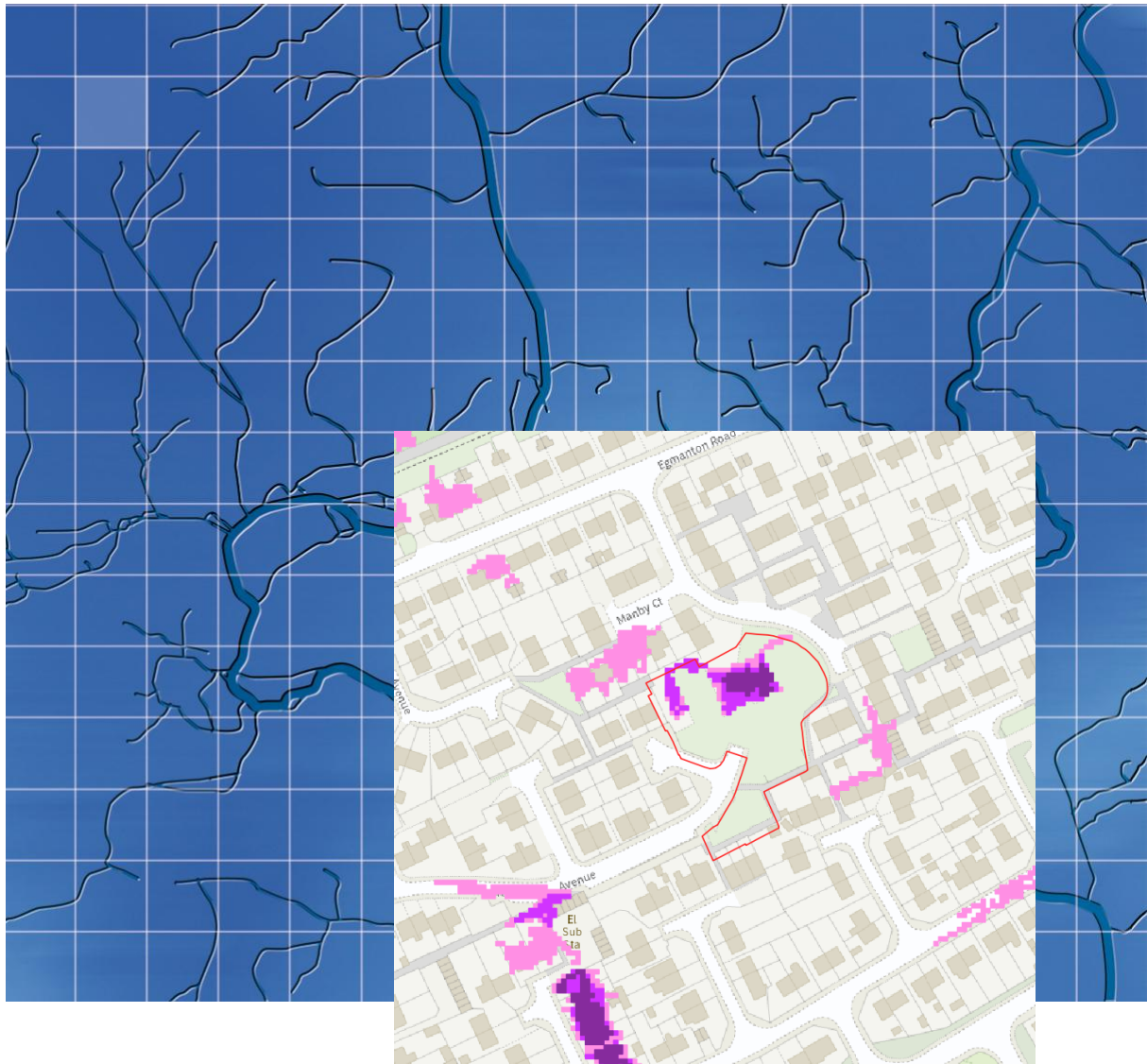


Mansfield District Council

August 2026

Appendix 1 Melville Court Level 2 Strategic Flood Risk Assessment



Mansfield District Council

Melville Court

Level 2 Strategic Flood Risk Assessment

Document issue details

WHS10323

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For and on behalf of Wallingford HydroSolutions Ltd.

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Melville Court 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 12% of the site inundated during a 1.0% AEP +CC event. This flood risk is associated with 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. These depths are associated with a small topographic depression in the north of the site.

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 dwelling density of 40 dwelling per hectare is achievable and a sequential approach is followed; it should be possible to locate infrastructure outside of the design surface water flood extent. If this is not possible, ground raising may be required as mitigation in areas within the design flood extent, this will likely need to be supported by detailed pluvial modelling.

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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 Melville Court, 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

Melville Court is a 0.20 ha brownfield site located within an established residential area in the west of Meden Vale, see Figure 1.

The site is a proposed allocation for residential development in the emerging Local Plan review, with a capacity for 13 dwellings.

2.2 Topography

Based on 1m LiDAR data the site slopes south-easterly towards the River Meden (see section 2.3). The ground levels across the site range from 54.4 m AOD to 57.5 m AOD, with the average ground level 55.7 m AOD, see Figure 2.

2.3 Nearby Watercourses

The closest main watercourse is the River Meden, which flows easterly approximately 300 m south of the site towards Church Warsop. There are also minor local land drainage channels approximately 150 m north of the site. These drains are downslope of a solar farm site located on the higher slopes north of the site, see Figure 1



Figure 1 - Site Location

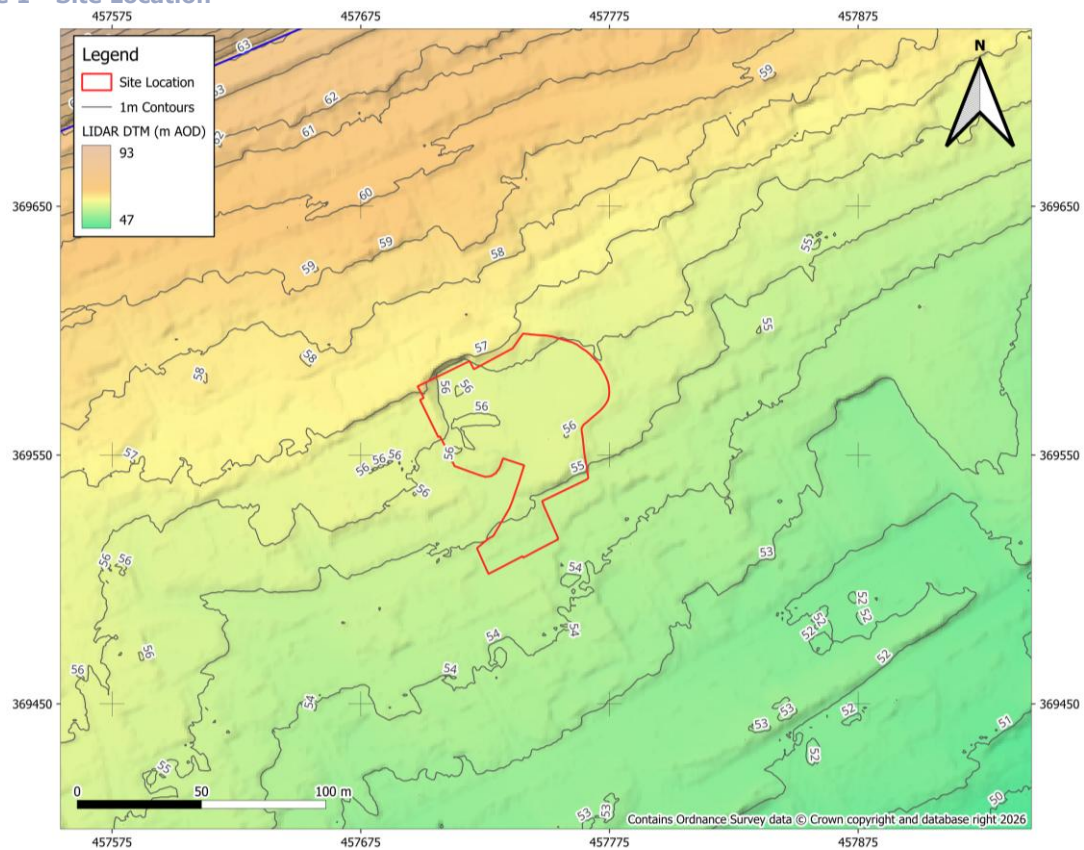


Figure 2 – Topography

3 Flood Risk

3.1 Historical Flooding

The EA hold no records of historic flooding at the site. The nearest recorded flood event occurred in approximately 200 m south of the site in January 1947 and 1977, both from the River Meden exceeding its channel capacity.

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 the site is not at risk during the 3.3% AEP event. However, 6% of the site is inundated during the 1.0% AEP event and 16% is inundated during the 0.1% AEP event, see Figure 5.

When accounting for climate change impacts, 5% of the site is shown to be at future risk during the 3.3% AEP event, and the extent of inundation moderately increases to 12% during the 1.0% AEP event. It remains at 16% during the 0.1% AEP event, see Figure 6.

Although the extent of surface water flooding is relatively small, the areas at risk are associated with significant surface water ponding within the northern section 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 entirely underlain by a bedrock of the Lenton Sandstone Formation. It is classed as a highly productive principal aquifer with significant intergranular flow. The overlying soils are freely draining slightly acid sandy 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. 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.

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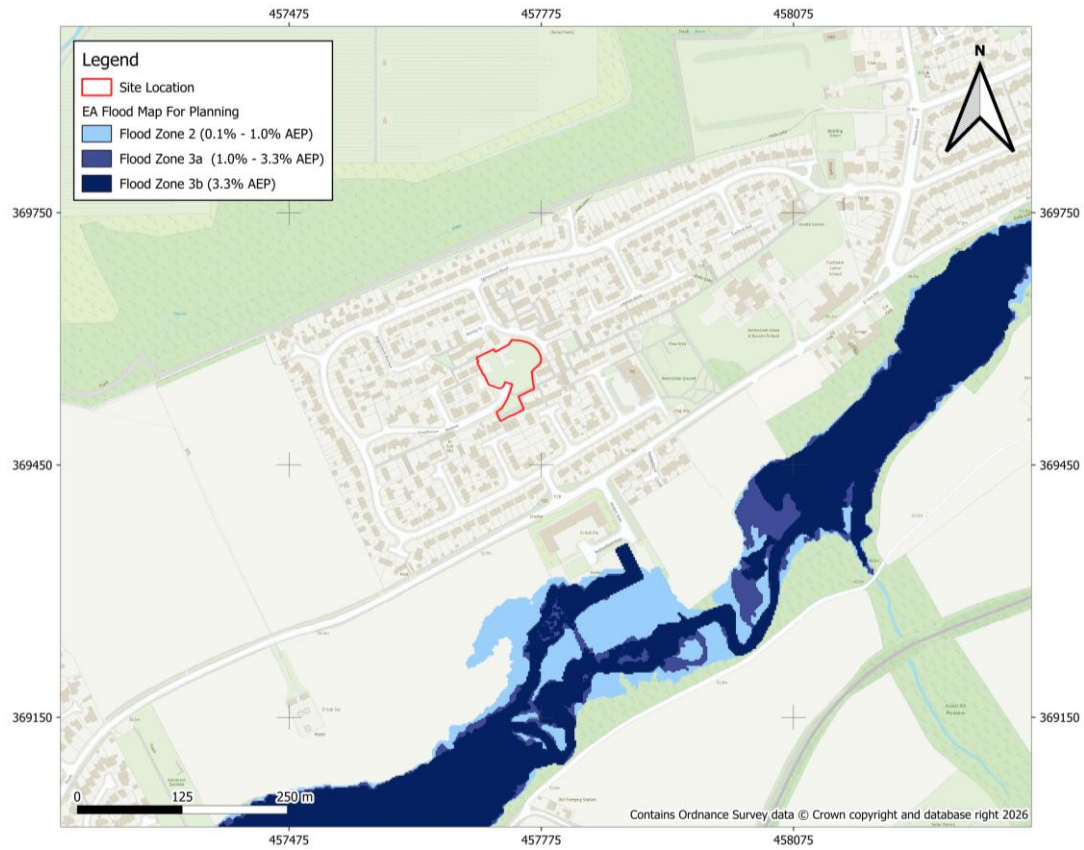


Figure 3 - Fluvial Flood Map

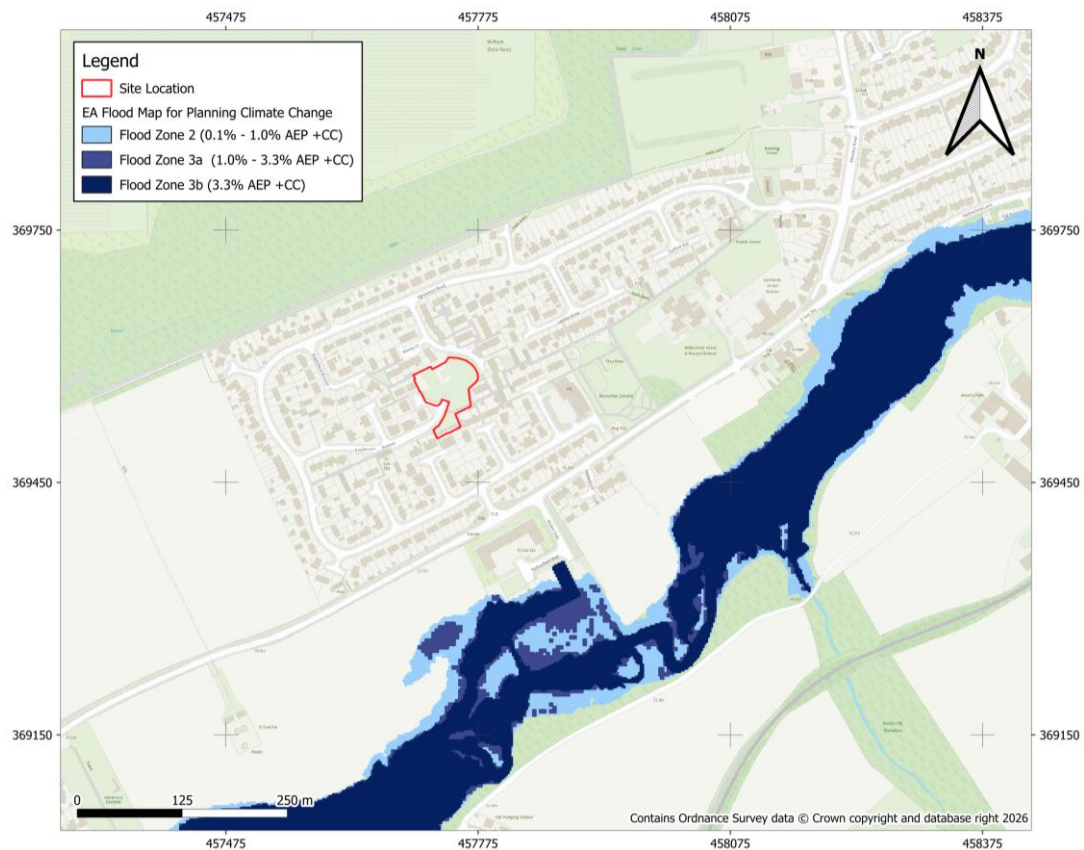


Figure 4 - Fluvial Climate Change Flood Map

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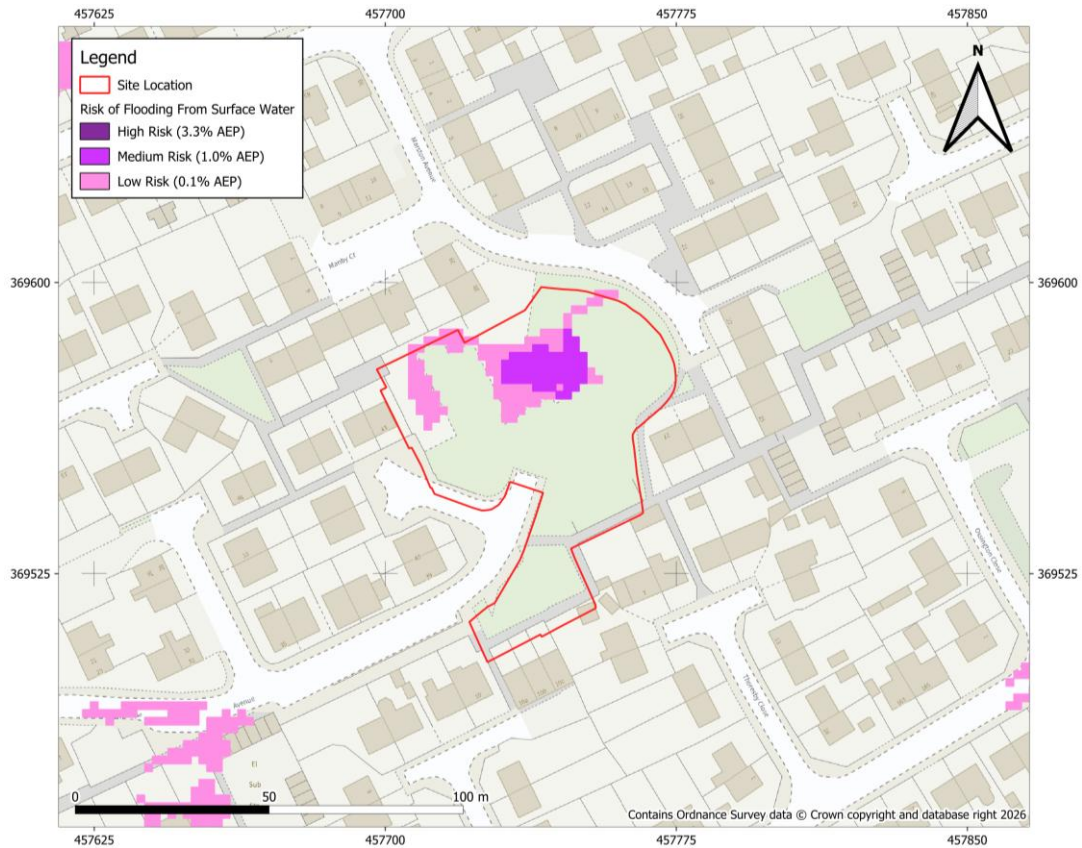


Figure 5 – Surface Water Flood Map

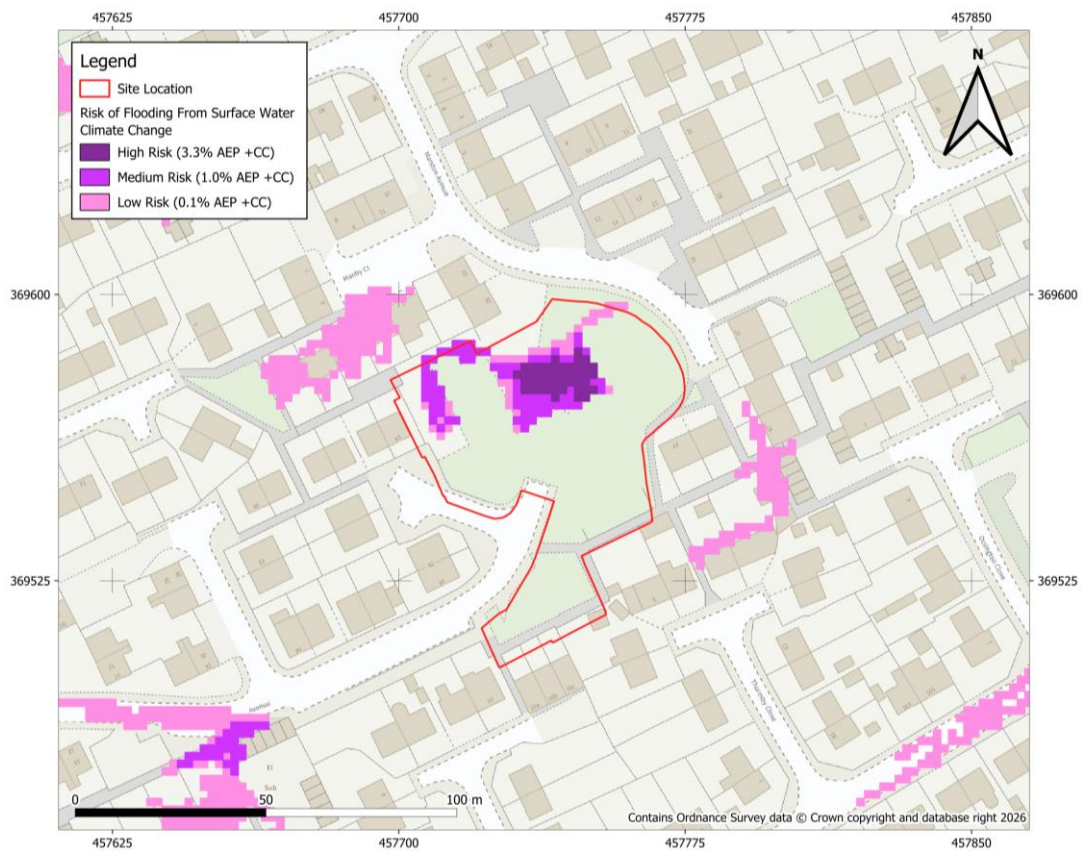


Figure 6 -Surface Water Climate Change Flood Map

Melville Court House 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. It applies an Upper End allowance for the 2070s epoch, which is appropriate to support long-term planning and development. During this event, inundation results from localised ponding within a topographic depression in the northern section of the site. Approximately, 12% of the total site area is inundated during this event, see Figure 8.

Flood depths within the flooded areas range between the < 150 mm and 300 mm. Given the flooding is within a topographical depression flow velocities are expected to be low.

4.3 Access and Egress

The main access and egress route will be via Perlthorpe Ave west of the site, which merges with Egmonton Rd. During an extreme pluvial flood (0.1% AEP + CC), this route remains largely flood free. However, there is a small area of localised ponding adjacent to the road approximately 60 m southwest of the site where depths are estimated to reach <150mm to 300mm, see Figure 9. The access route is located entirely within fluvial Flood Zone 1.

In general access is considered to be achievable. However, a site-specific FRA should detail consider the nature of the flood risk in more detail to determine how quickly it occurs and the degree of hazard. Routes across the site should also be reviewed once the development layout is known.

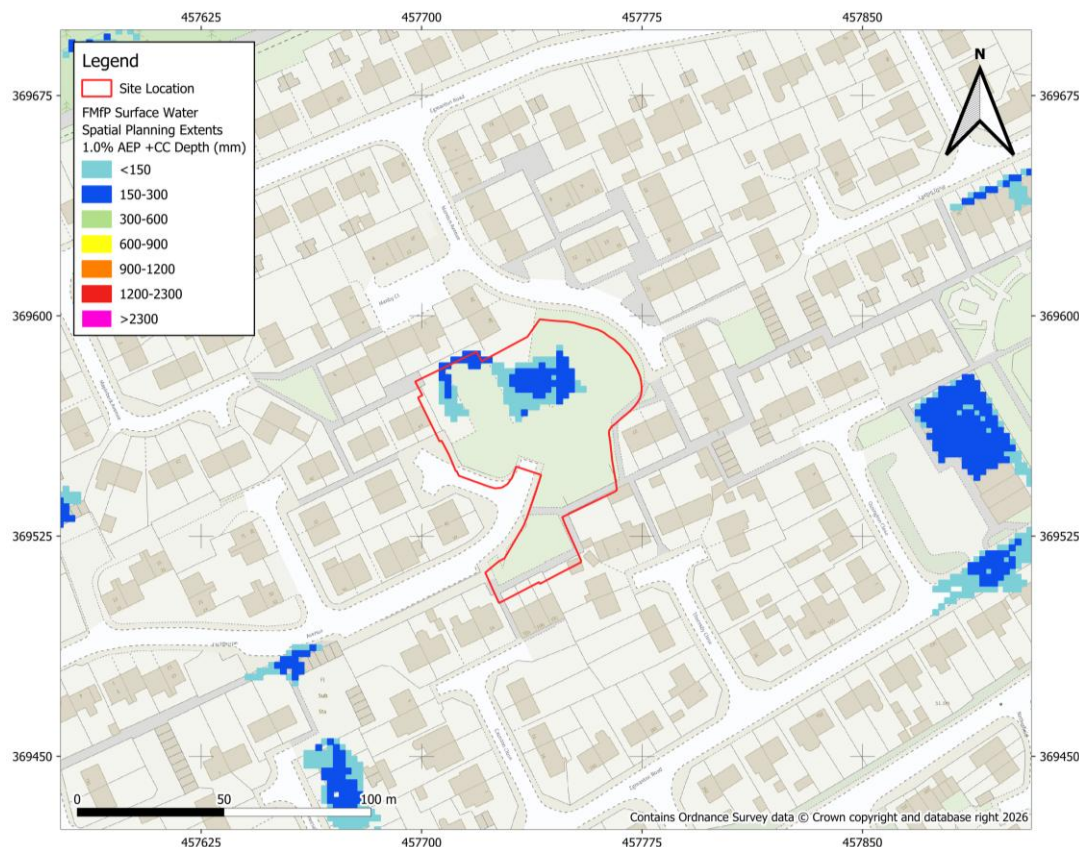


Figure 8 - FMfP Surface Water Spatial Extents - 1.0% AEP + CC Depth

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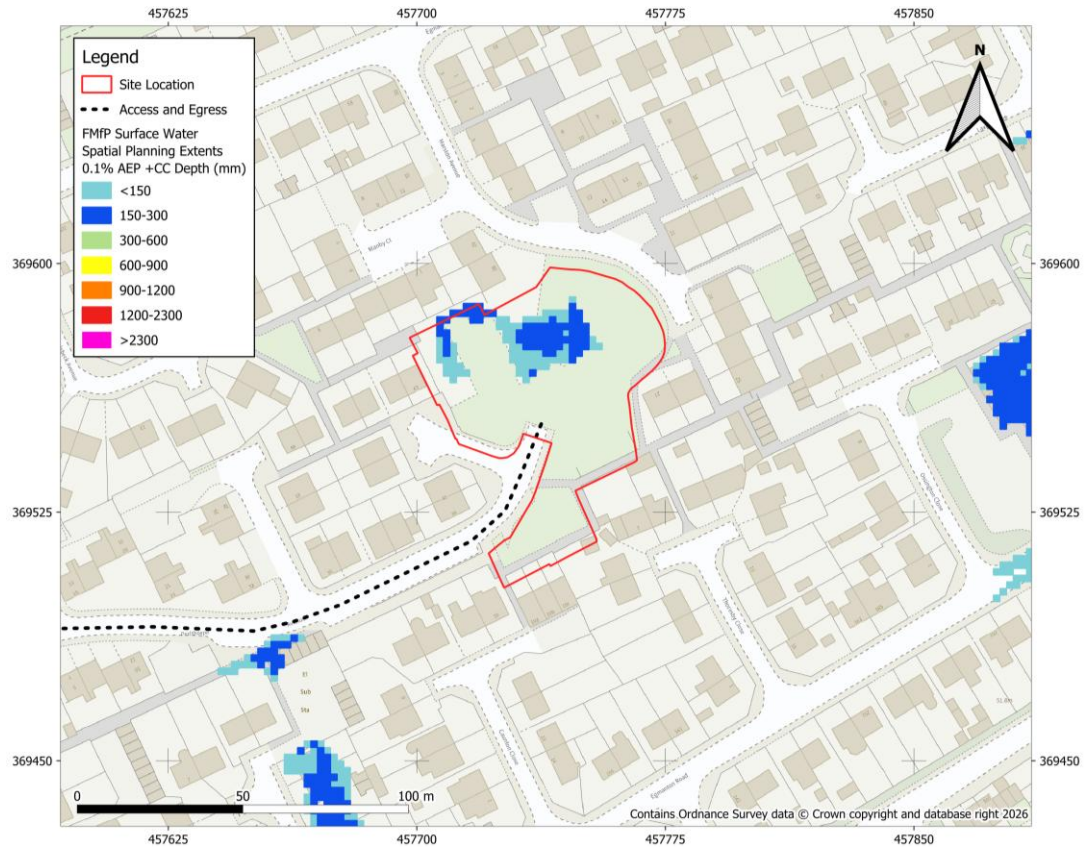


Figure 9 - Access and Egress Routes

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. Provided a dwelling density of 40 dwelling per hectare is achievable and a sequential approach is followed; it should be possible to locate infrastructure outside of the design surface water flood extent. If this is not possible, ground raising may be required as mitigation in areas within the design flood extent, this will likely need to be supported by detailed pluvial modelling.

5.2 Scale of Development

The total site area is 0.38 ha, allocated for 13 dwellings. Assuming medium density housing (35 dwellings per hectare) 13 dwellings would require approximately 0.37 ha of land.

As the entire site is located within Flood Zone 1, development should be guided by the surface water flood extents at the site. The 1.0% AEP +CC design surface water extent inundates 12% of the total site area. This means that 0.33 ha of land remains flood free during the design surface water event.

It is recommended that if possible, the dwelling density be set to 40 dwelling per hectare, this should make it possible to locate all development outside of flood risk areas.

Should this not be possible mitigation in the form of ground raising may be required for dwellings located within the design surface water extent.

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 to better inform design flood levels and mitigation 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.