

# Land at Meadow Lane

<b>Ref</b>	SPS13
<b>Primary Flood Zone</b>	Flood Zone 1
<b>Vulnerability Classification</b>	More vulnerable

## Site Details

<b>Site Location:</b>	<b>X:</b>	452774	<b>Address:</b> Meadow Lane, OX4 4ED
	<b>Y:</b>	203946	
<b>Site Area:</b>	0.99 ha		<b>Additional Information:</b> The site is currently on greenfield land bounded by existing residential development.
<b>Proposed Function:</b>	Residential		
<b>Ground Level Range (m AOD):</b>	55.333m – 64.937m		

## Fluvial Flood Risk

	<b>1 in 100 Yr (+26%)</b>	<b>1 in 100 Yr (+84% CC)</b>
<b>Percentage Inundated (%)</b>	9%	34%
<b>Average Flood Depth (m)</b>	0.35 m (Max – 0.68 m)	0.54m (Max – 1.27 m)
<b>Average Velocity (m/s)</b>	0.032 m/s (Max – 0.11 m/s)	0.04 m/s (Max – 0.19 m/s)
<b>Speed of Onset (hrs)</b>	42 hrs	24 hrs

**Summary:** The majority of the site is at low risk of fluvial flooding, with a significant proportion of the site lying within Flood Zone 1. This is with the exception of an area in the west of the site, it lies in Flood Zone 2 and Flood Zone 3a, with a very small section in Flood Zone 3b also (see fluvial flood map overpage). When accounting for climate change, for the design 100-year (+26% climate change) event, 9% of the site is modelled to be inundated. The hazard map for this event (see hazard maps) shows the hazard rating in the flooded area as *danger for some* indicating moderate flood depths and velocities. Whilst hazard is greater for the extreme climate change scenario, the area inundated remains limited to the west of the site and should not affect allocation given the development type being considered. Only a very small part of the site lies within the historical flood map, this was from a flood event in Spring 1947.

## Defence Infrastructure

<b>Description:</b>	The site is not protected by any flood defence infrastructure. Bank protection is observed along the River Thames close to the site.
<b>Owner:</b>	N/A
<b>Standard of Protection:</b>	N/A
<b>Condition:</b>	N/A

**Potential Access & Egress Route:** The proposed access and egress route to/from the site is along Meadow Lane to the east of the site. Onward travel would likely be via Rose Hill and the Eastern Bypass Rd (see access/egress map overpage).

**Flood Risk:** The route identified is flood-free and speed of onset values are high based on fluvial modelling of the Thames. Most of the site is also in Flood Zone 1 so should provide safe refuge during an extreme flood event.

It should be noted that the Thames model does not explicitly represent an unnamed watercourse running along the site's western boundary, flooding from this watercourse is likely to be more immediate than the speed of onset values listed above given its proximity to the site. The importance of adequate flood warnings in the west of the site should therefore be taken into account.

## Pluvial & Other Sources of Flood Risk

The risk of pluvial flooding has been assessed using the EA surface water flood maps (see pluvial flood map overpage). Parts of the western site are shown to be at medium to high risk of pluvial flooding. In most of these areas the principal flood mechanism is thought to be fluvial. The flood maps use a DTM to simulate runoff, meaning that water gravitates to low points, such as streams. The flooding appears to originate from an unnamed ordinary watercourse which runs adjacent to the site's western boundary. This watercourse is not explicitly represented in the Thames model used to assess fluvial flood risk, however the extent shown is reasonably similar to the fluvial flood map. Where flooding is considered to be pluvial in origin, it is predominantly limited to low-risk areas along Meadow Lane and not considered a significant barrier to development.

The underlying geology at the site comprises seasonally wet loamy and clayey soils with impeded drainage underlain by sedimentary bedrock in the form of Mudstone. In this regard, the water table is not expected to be mobile and groundwater flood risk is considered to be low.

The EA's Flood Risk from Reservoirs Map shows the site to be partially at risk during the wet-day scenario, with a very small part of the site also at risk during the dry-day scenario. Reservoir failure is a rare event with a very low probability of occurrence, so this risk is not considered a significant barrier to development at the site. Based on the LLFA's flood incident data, there have been no recent historical flood incidents recorded close to the site.

## FRA Implications, SuDS & Exception Test

Hydraulic modelling of the River Thames and its associated tributaries has indicated that the site is at low risk of fluvial flooding. A significant proportion of the site lies in Flood Zone 1 with only a small area in the west of the site shown to be at risk. This area lies in Flood Zone 2 and Flood Zone 3a, with a very small section in Flood Zone 3b. A residential development (more vulnerable) is proposed. More vulnerable infrastructure is permissible in Flood Zone 2 but must pass an Exception Test as specified in the latest NPPF if located in Flood Zone 3a, it is not permissible in Flood Zone 3b under any circumstances. When accounting for climate change, 9% of the site is at risk during the design 100-year (+26% Climate change) event.

The site's access route is flood free and given that a large proportion of the site is within Flood Zone 1, safe refuge during an extreme flood event should also be possible. The provision of adequate flood warnings in the west of the site where speed of onset values are unclear should be considered in a site-specific FRA.

The pluvial flood risk at the site is also considered to be low, the flooding shown by the EA surface water flood maps appears to be mostly fluvial, originating from an unnamed watercourse on the site's western boundary. As this watercourse is not explicitly represented in the existing Thames model, a site-specific FRA should consider in more detail the nature of the flood risk associated with it to address any residual hazard on site. The drainage strategy for the proposed development should be suitably designed to manage additional runoff arising from the development and ensure that pluvial flood risk at the site and to third party land is not increased.

In assessing and demonstrating the viability of any SuDS solution for the site, a site-specific FRA should follow the Non-statutory technical standards for SuDS. The geology at the site consists of loamy and clayey floodplain soils with naturally high groundwater in this regard the use of infiltration SuDS solutions is likely to be limited. 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 sewer will also need considering as part of a site-specific FRA.

Overall, a residential development at the site should be achievable. Only a small proportion of the site is within Flood Zone 2 and Flood Zone 3. All development should be located in Flood Zone 1 if possible, with flood zone areas retained as greenfield land or reserved for recreational open space. If development needs to be located within Flood Zone 2 or Flood Zone 3a less vulnerable ancillary infrastructure (e.g. Car Parks) should be prioritised over more vulnerable uses (e.g. Dwellings), the latter will require an exception test if located in Flood Zone 3a. No development (unless water compatible development) is permissible in Flood Zone 3b.

Development may need to be set at a floor level to provide an appropriate freeboard above the flood level for the 100-year (+26% climate change) design event, estimated at 55.91 m. Most of the site is higher than this level, so ground raising should be limited and can be reduced by locating development outside of low-lying areas. A site-specific FRA should confirm with the EA the need to provide compensatory storage and assess 3<sup>rd</sup> party impacts if ground raising is implemented.

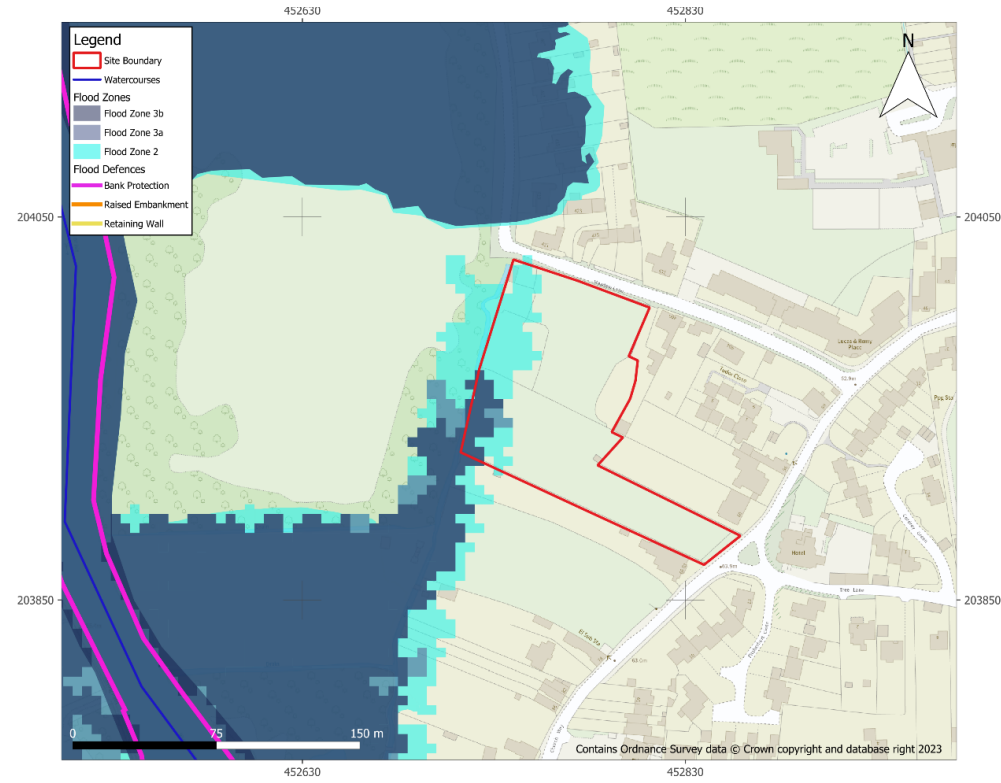
<b>Fluvial Hazard</b>	<b>Low Risk</b>
<b>Pluvial Hazard</b>	<b>Low Risk</b>
<b>Developable</b>	<b>Proposed development type should be appropriate, a sequential approach to development is advised</b>

# Land at Meadow Lane

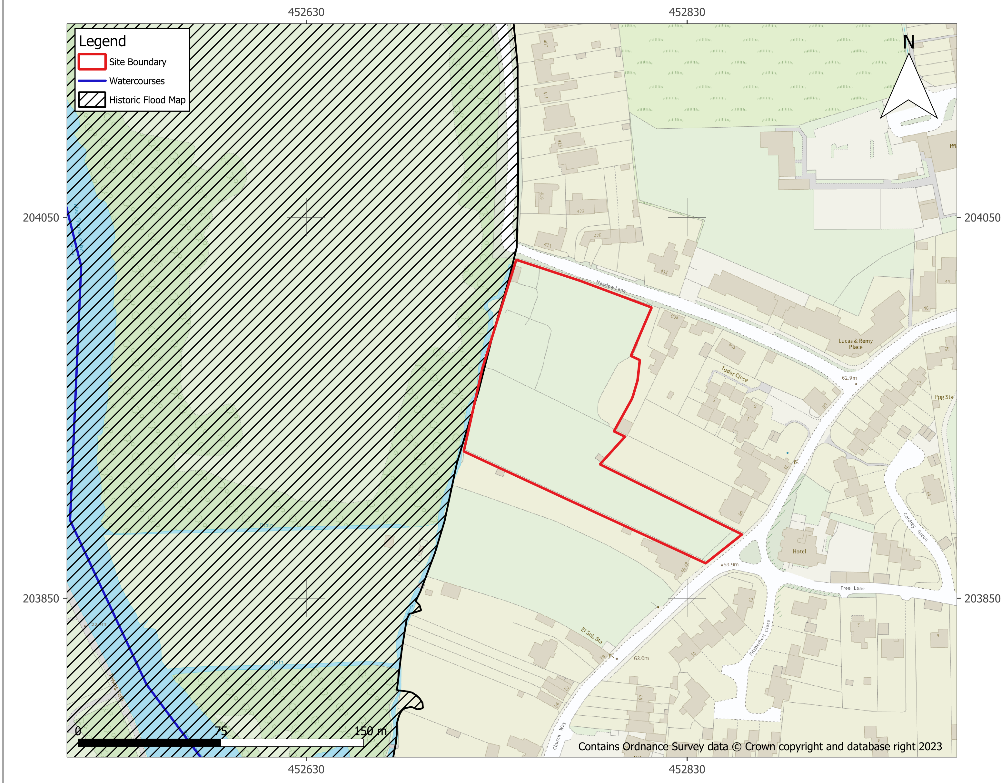
Ref  
 Primary Flood Zone  
 Vulnerability Classification

SPS13  
 Flood Zone 1  
 More vulnerable

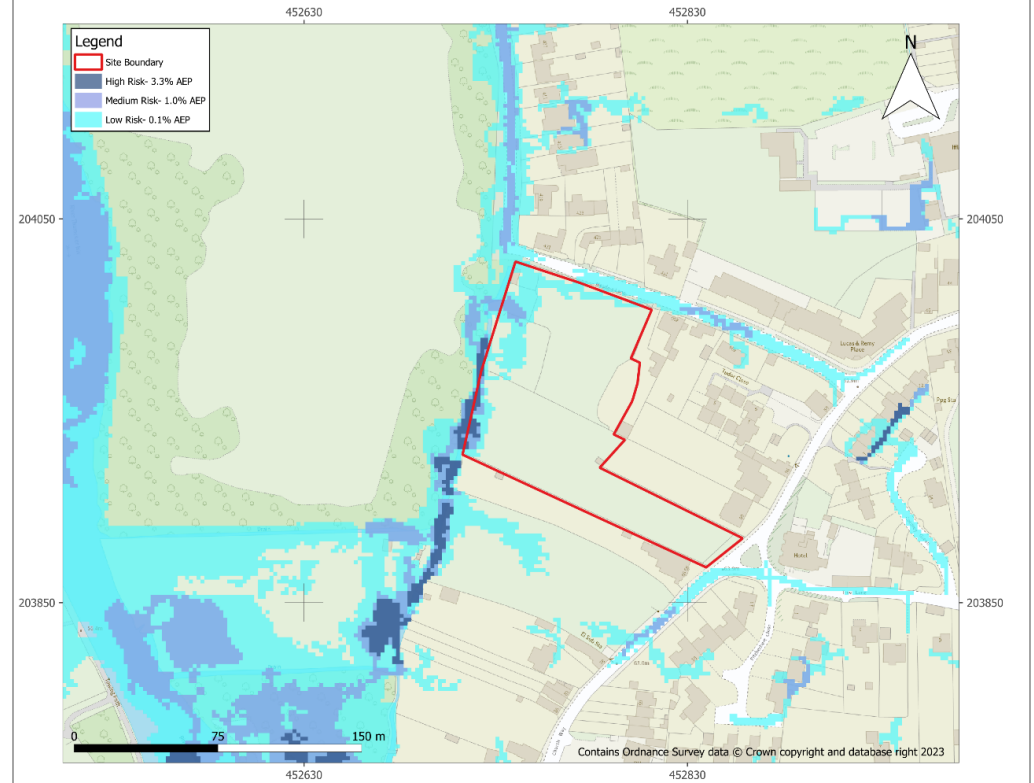
## Fluvial Flood Map



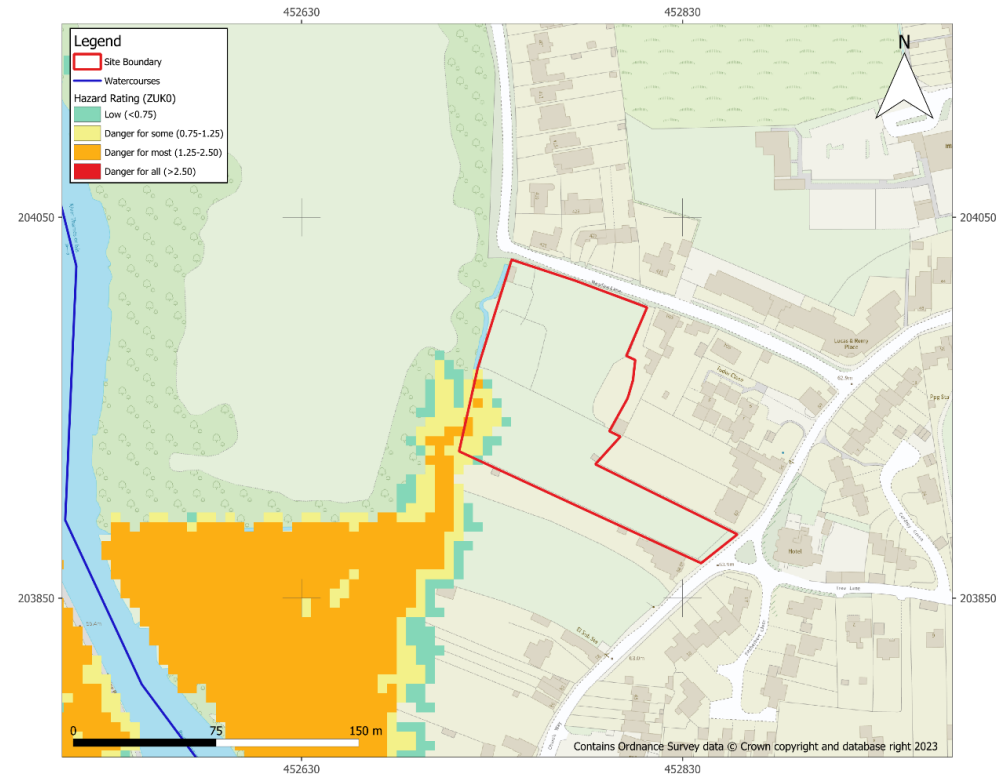
## Historical Flood Map



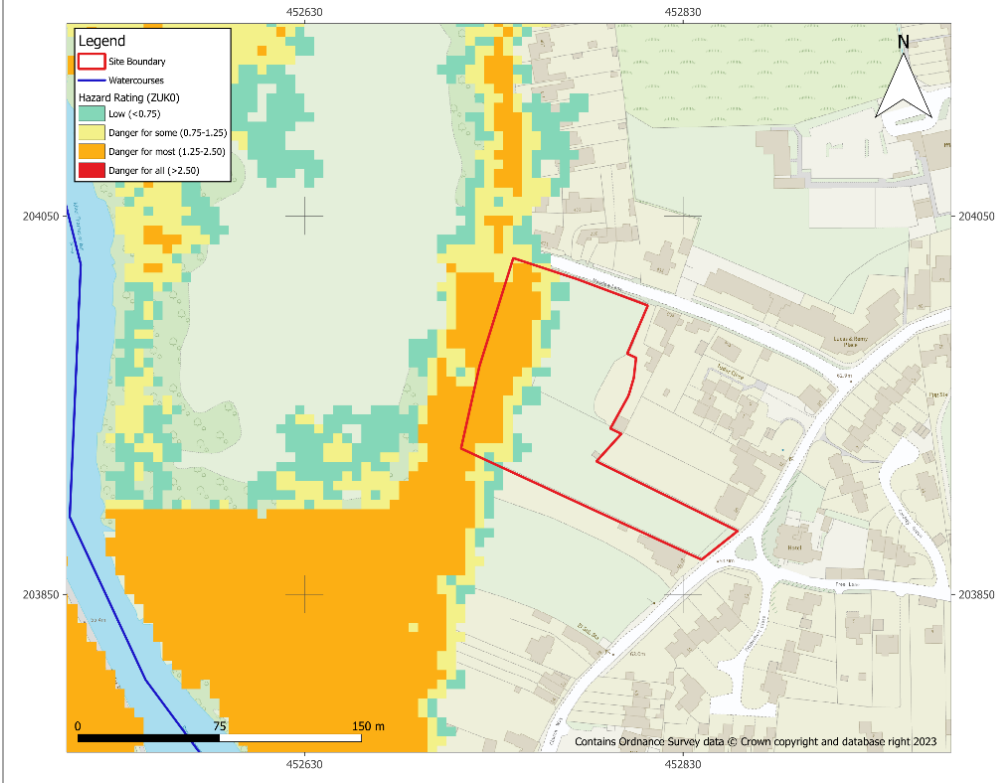
## Pluvial Flood Map



## Hazard Map (100 Yr + 26% Climate Change)



## Hazard Map (100 Yr + 84% Climate Change)



## Access/Egress Routes

