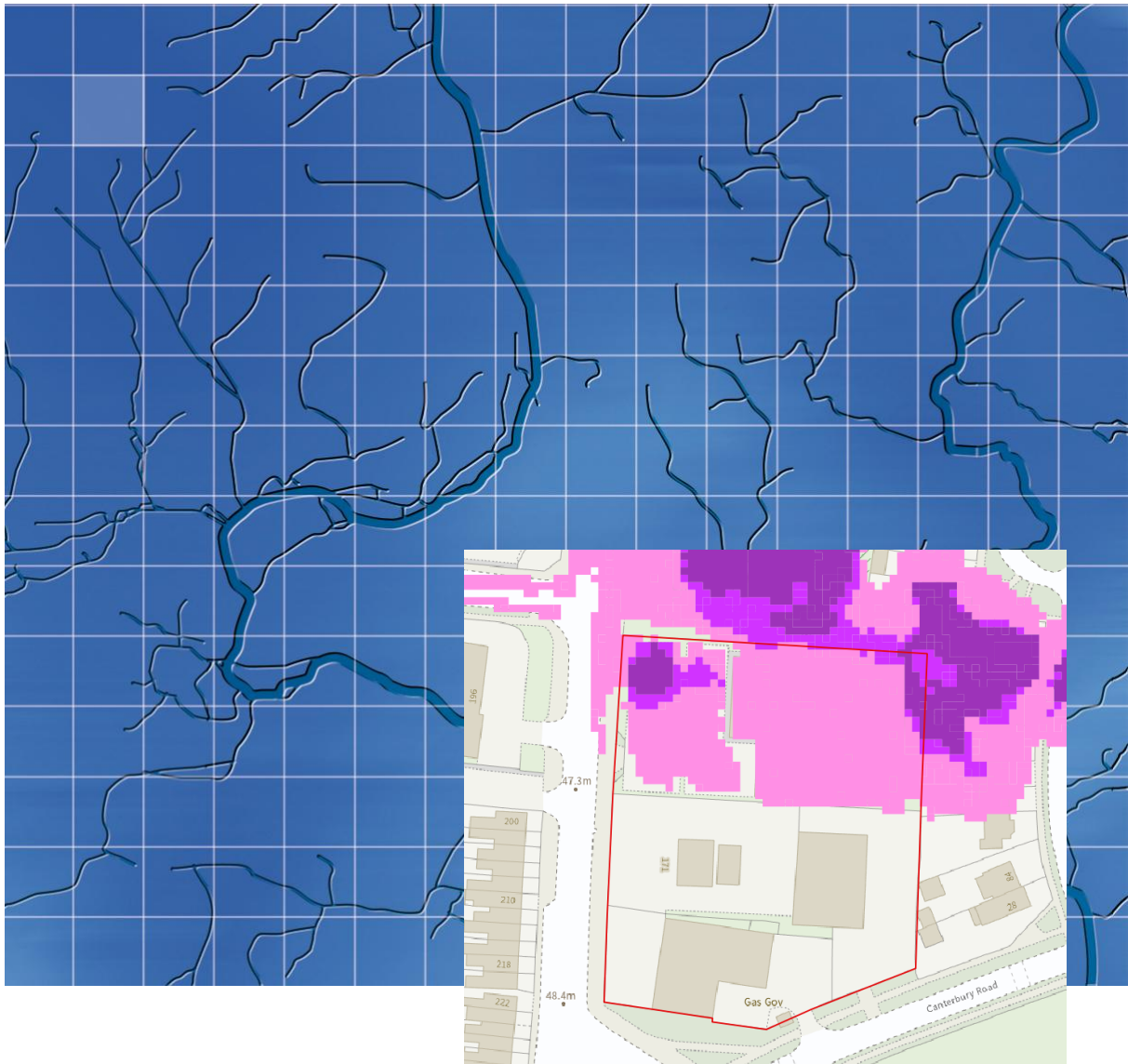


Reading Borough Council

May 2025

169-173 Basingstoke Road (SR4c)

Level 2 Strategic Flood Risk Assessment



Reading Borough Council

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For and on behalf of Wallingford HydroSolutions Ltd.

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169-173 Basingstoke Road (SR4c) Level 2 SFRA

Flood Risk Overview

Fluvial Flood Risk	L
Pluvial Flood Risk	M
Other Sources of Flood Risk	L
Confidence in Assessment	M

Flood Risk

Surface water flood risk represents the greatest source of flooding to the site. However, as only 8% inundated during the design 1.0% AEP plus climate change event, the risk of surface water flooding is moderate.

The risk from other sources of flooding is considered to be low.

The overall confidence in the assessment is moderate as the primary flood risk at the site is based on national scale mapping.

Conclusions and Recommendations

The development proposed is categorised as *More Vulnerable Development* which is permissible in Flood Zone 2 but needs to pass the Exception Test to justify development in Flood Zone 3a. More vulnerable development is not permissible in Flood Zone 3b.

In this regard, a new residential development at the site will be permissible given that the site lies completely outside of Flood Zones 2 and 3. Whilst there is a risk of surface water flooding at the site, it is limited to the north of the site and only inundates 8% of the site in the design event so should be manageable.

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1 Introduction

1.1 Background

Wallingford HydroSolutions Ltd has been commissioned by Reading Borough Council (RBC) to undertake a Level 2 Strategic Flood Risk Assessment (SFRA) at 169-173 Basingstoke Road (SR4c) in accordance with the National Planning Policy Framework (NPPF), Planning Practice Guidance (PPG) and associated guidance from the Environment Agency (EA).

Where there is a risk of flooding at the site, this risk has been quantified with the latest available datasets and any associated limitations with the assessment have been identified.

Where applicable, recommendations for improving our understanding of flood risk and/or mitigating the risk has also been included in this report.

1.2 Assessment of Flood Risk

For the site, a detailed assessment of the nature of flood hazard was undertaken. This included using the relevant fluvial modelling data to assess:

- The proportion of the site inundated for a range of return periods
- The speed of onset
- Flood depth
- Flood velocity
- Flood Hazard

The sites were assessed against a range of return periods, however the design event, the 100-year (plus central climate change) event, was considered most important for planning purposes.

In addition to the analysis of modelling data, the location, standard and condition of existing flood defences was assessed. Other sources of flooding were also reviewed at each site. This included an assessment of surface water flooding and an assessment of groundwater flooding based on available hydrogeological information from BGS and Soilsclapes. Potential access/egress routes were identified with respect to the risk posed from all sources of flooding.

Following a review of flood risk, flood defences and the identification of access/egress routes, an assessment was made on whether a future site-specific FRA would be able to show that the site can be allocated for development. The assessment takes into account the flood risk vulnerability of the development, the scale of development proposed along with any requirements for the Exception Test. In this context, any mitigative actions in the form of ground raising and compensatory storage are identified.

The site assessments also include guidance for the preparation of FRAs, including information about the use of SuDS.

1.3 Report Structure

This FRA follows the structure summarised below:

- 1 - Introduction (this section)
- 2 - Site Description
- 3 - Flood Risk
- 4 - Detailed Review of Primary Flood Risk
- 5 - Development Viability and FRA Recommendations

2 Site Description

2.1 General Location Plan

169-173 Basingstoke Road (SR4c) is a 0.80 ha area site located in a suburban area in the south of Reading, see Figure 1.

In the Replacement Local Development Plan (RLDP) it is proposed to be used for residential development for 72-110 dwellings.

2.2 Topography

Based on 1m LiDAR data, the site slopes gradually from south to north, see Figure 2. Within the wider area, there is higher land to the east and north, relatively flat land to the south, and lower land to the west towards the River Kennet. The ground levels within the site boundary range from 46.4 to 48.8 m AOD. The average ground level is 47.6 m AOD.

2.3 Nearby Watercourses

The River Kennet is located approximately 550m west of the site, see Figure 1. A small unnamed tributary of the River Kennet is located approximately 340 m northwest of the site.

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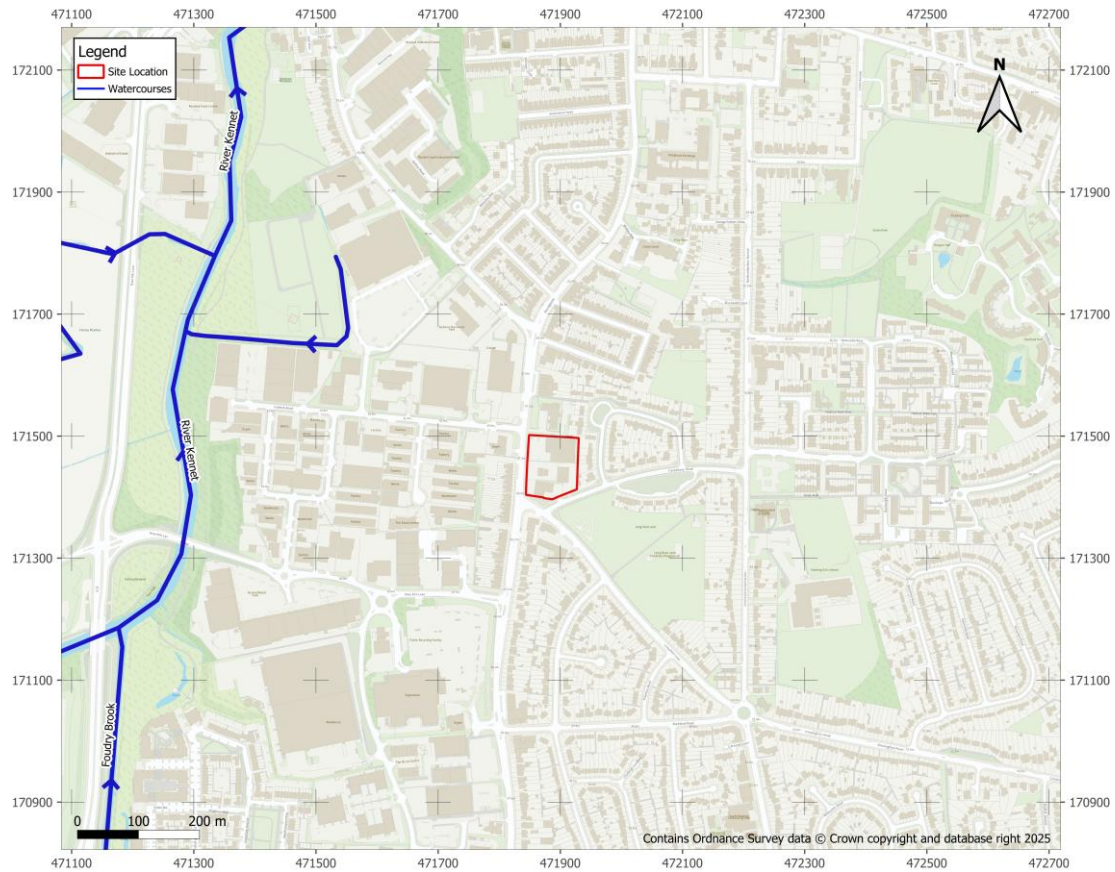


Figure 1 - Site Location

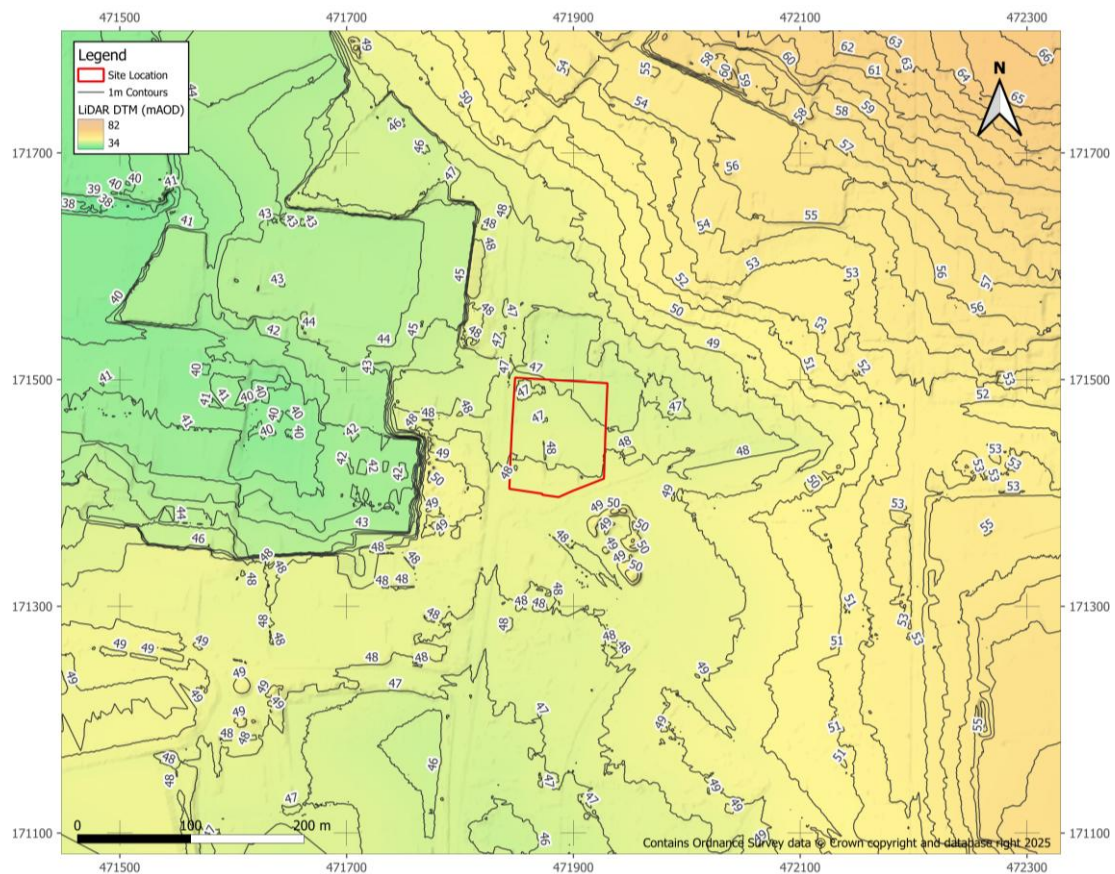


Figure 2 – Topography

3 Flood Risk

3.1 Historical Flooding

The EA has no record of historical flooding at the location of the site. The closest record of flooding is associated with the River Kennet, located approximately 500 m west of the site.

3.2 Fluvial Flood Risk

In the existing Flood Map for Planning (FMfP), no part of the site is located within Flood Zone 2 or 3, see Figure 3.

The EA climate change fluvial outputs for Flood Zone 2 and 3 have also been assessed and show no part of the site to be inundated, see Figure 4.

Therefore, fluvial flood risk is considered to be low.

3.3 Flood Defence Infrastructure

There is no formal flood defence infrastructure in the vicinity of the site. The site is not located within an area associated with a reduction in risk of flooding from rivers and sea due to defences nor is it located within a flood storage area.

3.4 Surface Water Flood Risk

The EA's surface water flood map shows that during the 0.1% AEP event a large area in the north of the site (39%) of the site is inundated. However, for the 1.0% AEP and 3.3% AEP events only 5% and 2% of the site are inundated respectively, see Figure 5.

When considering the effects of climate change, the percentage of the site inundated by the 0.1% AEP, 1.0% AEP, and the 3.3% AEP events increases to 41%, 8%, and 4% respectively, see Figure 6.

As a significant proportion of the site is inundated during the 0.1% AEP event; surface water flood risk is considered to be moderate. This is assessed in more detail in Section 4.

3.5 Groundwater Flooding

The site is underlain by the Lambeth Group which comprises Clay, Silt and Sand bedrock. This is expected to permit variable amounts of infiltration. No superficial deposits are present at the site. The underlying soils are loamy and clayey floodplain soils with naturally high groundwater.

Based on the data available the water table at the site could be mobile and close to the surface, translating to a moderate risk of groundwater flooding. More data is required at the planning stage to confirm this.

3.6 Reservoir Flood Risk

The FMfP shows that no part of the site is at risk of reservoir flooding during either the wet or the dry day scenario, see Figure 7.

3.7 Flood Warning Service

The site is not located within an EA Flood Warning Area.

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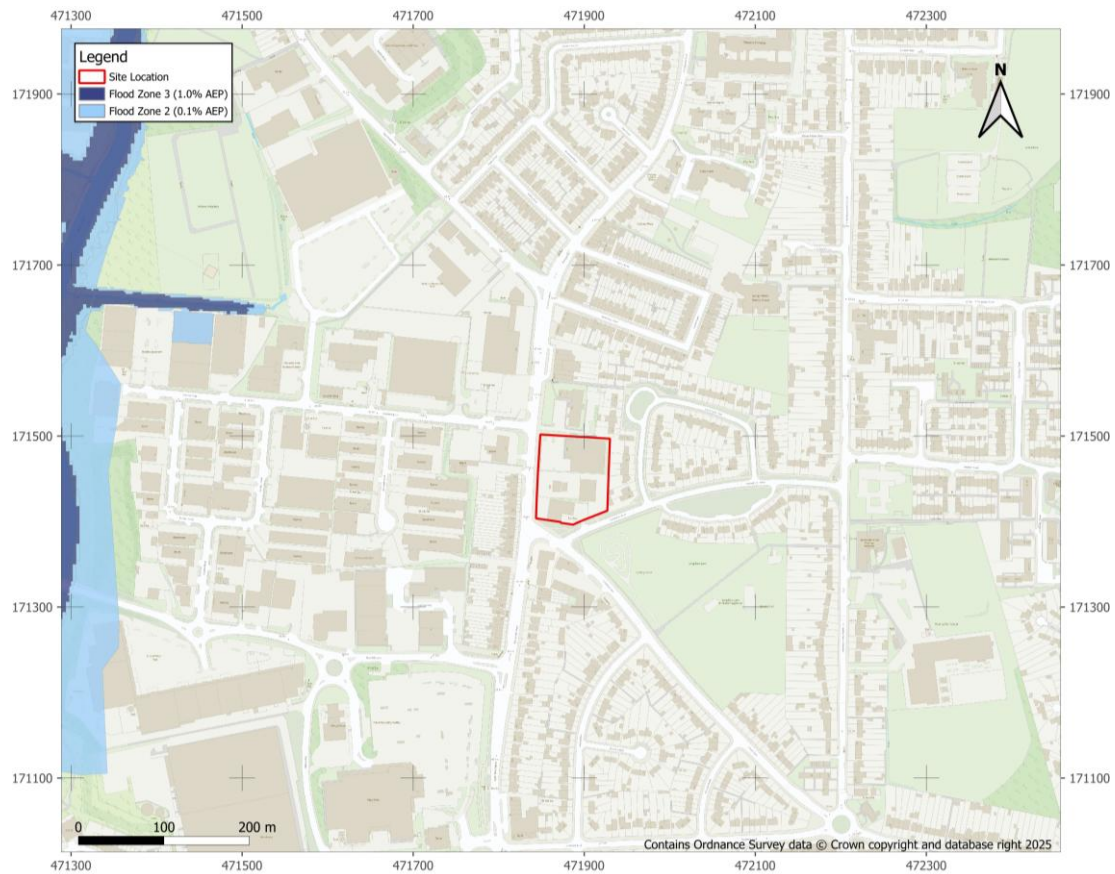


Figure 3 - Fluvial Flood Map

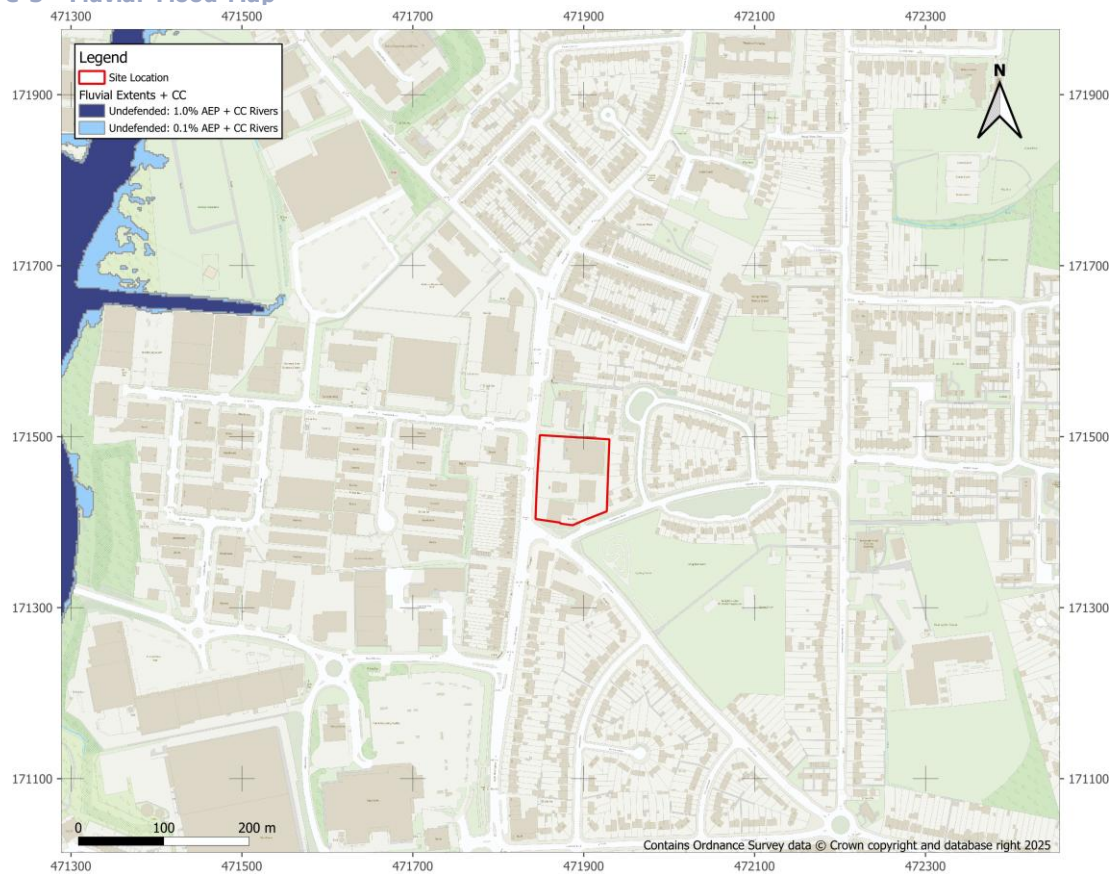


Figure 4 - Fluvial Climate Change Flood Map

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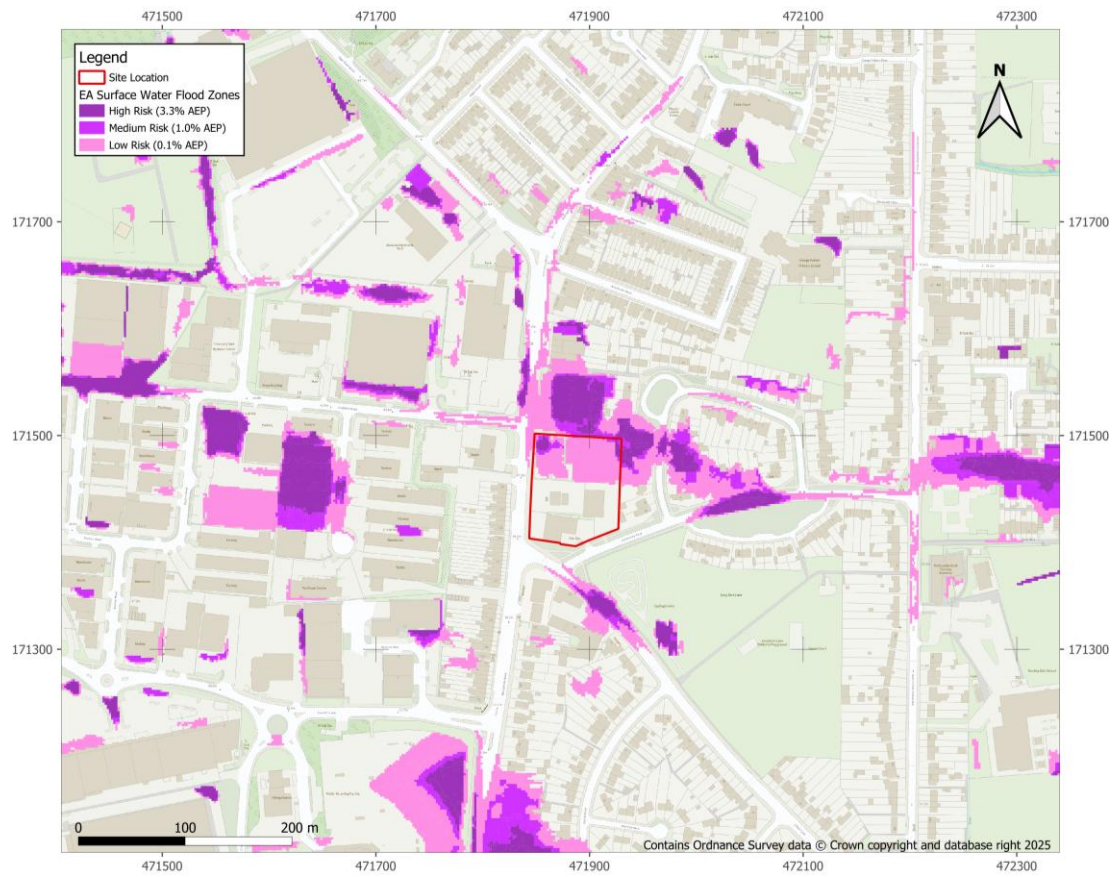


Figure 5 – Surface Water Flood Map

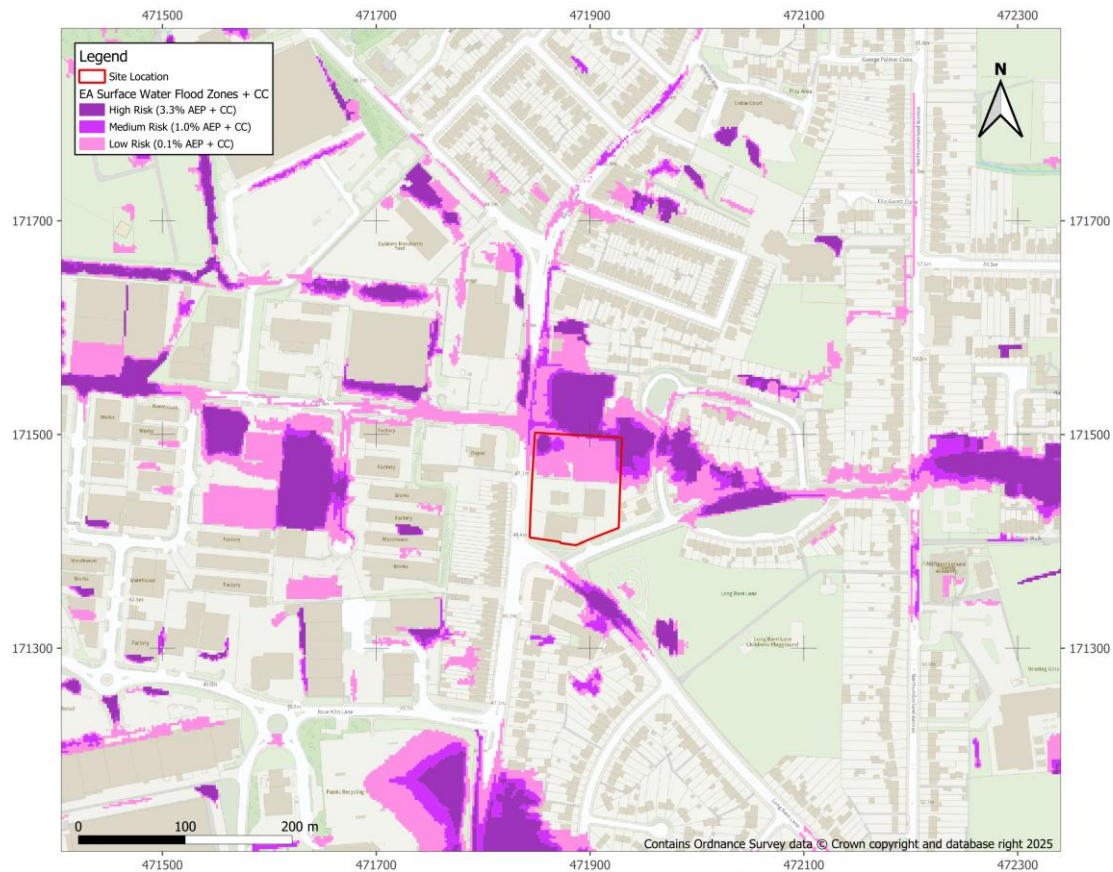


Figure 6 -Surface Water Climate Change Flood Map

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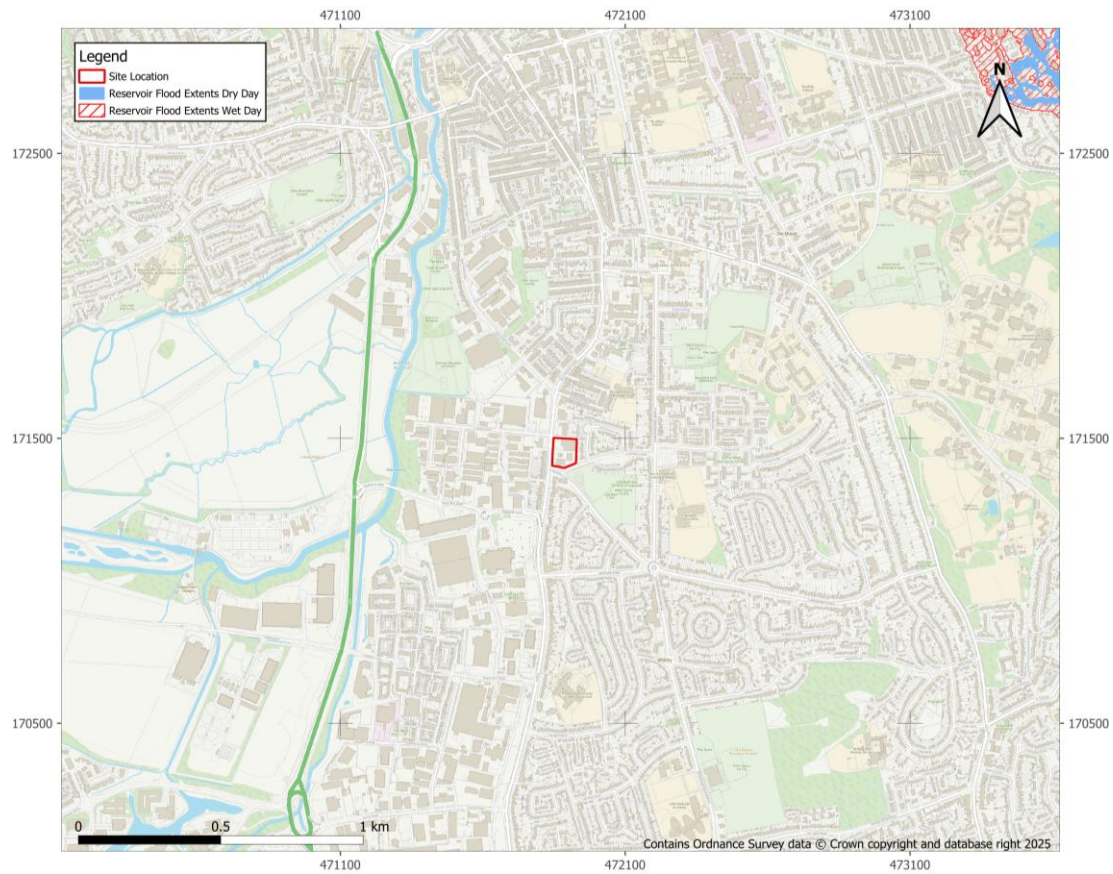


Figure 7 - Reservoir Failure Flood Map

4 Detailed Review of Primary Flood Risk

4.1 Primary Flood Risk

The primary flood risk mechanism at the site is pluvial in origin. The flood risk is quantitatively assessed in more detail below.

4.2 Flood Risk Metrics

For the design 100-yr plus climate change event 8% of the site is flooded. The current extents are based on national scale mapping, velocity data is not available however depth banding is available. For the small area inundated during the design event the depth banding is between 0.2-0.3m depth, suggesting limited flood depths for the design event. The flooding is limited to the north of the site where ground levels are lower. This results in pooling in the northwestern corner of the site and around the existing building edge in the northeast.

4.3 Access and egress

Vehicle and pedestrian access to the site is via either Canterbury Road to the southeast, or Basingstoke Road to the west. Subsequent travel would likely be via Longbarn Lane. The route lies exclusively in Flood Zone 1 and is generally at very low surface water flood risk, see Figure 8. This is with the exception of a small section of the Longbarn Lane where there is an area at high risk of surface water flooding. Whilst this risk is generally considered manageable, a site-specific FRA should consider in more detail the nature of the flood risk to determine how quickly it occurs and the degree of hazard.

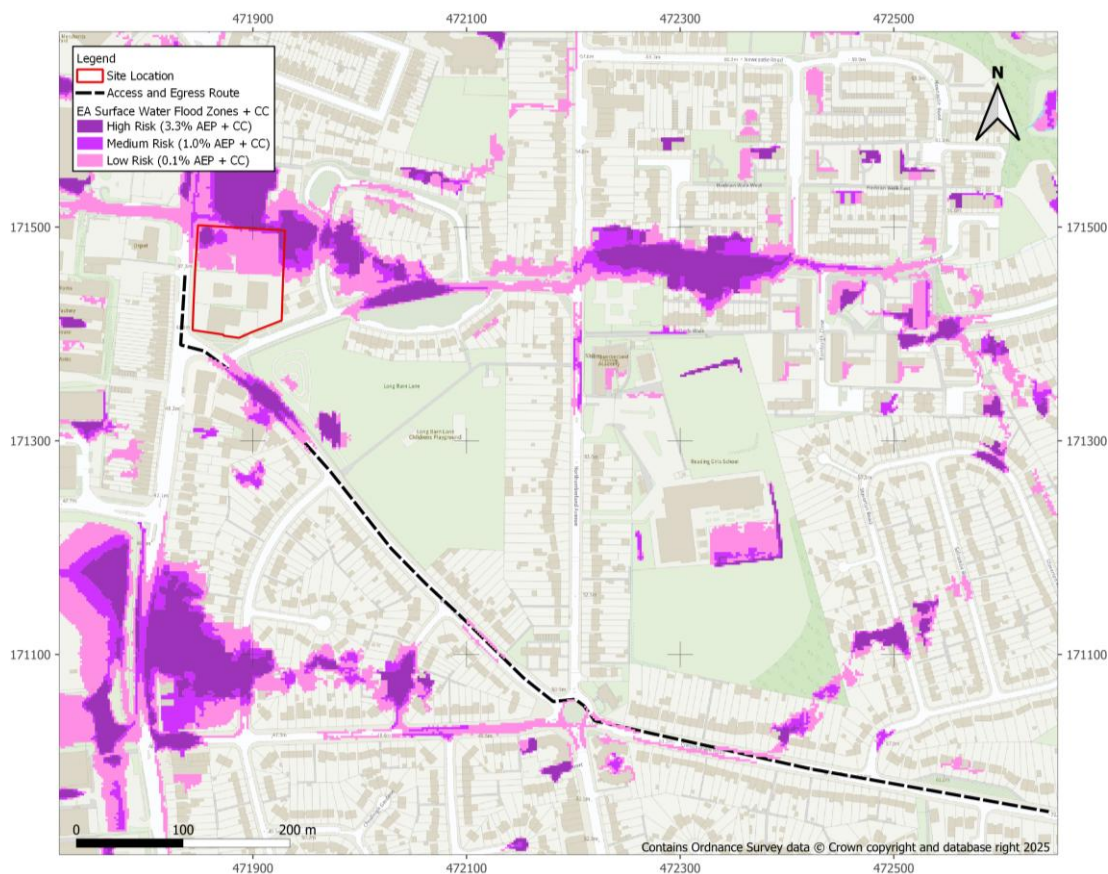


Figure 8 – Access and Egress Route

5 Development Viability and FRA recommendations

5.1 Development Categorisation

The development proposed is categorised as *More Vulnerable Development* which is permissible in Flood Zone 2 but needs to pass the Exception Test to justify development in Flood Zone 3a. More vulnerable development is not permissible in Flood Zone 3b.

In this regard, a new residential development at the site will be permissible given that the site lies completely outside of Flood Zones 2 and 3. Whilst there is a risk of surface water flooding at the site, it is limited to the north of the site and only inundates 8% of the site in the design event so should be manageable.

5.2 Scale of Development

The total site area is currently 0.80 ha; allocated for 72-110 residential dwelling. As no part of the site is located within Flood Zone 2 or 3, the whole development will be within Flood Zone 1. Surface water flood risk whilst present at the site is limited so should not present a significant barrier to the scale of the development.

5.3 Sequential Approach

It should be possible to place all infrastructure in Flood Zone 1. However, a sequential approach should be undertaken using the surface water flood extent prioritising more vulnerable residential development in lower flood risk areas with ancillary infrastructure such as car parks and green spaces located in higher flood risk areas if required. This is on the assumption that it does not increase flood risk elsewhere and is designed to be appropriately resistant and resilient to flooding. For this site it is recommended that the surface water climate change extents are used, which more clearly show the graduation in flood risk across the site.

5.4 Other Site-Specific Considerations

A small proportion of the site and access/egress route is at high surface water flood risk it should not prevent development at the site. However, a site-specific FRA should consider in more detail the nature of the surface water flood risk to determine how quickly it occurs and the degree of hazard. The drainage strategy for the proposed development should be suitably designed to manage additional runoff arising from the development and ensure that surface water flood risk at the site and to third party land is not increased.

In assessing and demonstrating the viability of any drainage solution for the site, a site-specific FRA should follow the non-statutory technical standards for SuDS and any relevant Local Authority Local Plan policies. The geology at the site is moderately permeable, however, the water table is likely high given the naturally wet soils. Therefore, the significant use of infiltration SuDS solutions may be challenging. It is recommended that a geotechnical investigation is undertaken at this site to obtain further information relating to infiltration rates, this will confirm whether infiltration could be viable in some areas. Attenuated discharge to a watercourse or a sewer will also need to be considered as part of a site-specific FRA.