

Mansfield District Council

Former Victoria Court Flats

Level 2 Strategic Flood Risk Assessment

Document issue details

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For and on behalf of Wallingford HydroSolutions Ltd.

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Former Victoria Court Flats 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 5% of the site inundated during a 1.0% AEP +CC event. This flood risk is associated with an overland flow path along the southeastern boundary and localised surface water ponding in the north of the site.

The Flood Map for Planning Surface Water Spatial Planning depth data shows depths range between < 150 mm and 300 mm.

The risk of fluvial flooding is considered to be low as entire site is within 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. Provided no infrastructure is located in flood risk areas the national scale modelling will remain suitable for planning purposes.

Conclusions and Recommendations

The development proposed is residential and categorised as *More Vulnerable Development*. All infrastructure at this site will be within Flood Zone 1 with low risk of fluvial flooding 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. 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

The Former Victoria Court Flats is a 2.07 ha brownfield site located within a mixed-use area of Mansfield, see Figure 1. The site was occupied by residential flats, which have since been demolished.

The site is bounded by existing residential dwellings to the north, public parkland and sports fields to the west, and a railway line to the south.

The site is a proposed allocation for residential development in the emerging Local Plan review, with a capacity for 62 dwellings.

2.2 Topography

Based on 1m LiDAR data the site slopes south-easterly towards the River Maun (see section 2.3). Ground levels across the site range from 120.7 m AOD to 130.4 m AOD, see Figure 2. The average ground level is 125.9 m AOD.

2.3 Nearby Watercourses

The closest main watercourse is the River Maun, which flows easterly approximately 200 m southeast of the site through the Quarry Lane Local Nature Reserve and adjacent allotment grounds.

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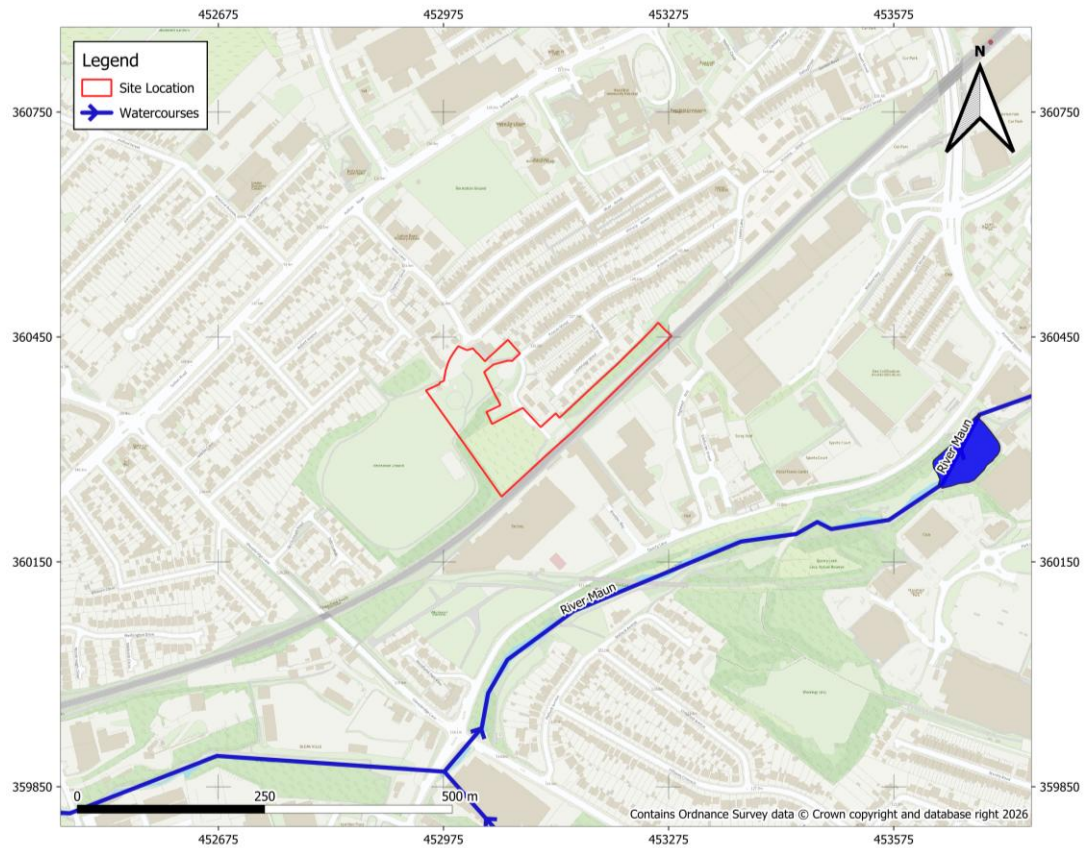


Figure 1 - Site Location

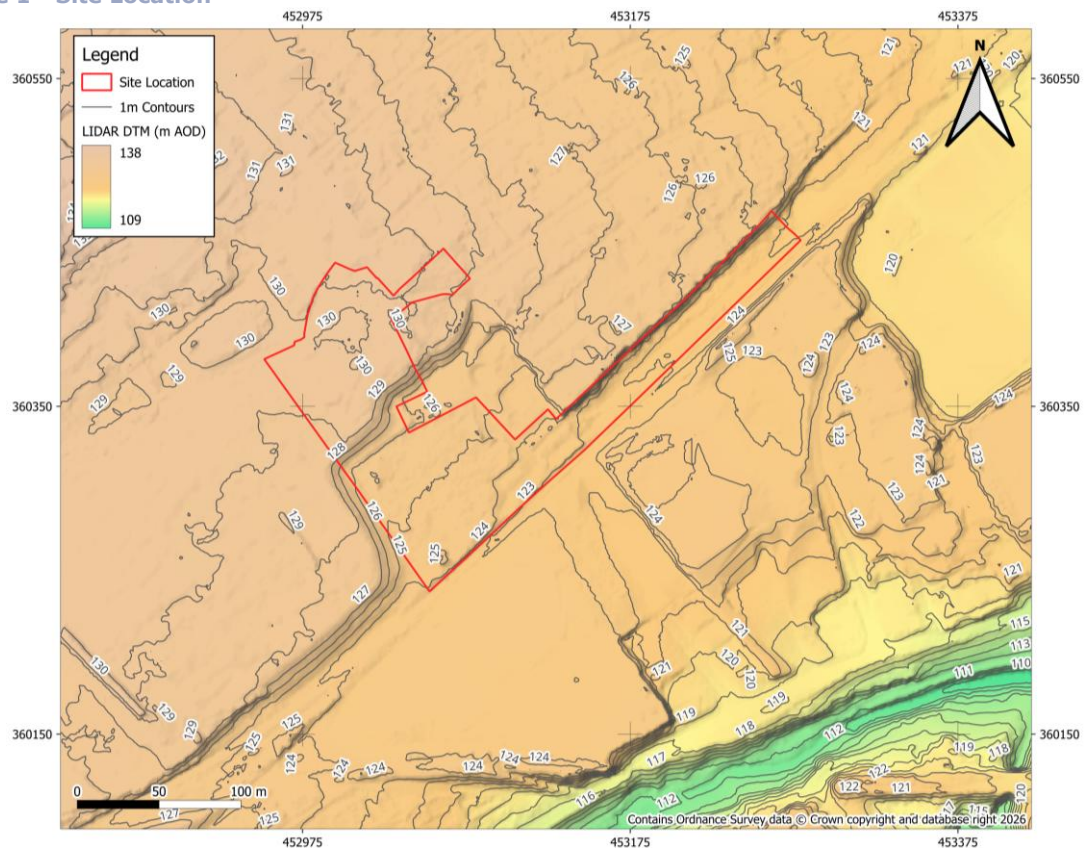


Figure 2 – Topography

3 Flood Risk

3.1 Historical Flooding

The EA hold no records of historic flooding at the site. The nearest recorded event occurred approximately 2 km to the northeast of the site in January 1977, caused by out-of-bank flows from the River Maun.

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 having a less than 0.1% annual chance of flooding, see Figure 3.

When considering an allowance for climate change, no changes are shown in the extent of inundation within the site, Figure 4.

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

3.3 Flood Defence Infrastructure

There are no formal flood defences in the vicinity of the site nor is it located within a flood storage area.

3.4 Surface Water Flood Risk

The EA's surface water flood maps show that 3% of the site is inundated during the 3.3% Annual Exceedance probability (AEP) event, 4% of the site is inundated during the 1.0% AEP event and 8% is inundated during the 0.1% AEP event, see Figure 5.

When accounting for climate change impacts, the flood extents increase moderately to inundate 4% of the site during the 3.3% AEP event, 5% during the 1.0% AEP event and 11% during the 0.1% AEP event, see Figure 6.

The flooding is predominantly driven by overland flows along the southern railway corridor and localised ponding in the north of the site. Surface water flood risk is considered moderate and is assessed in more detail in Section 4.

3.5 Groundwater Flooding

The site is largely underlain by mudstone and sandstone bedrock with the exception of the east of the site which is underlain by dolostone. The overlying soils are freely draining lime-rich loamy soils.

Based on the underlying site geology and hydrogeology, the overall risk of groundwater flooding is considered moderate. The geology underlying the site could lead to a mobile water table and groundwater emergence, the risk is likely to be higher in areas underlain by Dolostone where the bedrock permeability is higher. A geotechnical assessment is recommended at the planning stage to confirm the level of risk from groundwater flooding.

3.6 Reservoir Flood Risk

The EA's reservoir flood map shows the site is not at risk under either the Wet-Day or 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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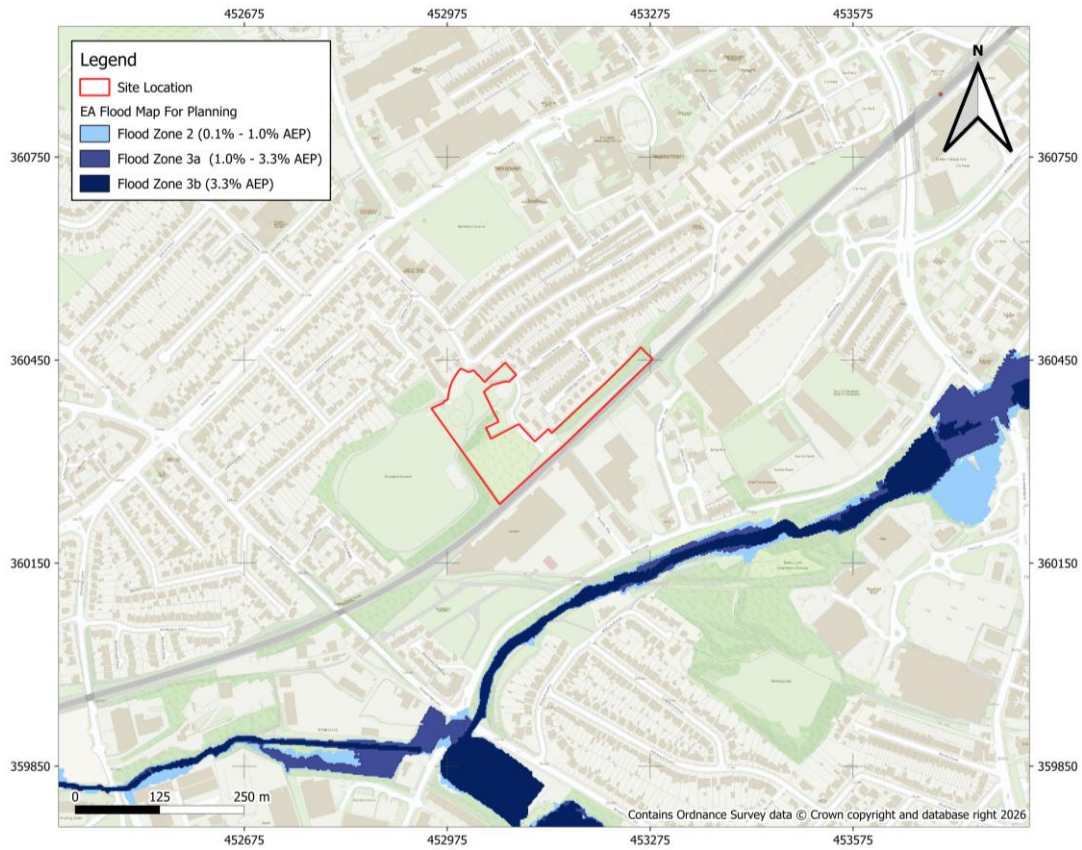


Figure 3 - Fluvial Flood Map

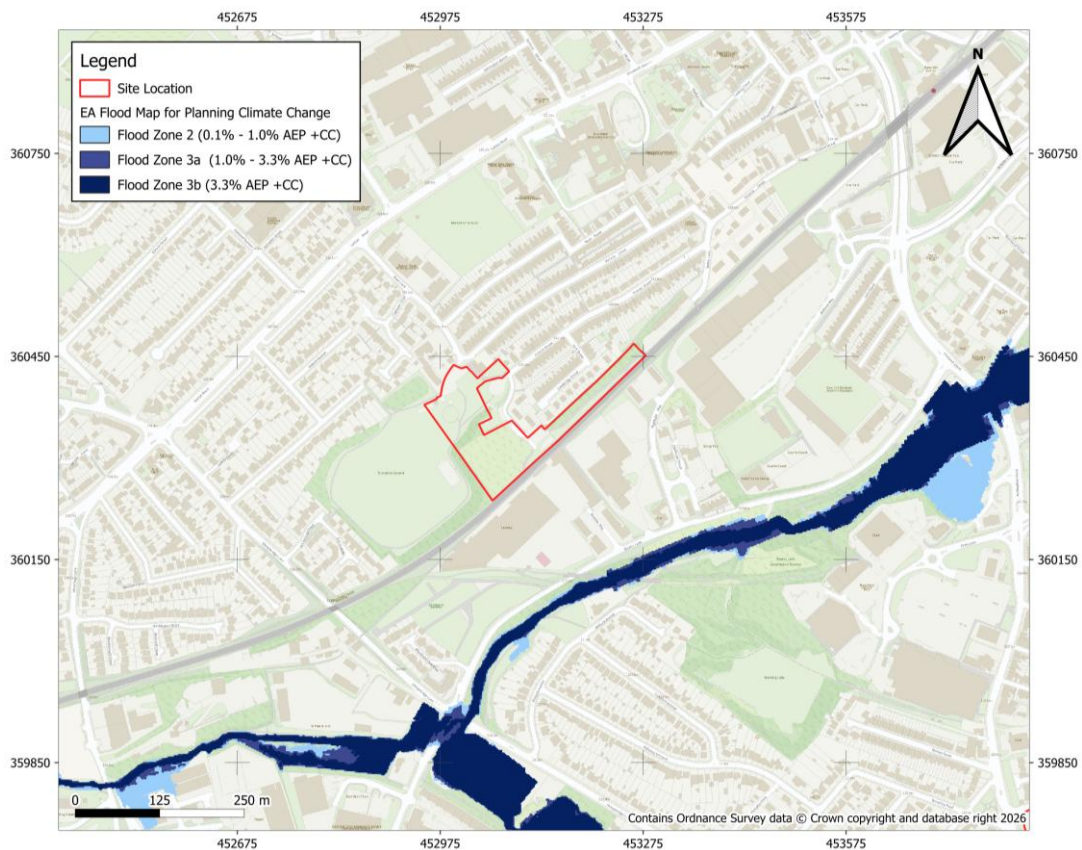


Figure 4 - Fluvial Climate Change Flood Map

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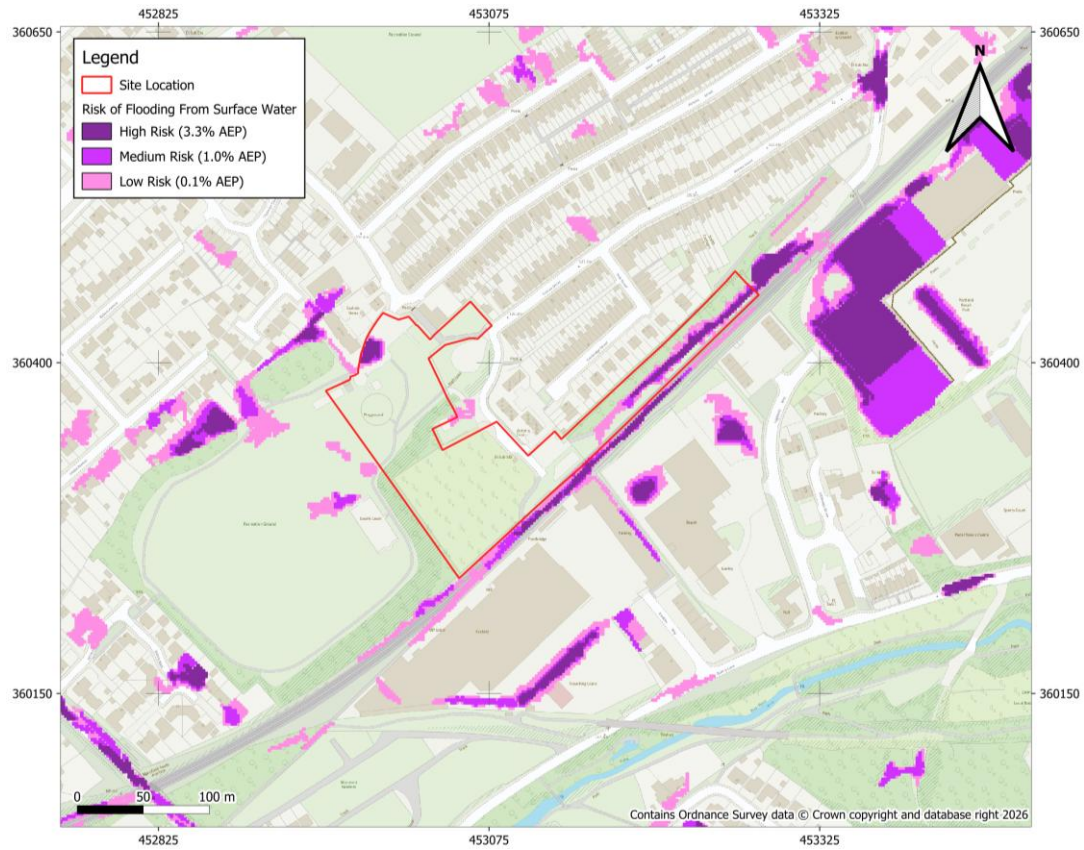


Figure 5 – Surface Water Flood Map

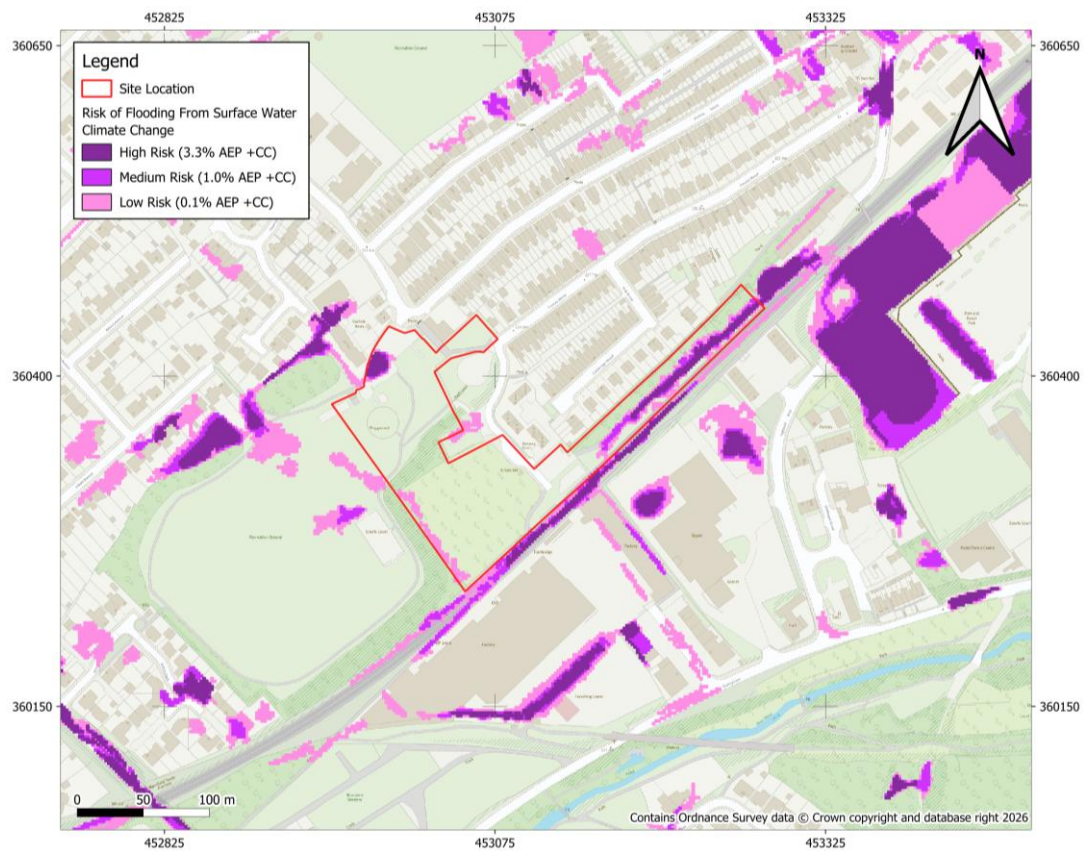


Figure 6 -Surface Water Climate Change Flood Map

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Figure 7 - Reservoir Failure Flood Map

4 Detailed Review of Primary Flood Risk

4.1 Primary Flood Risk

Pluvial flooding is the primary flood risk 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. It applies an Upper End allowance for the 2070s epoch, which is appropriate to support long-term planning and development. During this event, flood risk is associated with overland flow along the southern railway corridor and localised ponding to the north of the site. Approximately, 11% of the total site area is inundated during this event, see Figure 8.

Flood depths are relatively low ranging between < 150 mm and 300 mm. Flow velocities in the northern area are expected to be low, as the flooding appears to be associated with pooling within a topographical depression. Flow velocities in the southern area are also expected to be modest, given the limited change in levels along the flow route.

4.3 Access and Egress

Access and egress to site is available be via Princess Street along the eastern boundary and via Moor Lane along the northern boundary. During an extreme pluvial flood (0.1% AEP + CC), access via these routes remain largely flood free. However, for Princess Street there are areas of localised ponding indicated downstream along Victoria Street, see Figure 9.

The depth of these areas of pooling tends not to be significant (150mm-300mm), 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.

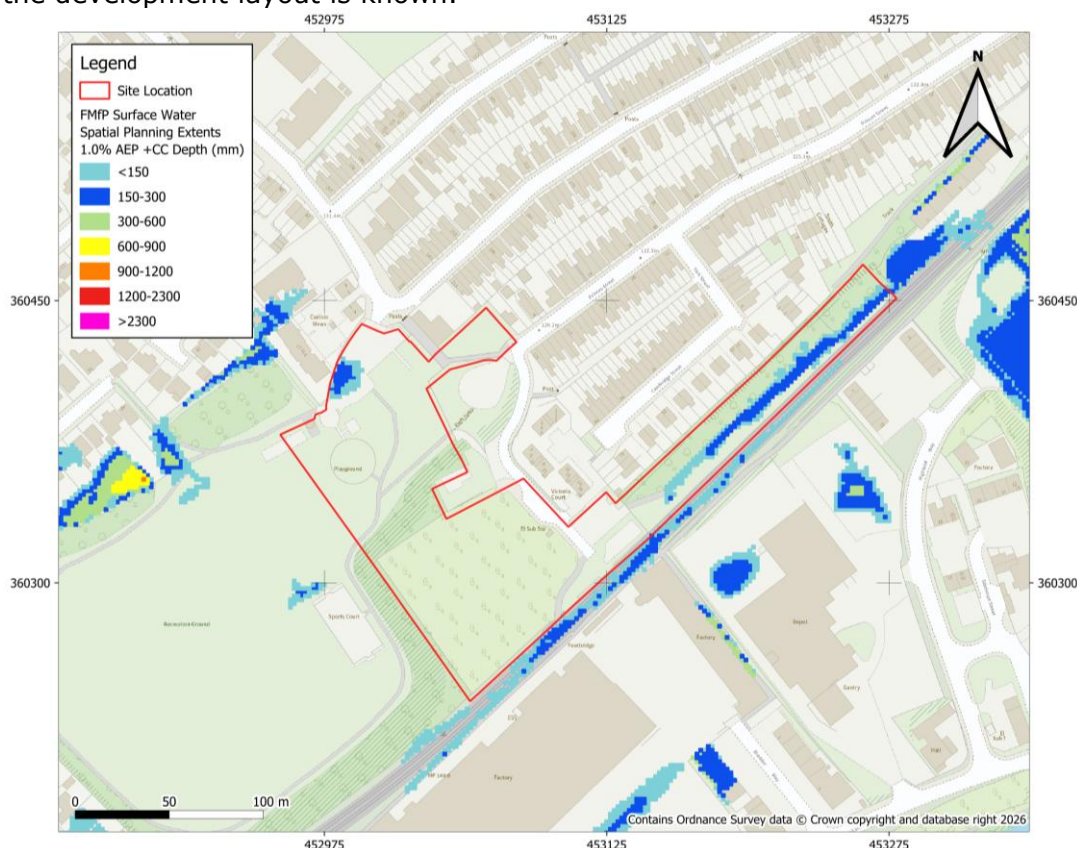


Figure 8 - FMfP Surface Water Spatial Extents - 1.0% AEP + CC Depth

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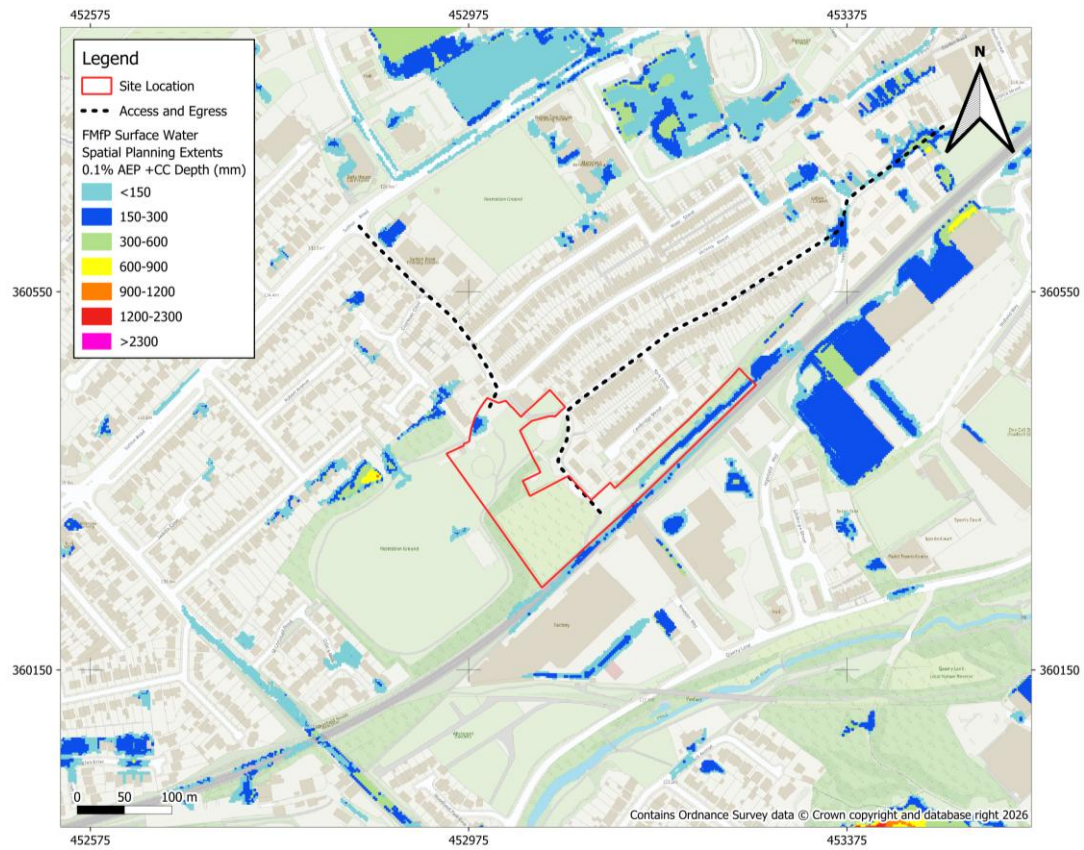


Figure 9 - Access and Egress Routes

5 Development Viability and FRA recommendations

5.1 Development Categorisation

The development proposed is residential and categorised as *More Vulnerable Development*. All infrastructure at this site will be within Flood Zone 1 with low risk of fluvial flooding 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 2.07 ha, allocated for 62 dwellings. Assuming medium density housing (35 dwellings per hectare) 62 dwellings would require approximately 1.77 ha of land.

As the entire site is located within Flood Zone 1, development should be guided by the surface water flood risk at the site. The 1.0% AEP +CC design surface water event inundates 5% of the total site area. This leaves 1.97 ha of land flood free during the design event. Therefore based on the assumed dwelling density, it should be possible to locate all development outside of the design flood extent. 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.

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.