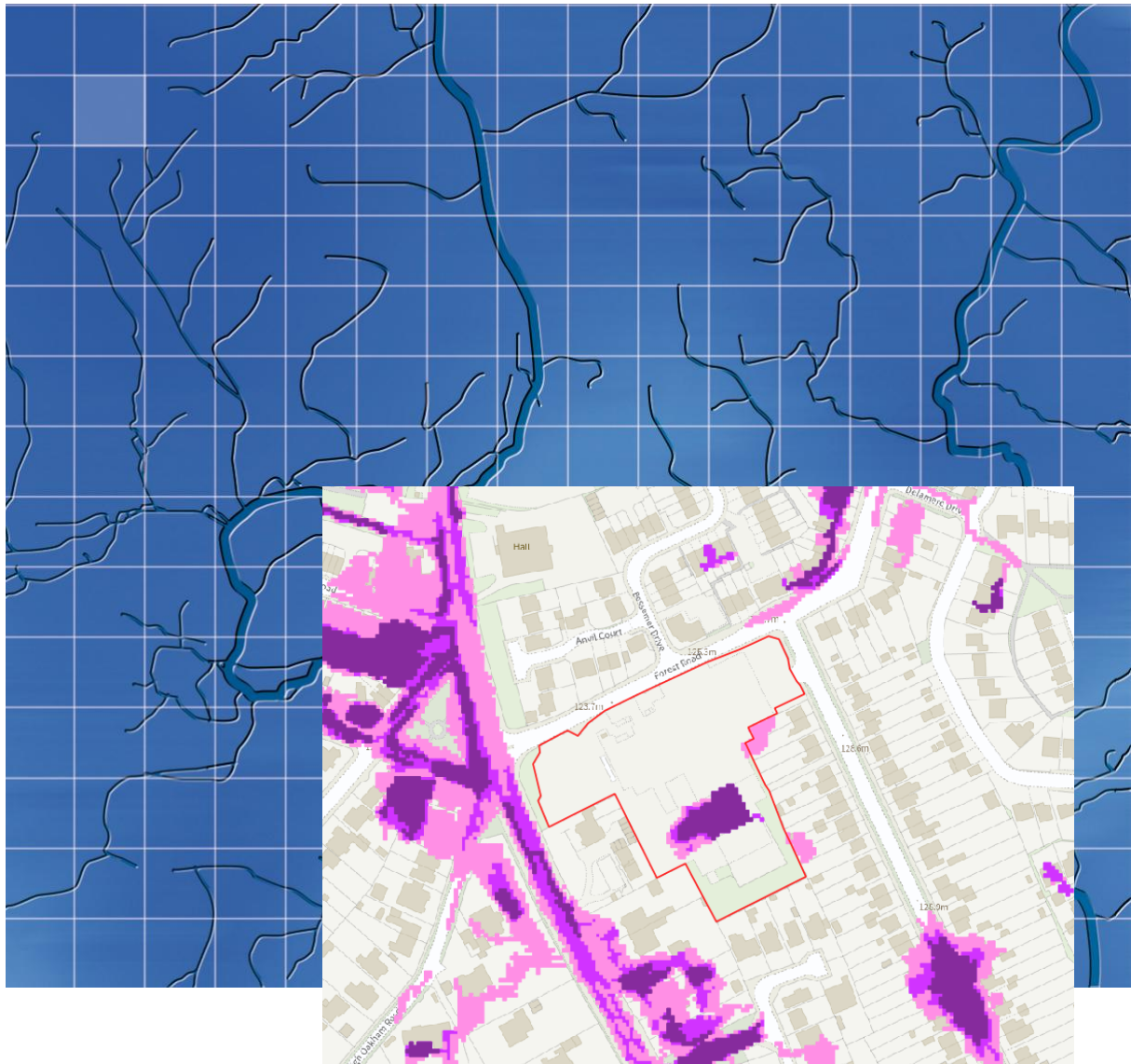


Appendix 1 Land off Forest Road Level 2 Strategic Flood Risk Assessment



Mansfield District Council

Land off Forest Road

Level 2 Strategic Flood Risk Assessment

Document issue details

WHS10323

Version	Issue date	Issue status	Prepared By	Approved By
1.1	20/08/2026	Final	Jasmine Lucas (Consultant)	Daniel Hamilton (Principal Consultant)

For and on behalf of Wallingford HydroSolutions Ltd.

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Land off Forest Road Level 2 SFRA

Flood Risk Overview

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

Flood Risk

Pluvial flood risk represents the greatest risk of flooding to the site with 6.6% of the site inundated during a design 1.0% AEP +CC event. This flood risk is located within one area in the centre of the site.

The Flood Map for Planning Surface Water Spatial Planning depth data shows depths are generally 150-300 mm, though a small area has depths up to 300-600 mm.

The risk of fluvial flooding is considered to be low as the entire site is located in Flood Zone 1.

The risk from other sources of flooding is considered to be moderate due to the potential for groundwater flooding.

The overall confidence in the assessment is moderate. This is based on the fact that the EA's latest national scale modelling has informed the assessment of surface water flood risk.

Conclusions and Recommendations

The development proposed is residential and categorised as *More Vulnerable Development*. It should be possible to locate all infrastructure in Flood Zone 1 at this site to avoid fluvial flood risk to people and property.

It should be noted that whilst the site is at low fluvial flood risk, parts of the site are at flood risk based on the EA's surface water modelling extents. However, provided a sequential approach is followed, it should be possible to locate infrastructure outside of the design surface water flood extent.

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1 Introduction

1.1 Background

Wallingford HydroSolutions Ltd has been commissioned by Mansfield District Council (MDC) to undertake a Level 2 Strategic Flood Risk Assessment (SFRA) at the Former Victoria Court Flats, in accordance with the National Planning Policy Framework (NPPF)¹, Planning Practice Guidance (PPG)² and associated guidance from the Environment Agency (EA)³.

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 site is 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 the site. This included an assessment of surface water flooding and an assessment of groundwater flooding based on available hydrogeological information from BGS and SoilScapes. 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 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 assessment also includes guidance for the preparation of FRAs, including information about the use of SuDS.

¹ Ministry of Housing Communities & Local government (2024) National Planning Policy Framework https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf

² UK Government (2025) Planning practice guidance- Flood risk and coastal change <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

³ Environment Agency (2026) <https://www.gov.uk/guidance/how-to-prepare-a-strategic-flood-risk-assessment>

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

Land off Forest Road is a 1.2 ha brownfield site located in the south of Mansfield town. Land use surrounding the site is residential, see Figure 1.

The site is a proposed allocation for residential development in the emerging Local Plan review, with a capacity for 35 dwellings.

2.2 Topography

Based on 1m LiDAR data the site slopes from southeast to northwest, with ground levels across the site ranging from 121.7 m AOD to 129.5 m AOD, see Figure 2. The average ground level is 125.7 m AOD.

2.3 Nearby Watercourses

The closest watercourse to the site is the River Maun, which flows from west to east, located approximately 500 m north of the site. The Cauldwell Brook is located 600 m west of the site. This flows through the Mill Pond before joining with the River Maun 830 m northwest of the site. Four other ponds are present parallel to the left bank of the Cauldwell Brook, see Figure 1.

Land off Forest Road Level 2 SFRA

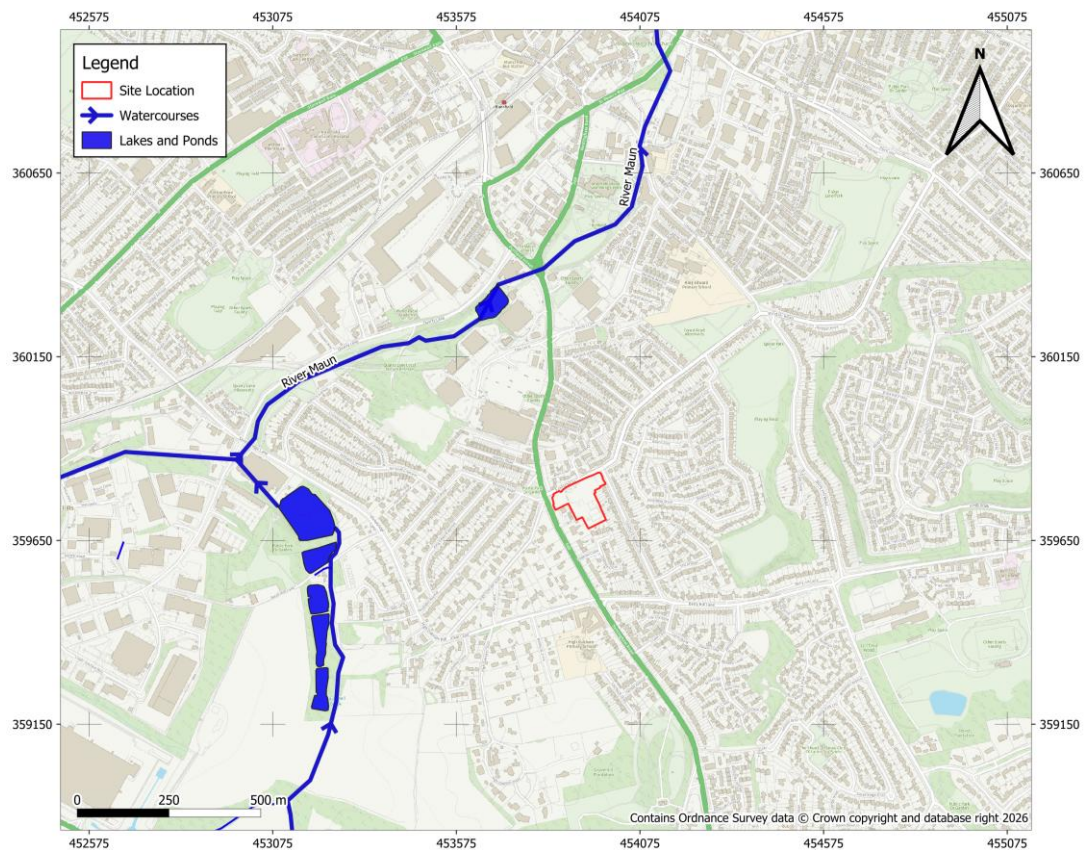


Figure 1 - Site Location

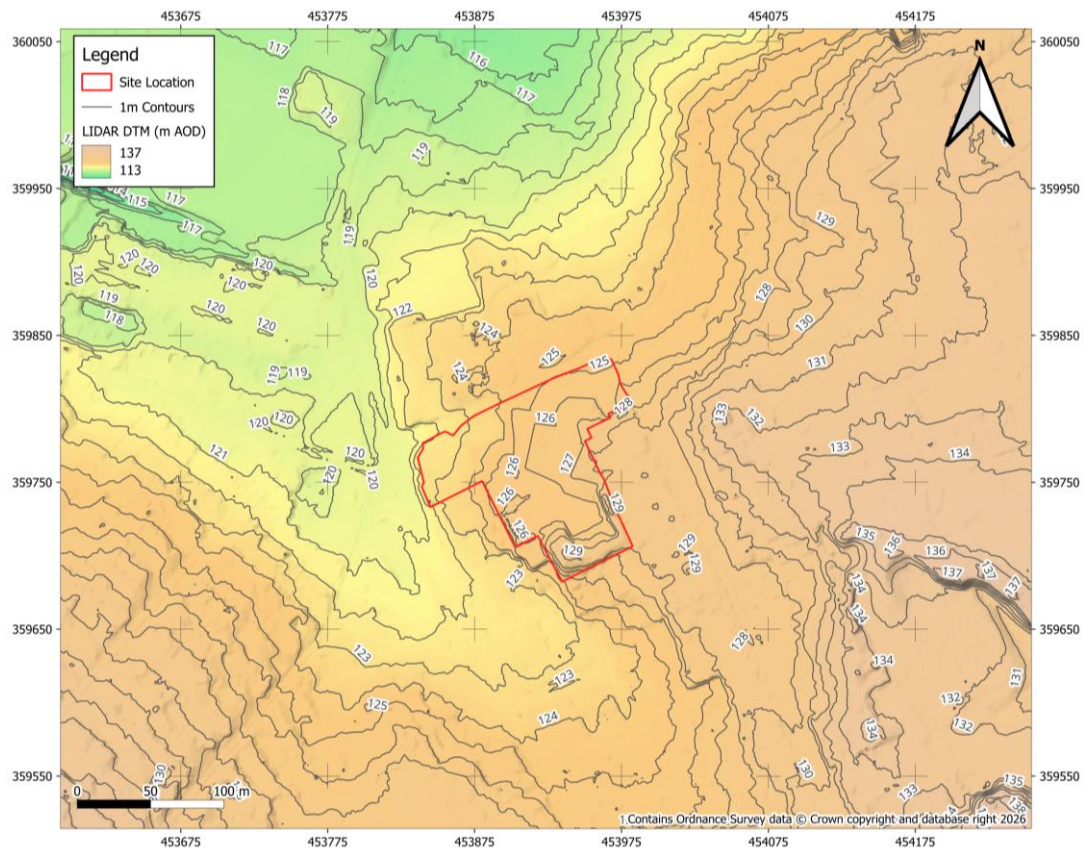


Figure 2 – Topography

3 Flood Risk

3.1 Historical Flooding

The EA hold no records of historic flooding at the site.

3.2 Fluvial Flood Risk

In the EA Flood Map for Planning (FMfP) the entire site is located within Flood Zone 1, defined as land with a less than 0.1% annual probability of flooding, see Figure 3.

When considering an allowance for climate change, the site remains outside of the 0.1% AEP extent, see Figure 4.

Fluvial flood risk is considered to be low and no further assessment is required.

3.3 Flood Defence Infrastructure

Flood defences are present along some parts of the River Maun through Mansfield, however given the distance of the site from these defences, they are not expected to significantly alter the baseline fluvial flood risk at the site. The site is not located within a flood storage area.

3.4 Surface Water Flood Risk

The EA's surface water flood maps show 4.4% of the site is inundated in the 3.3% AEP event, 5.4% is inundated in the 1.0% AEP event and 7.7% is inundated in the 0.1% AEP event, see Figure 5. When accounting for climate change the proportions moderately increase to 5.5% in the 3.3% AEP event, 6.6% in the 1.0% AEP event, and 8.2% in the 0.1% AEP, see Figure 6.

Although the overall extent of surface water flooding is relatively small, the risk is located within the centre of the site. Therefore, the risk of surface water flooding is considered to be moderate and is assessed in more detail in Section 4.

3.5 Groundwater Flooding

The site is underlain wholly by Lenton formation which is comprised of sandstone and classed as a highly productive, principal aquifer. No superficial deposits are present. The overlying soils are slightly acidic sandy soils; these are expected to be freely draining.

Based on the data available the risk of groundwater flooding is considered moderate, largely based on the freely draining nature of the overlying soils which permit a mobile water table. A geotechnical assessment is recommended at the planning stage to confirm the level of risk from groundwater flooding.

3.6 Reservoir Flood Risk

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

3.7 Flood Warning Service

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

Land off Forest Road Level 2 SFRA

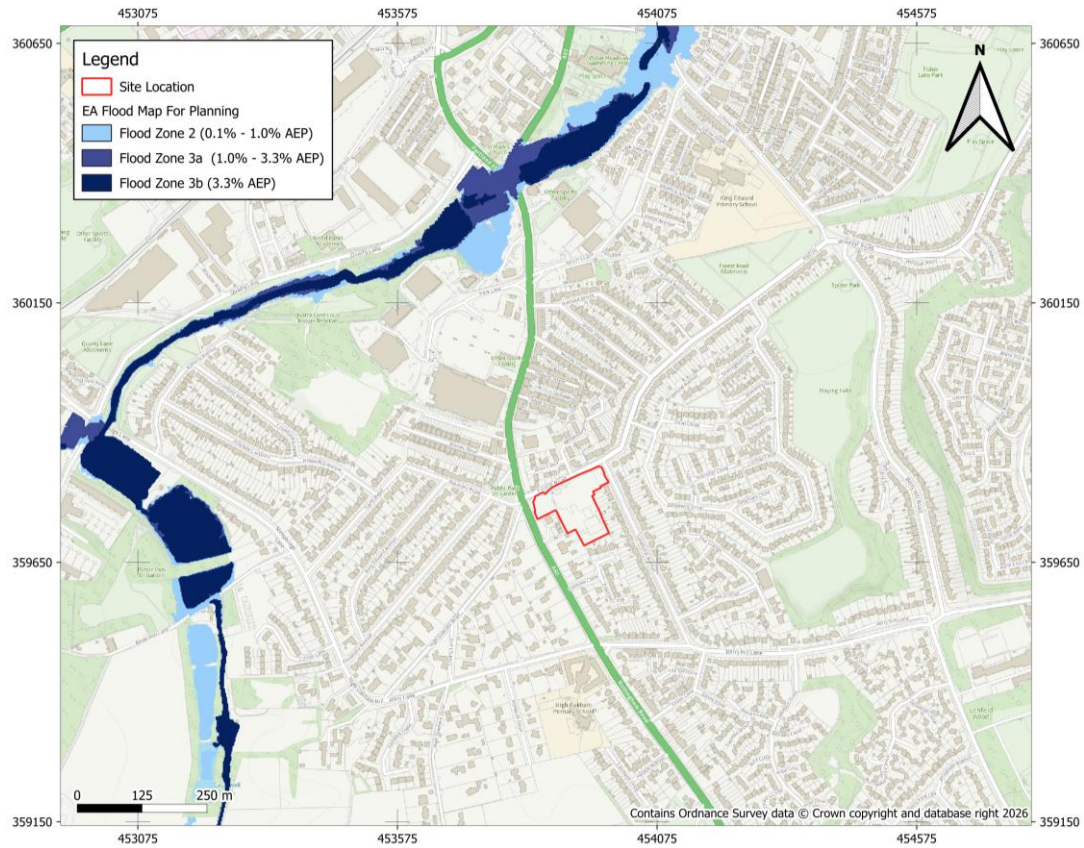


Figure 3 - Fluvial Flood Map

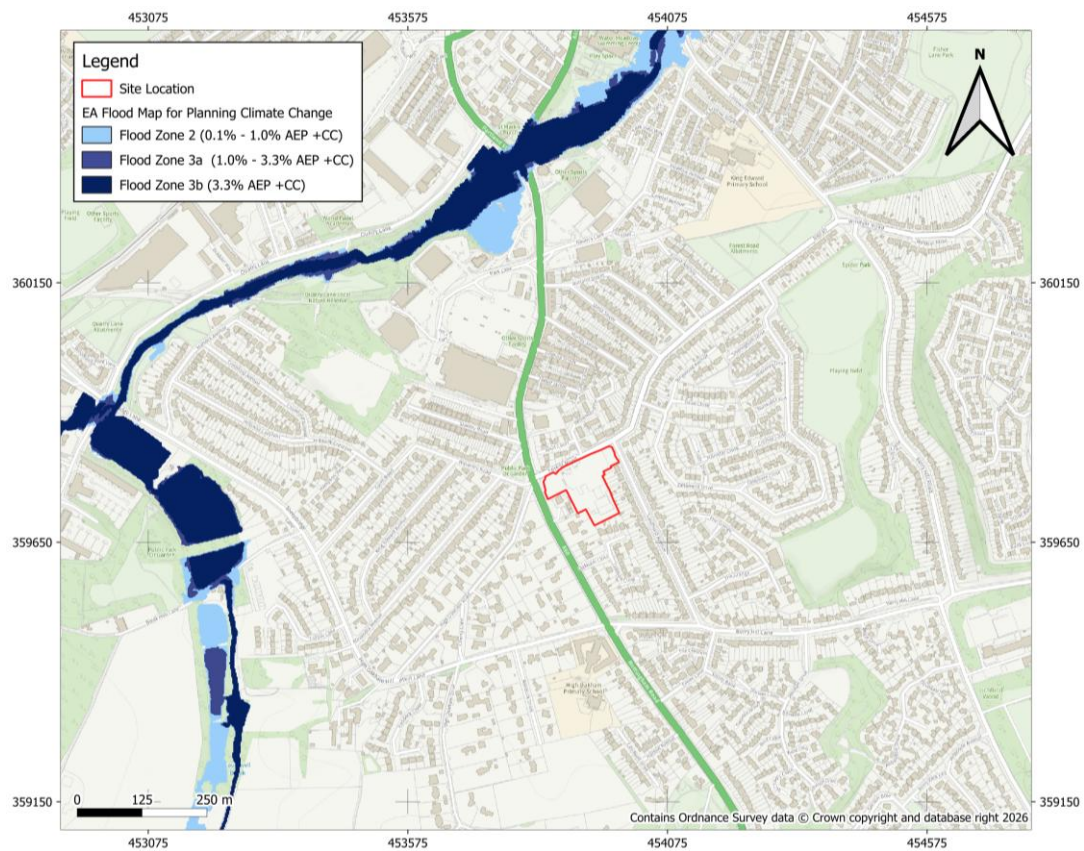


Figure 4 - Fluvial Climate Change Flood Map

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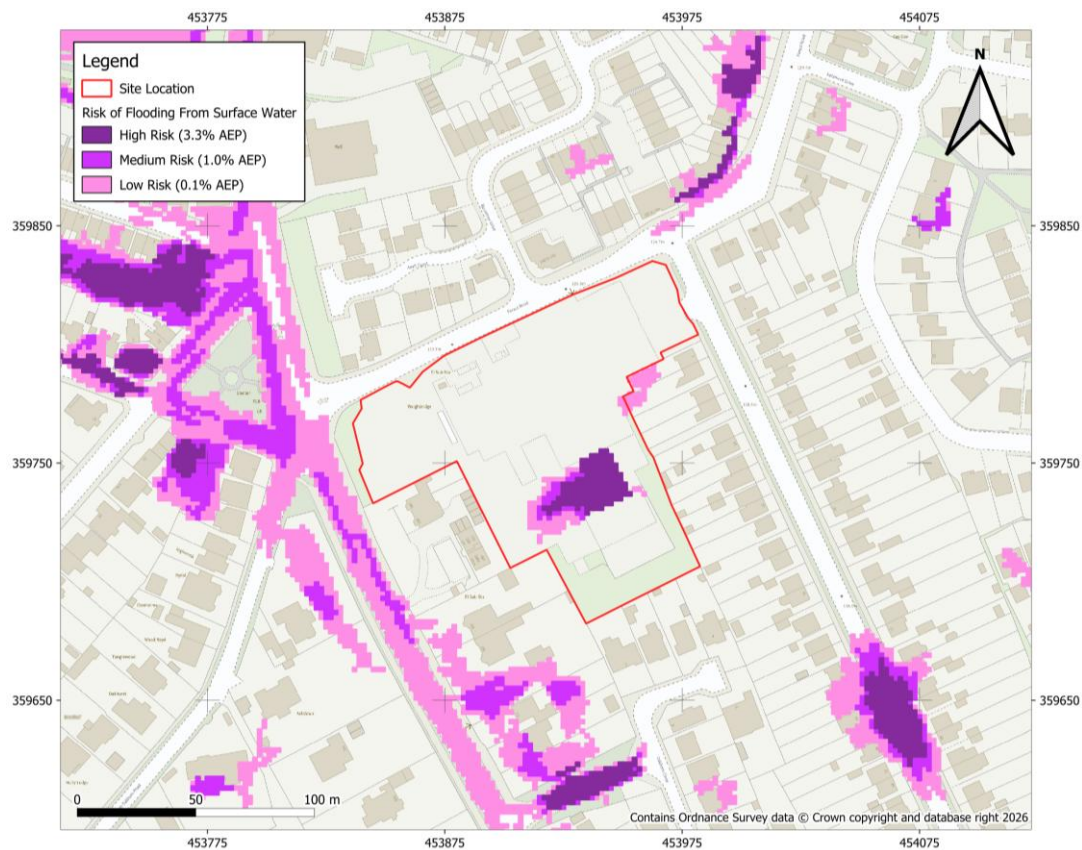


Figure 5 – Surface Water Flood Map

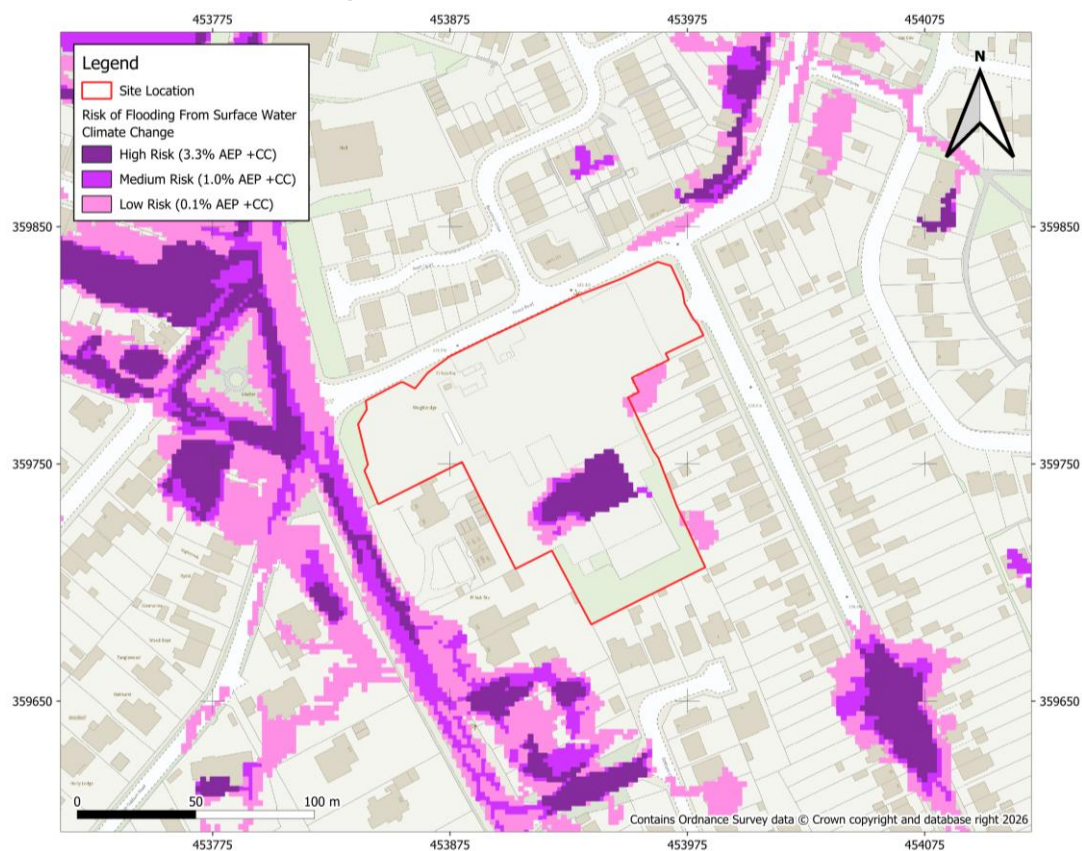


Figure 6 -Surface Water Climate Change Flood Map

Land off Forest Road Level 2 SFRA

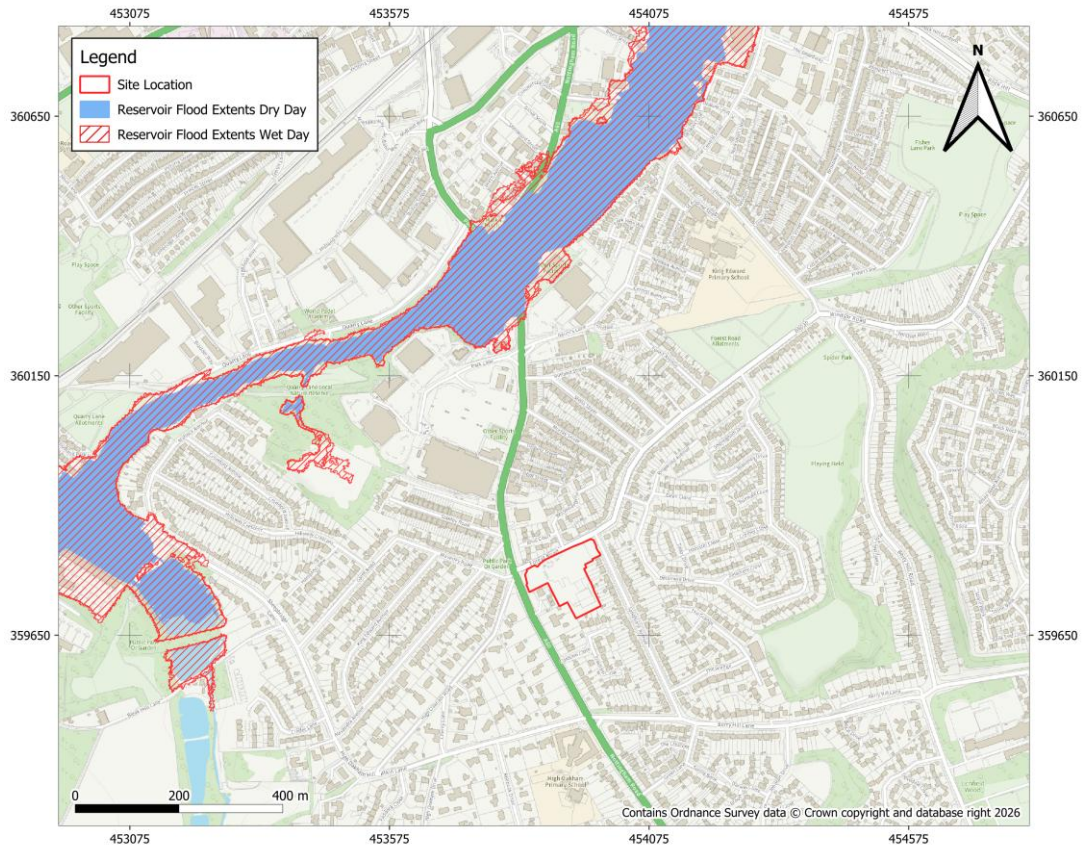


Figure 7 - Reservoir Failure Flood Map

4 Detailed Review of Primary Flood Risk

4.1 Primary Flood Risk

Pluvial flooding is the primary flood risk mechanism at the site and is assessed in more detail below.

4.2 Flood Risk Metrics

The FMfP Surface Water Spatial Extents depth data for the 100-yr plus climate change design event was assessed to attain further detail on surface water flooding. During this event, the inundation is limited to one area in the centre of the site. Overall, 6.6% of the total site area is inundated, see Figure 8.

The greatest depth of flooding within the site is 300-600 mm, though the majority of the inundated area has a flood depth between 150 and 300 mm. On the western edge of the flood extent, depths are shown to be less than 150 mm. Flow velocities in the area are expected to be low, as the flooding appears to be associated with pooling within a topographical depression caused by manmade hardstanding and infrastructure on the site.

4.3 Access and Egress

Access to the site is likely to be from Forest Road to the north or Sandhurst Avenue to the east. Due to the surface water flood risk along the A60 to the west of the site during the extreme 0.1% AEP +CC event, the best access and egress route to the site is along Forest Road.

Leaving the site, users should travel east along Forest Road continuing to its junction with Windsor Road. From here onward travel should be either continuing east along Windsor Road or south along Berry Hill Road. Travel northwards should be avoided due to the fluvial flood risk associated with the River Maun. Along the route identified there is one minor area of flooding (<150mm) approximately 100m northeast of the site along the Forest Road.

Safe access is considered available to the site, however a site-specific FRA should assess in more detail the nature of the flood risk to determine how quickly it occurs and the degree of hazard. It should also consider routes across the site once the development layout is known.

Land off Forest Road Level 2 SFRA

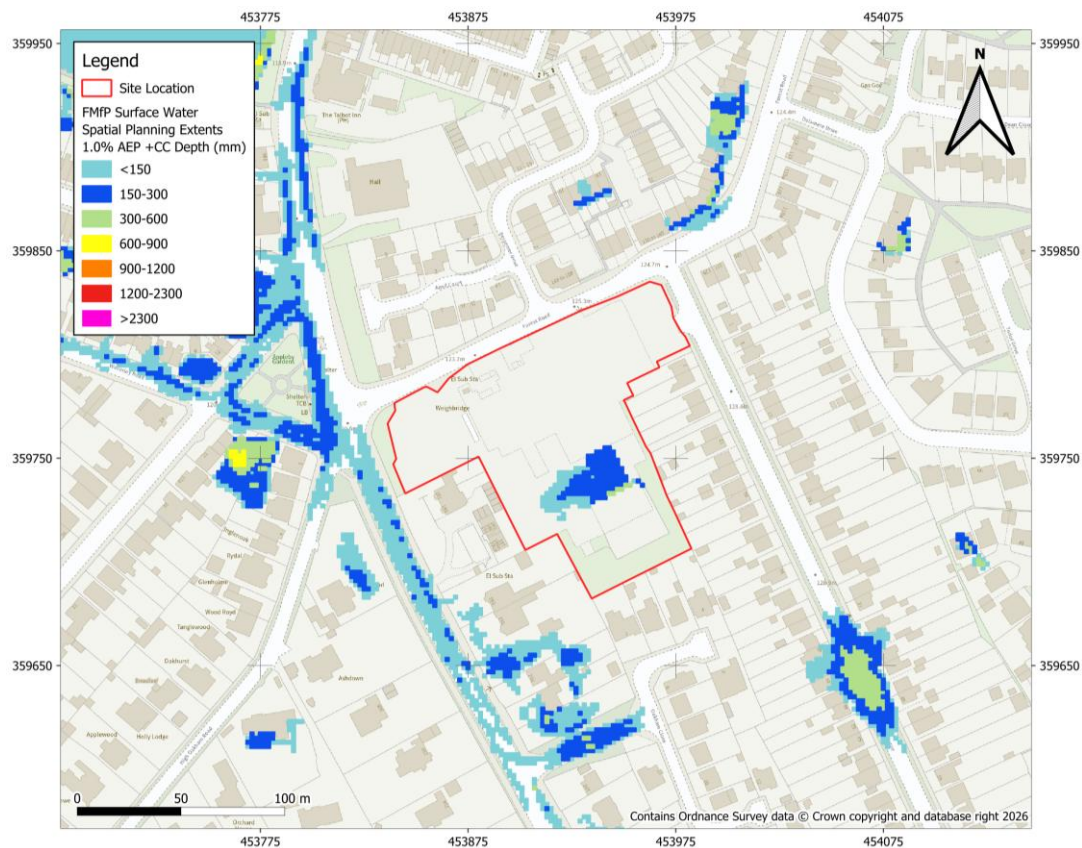


Figure 8 - FMfP Surface Water Spatial Extents - 1.0% AEP + CC Depth

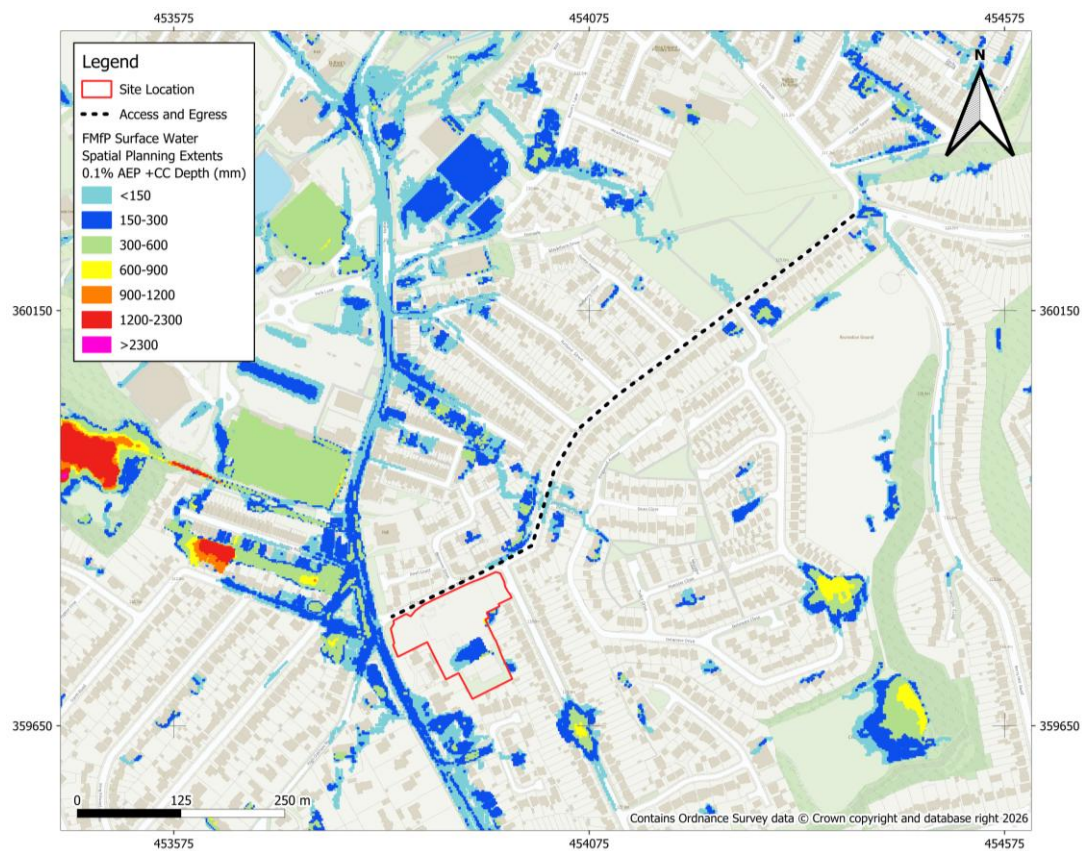


Figure 9 - Access and Egress Routes

5 Development Viability and FRA recommendations

5.1 Development Categorisation

The development proposed is residential and categorised as *More Vulnerable Development*. It should be possible to locate all infrastructure in Flood Zone 1 at this site to avoid fluvial flood risk to people and property.

It should be noted that whilst the site is at low fluvial flood risk, parts of the site are at flood risk based on the EA's surface water modelling extents. However, provided a sequential approach is followed, it should be possible to locate infrastructure outside of the design surface water flood extent.

5.2 Scale of Development

The total site area is 1.2 ha, allocated for 35 dwellings. Assuming a housing density of 35 dwellings per hectare, 35 dwellings would require 1.0 ha of land.

The extreme 0.1% AEP +CC design event inundates 8.2% of this area which indicates that 1.1 ha remains flood free. Therefore, it should be possible to locate all development outside of flood risk areas. This is provided there are no constraints (non-flood related) which require development to be located in at-risk areas.

5.3 Sequential Approach

It is important that a sequential approach is implemented at the site. As the entire site is located within Flood Zone 1, the surface water flood maps should be used to ensure development is prioritised in flood free areas where possible, followed by low risk, medium risk and high-risk areas.

If required ancillary infrastructure such as car parks and green spaces could be located in higher flood risk areas to allow residential properties to be sited in lower risk areas. This is under the assumption that it does not increase flood risk elsewhere and is designed to be appropriately resistant and resilient to flooding.

5.4 Other Site-Specific Considerations

Whilst this SFRA report has reviewed surface water flood risk, a site-specific FRA should consider in more detail how quickly it occurs, the degree of hazard to the site, and its impact on access considering the final layout. As only national scale modelling is available at the site, if development is proposed within the design flood extents, detailed modelling may be required during a site-specific FRA to better inform design flood levels and finished flood levels at the site.

As the area of surface water flood risk is associated with an existing topographical depression which is thought to result from the manmade hardstanding and infrastructure on the site, there may be opportunities to reprofile the ground as part of the site's redevelopment. This, in conjunction with SuDS designed to capture and manage excess surface water, could help to reduce the surface water flood risk.

In this regard, 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 national standards for SuDS and any relevant Local Authority Local Plan policies. The geology at the site is likely to be permeable and such infiltration SuDS solutions are likely to be appropriate; however, this should be confirmed through further geotechnical investigation. Attenuated discharge to a watercourse or a sewer may also need consideration as part of the development's drainage design.