

Cowley Marsh Depot, Marsh Road

Ref	SPS11
Primary Flood Zone	Flood Zone 1
Vulnerability Classification	More vulnerable

Site Details

Site Location:	X:	454147	Address: Marsh Rd, OX4 2HH
	Y:	204772	
Site Area:	1.7 ha		Additional Information: The site is currently occupied by a vehicle depot, which is mostly impermeable.
Proposed Function:	Residential		
Ground Level Range (m AOD):	61.111m-63.804m		

Fluvial Flood Risk*

	1 in 100 Yr (+20% Climate Change)	1 in 1000 Yr
Percentage Inundated (%)	0.1%	0.4%
Inferred Flood Level (m AOD)	62.14m	62.23m
Inferred Flood Depths (m)	0.00m-0.17m	0.00m-0.26m
Speed of Onset	Based on FEH catchment descriptors, the catchment upstream of the site is impermeable and heavily urbanised with an average slope. The site is located 10m northwest of the watercourse. Speed of onset values are expected to be moderate.	

* Only flood extents were available for the Boundary Brook model, therefore flood levels and depths have been inferred based on comparing the extents against LIDAR levels. Speed of onset summarised based upon a review of the catchment characteristics.

Summary: The majority of the site is at low risk of fluvial flooding; lying outside of Flood Zone 2. This is with the exception of a small area (0.4% of the site) abutting Marsh Rd which lies in Flood Zone 2. A small part of this area (0.1% of the site) is also predicted to flood in the 100-year +20% climate change event. The inferred flood level for this event is 62.14mAOD (see climate change map). The site is not within the historical flood map.

Defence Infrastructure

Description:	No flood defence infrastructure
Owner:	N/A
Standard of Protection:	N/A
Condition:	N/A

Potential Access & Egress Route: Access/Egress via Temple Road in an easterly direction, Subsequent travel would likely be towards Cowley or Headington (see access/egress map overpage).

Flood Risk: The initial 130m of the evacuation route is shown to be within Flood Zone 3. Flow velocities along this route are likely to be low given the flatness of the road, inferred flood depths along the inundated section are estimated to be between 0.2-0.5m. After the initial 130m the route becomes flood free, however early flood warning will be important to ensure site users can utilise the route before floodwaters inundate the wider area.

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). The surface water flood maps show a flow route running through the site from east to west in the 1000-year event, however there is no predicted flooding during the 30-year or 100-year events. Because of this, the risk of pluvial flooding for the site is deemed to be low. Pluvial flooding is predicted along the Marsh Road, which channelises the rainfall. The road serves as the main access route to the site and pluvial hazard for the 1000-year event indicates *Danger for most* (see pluvial hazard map).

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 of the West Walton Formation. These parameters indicate low risk from groundwater flooding.

The EA's Flood Risk from Reservoirs Map shows no risk of reservoir flooding at the site and 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 Boundary Brook has indicated that the site is at minimal risk of fluvial flooding. A majority of the site lies outside Flood Zone 2, with only 0.4% of the site laying within Flood Zone 2. A residential development (more vulnerable infrastructure) is proposed, such infrastructure is permissible in Flood Zone 2. When accounting for climate change, 0.1% of the site is at risk during the 100-year (+20% Climate change) event. Based on the flood levels for this event the site should also be at minimal flood risk when considering the latest central climate change allowance for the area of 26%, however a site-specific FRA should look to confirm this.

The site's access route is inundated for the initial 130m along Marsh Road and Crescent Road; lying in fluvial Flood Zone 3. Depths and velocities are expected to be low, however early flood warnings will be important to allow site users to utilise the route before floodwaters inundate the beginning of the route. As it should be possible to locate all development on site outside of the flood extents safe refuge on site should also be possible. A site-specific FRA should look into access arrangements in more detail.

The pluvial flood risk at the site is considered to be low, as the only pluvial flood risk present is associated with low probability events, which have a hazard rating of *Low* or *Danger to Some*. However, the access route identified for the site is subject to significant pluvial hazard. A site-specific FRA should consider in more detail the nature of the flood risk to determine how quickly the inundation occurs, while considering the accuracy of the EA surface water flood maps. 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. Infiltration SuDS solutions are unlikely to be viable at this site due to the soil and geological characteristics present. 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.

Overall, a residential development at the site should be achievable, with the site mostly located outside of Flood Zone 2. It is important that a sequential approach is still implemented at the site to minimise pluvial flood risk, as dwellings would optimally be constructed away from the potential pluvial flow route through the site.

The site is generally considered to be at low risk, however more refined model data would improve confidence in any assessment and confirm any ground raising requirements to reduce risk. A site-specific FRA should confirm the suitability of the existing Boundary Brook model to assess flood risk at the site given its age. A review of pluvial flood risk along the site access and an assessment of the pluvial flow route through the site is also recommended.

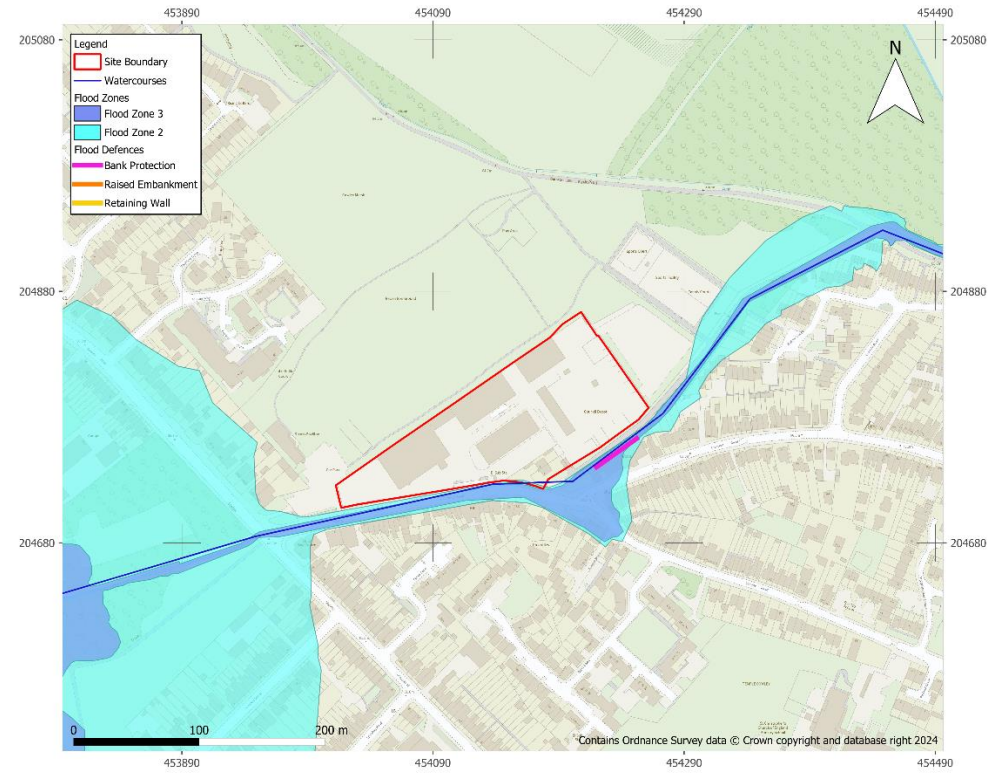
Fluvial Hazard	Low Risk
Pluvial Hazard	Low Risk
Developable	Proposed development type should be appropriate. To increase the confidence of assessment more refined model data and a further review of pluvial flood risk should be performed

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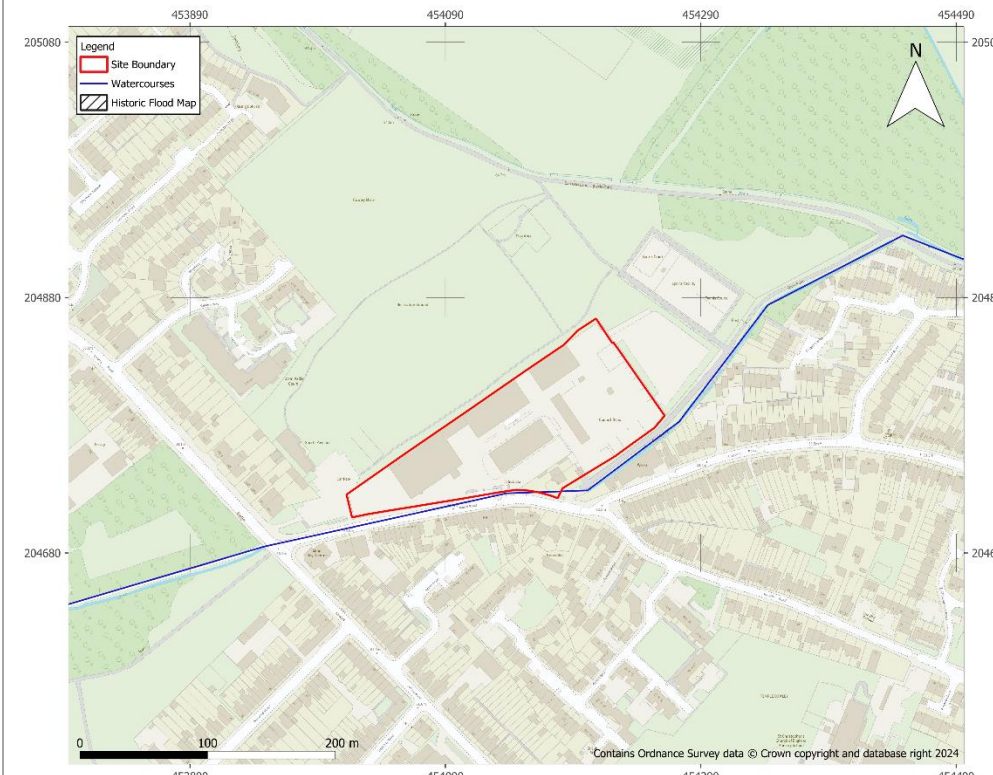
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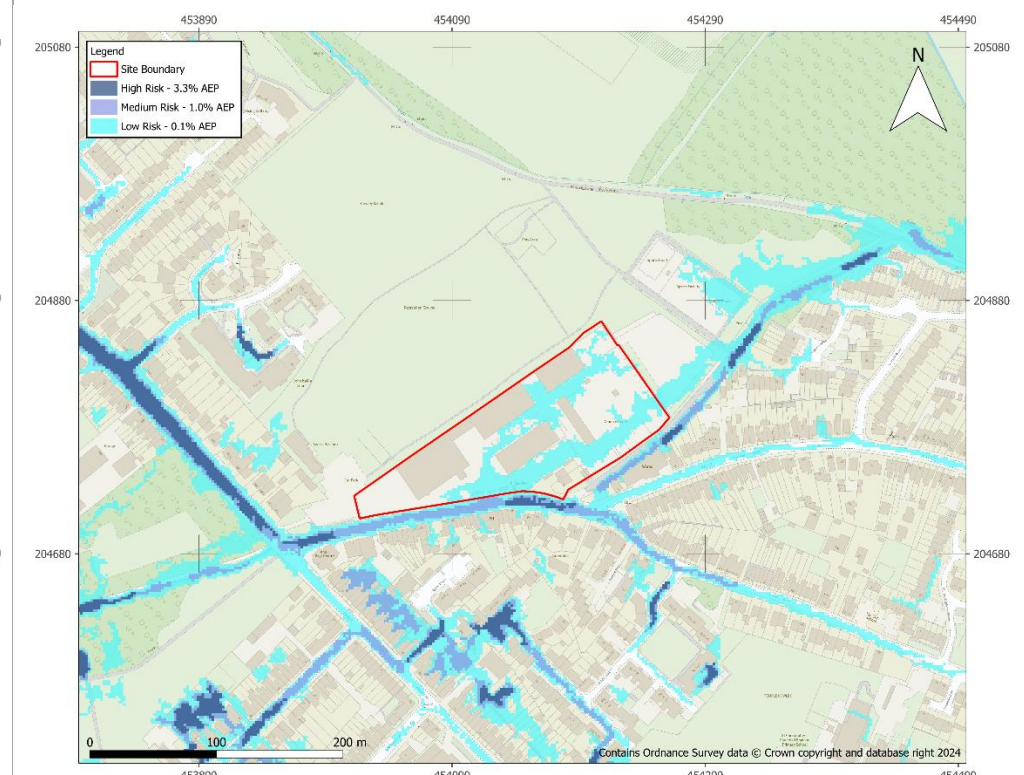
Fluvial Flood Map



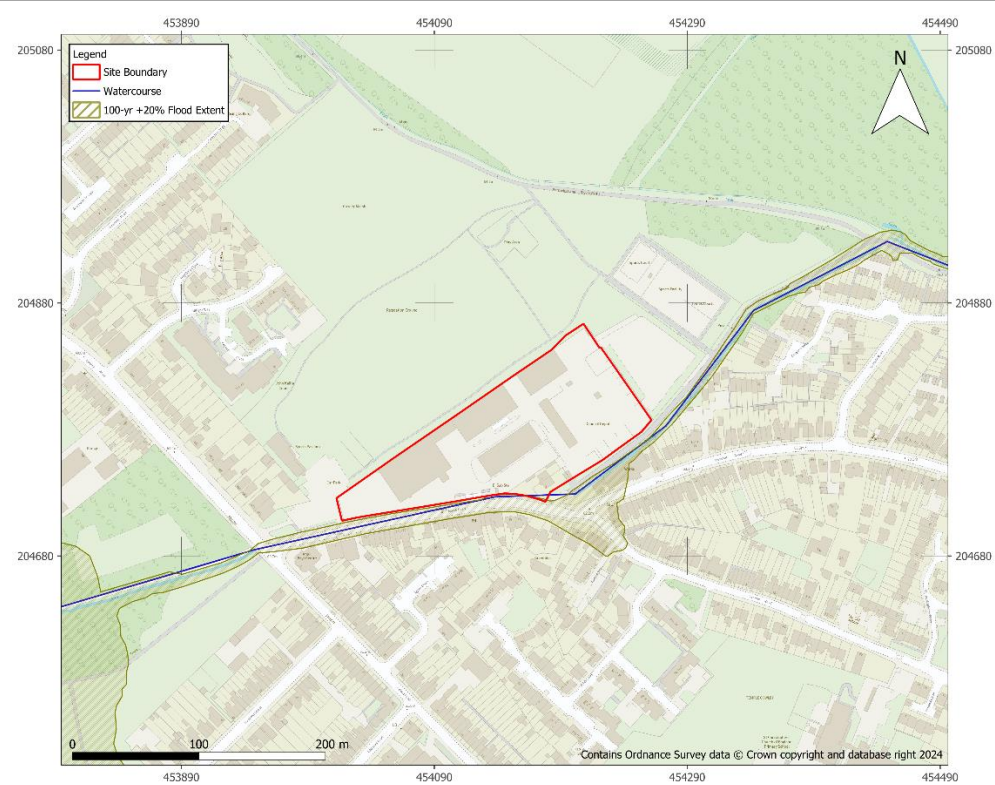
Historical Flood Map



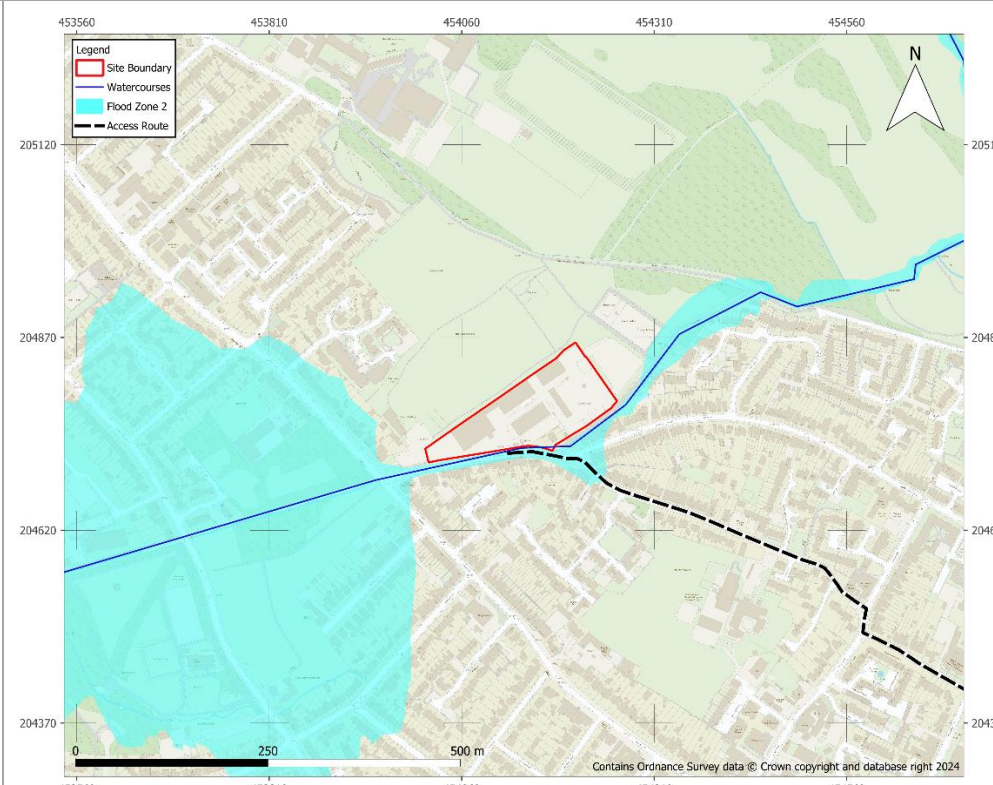
Pluvial Flood Map



Flood Extent (100 Yr + 20% Climate Change)



Access/Egress Routes



Pluvial Hazard Map (1000-Yr)

