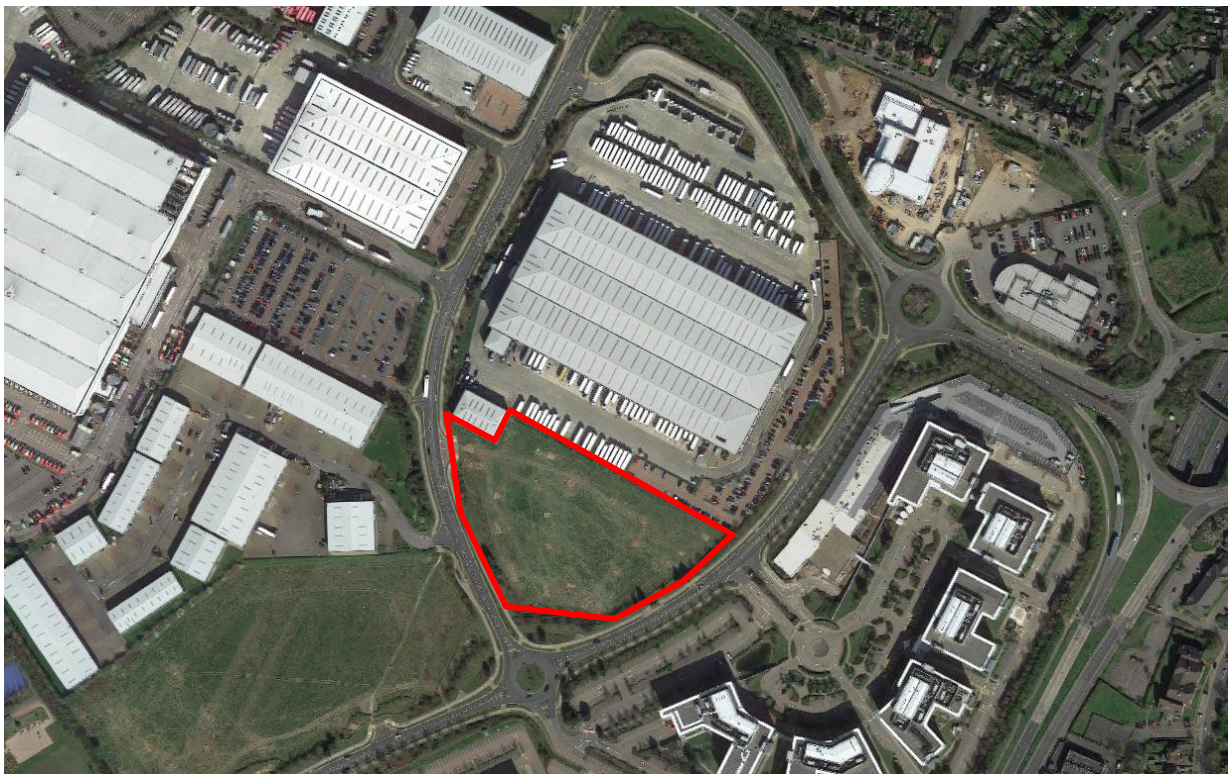


**FLOOD RISK ASSESSMENT**  
**PLOT 4100, HATFIELD BUSINESS PARK**  
**FOR**  
**CAMBRIA AUTOMOBILES**



**41753-001**

**September 2017**

**FLOOD RISK ASSESSMENT**  
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Job No. : 41753  
Report Status : Issue 1  
Document Date : September 2017

Approved : 

**S J English**



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	Location plan
SRA Architects	Proposed Site Plan 3280-030-F
Environment Agency	Flood Map for Planning, surface water flood extent & depth maps

## 1.0 THE DEVELOPMENT & NATIONAL PLANNING POLICY

### 1.1 Introduction

This Flood Risk Assessment has been prepared in accordance with current Planning Practice Guidance “Flood Risk and Coastal Change” on behalf of Cambria Automobiles. Any other parties using the information in this report do so at their own risk, unless previously approved in writing.

The project comprises the proposed development of a 1.7 ha greenfield site for commercial use.

### 1.2 Site Location & Description

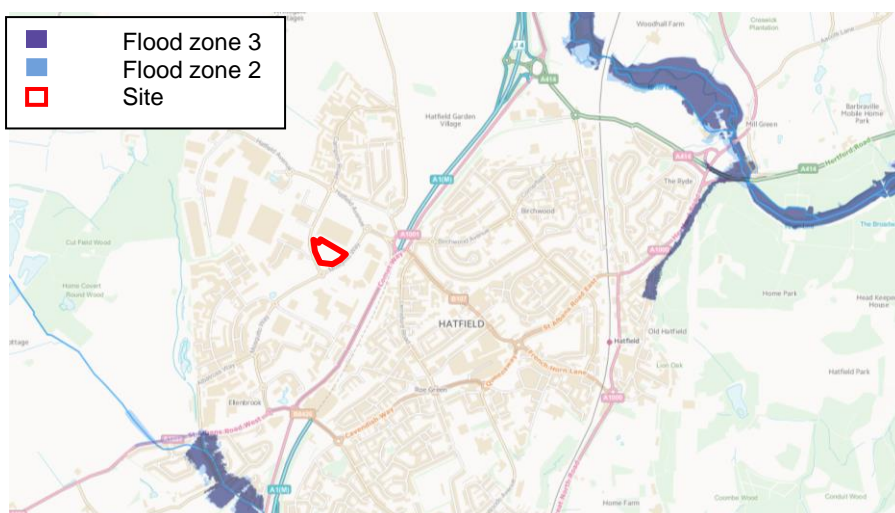
The site is located 1 km to the north-west of Hatfield town centre at National Grid Reference TL 215 092. The site is bounded by Mosquito Way to the south-east, Gypsy Moth Avenue to the west and car parking and warehousing to the north-east.

The site is listed as Plot 4100 of the Hatfield Business Park. It is currently grassland.

The site will be developed with two car showrooms, a valet building and associated parking.

### 1.3 Environment Agency Flood Map for Planning

The Environment Agency’s Flood Map for Planning shows the site to lie within Zone 1 (low flood risk).



*Environment Agency – Flood Map for Planning*

## **1.4 Welwyn Hatfield Borough Council Strategic Flood Risk Assessment**

The Level 1 Strategic Flood Risk Assessment flood map shows the site to lie within Zone 1.

## **1.5 National Planning Policy Framework**

National Planning Policy Framework (March 2012) sets out the principles for assessing the suitability of sites for development, in relation to flood risk, as part of the planning process.

### **1.5.1 Sequential Test**

Initially a Sequential Test is applied to the allocation of land suitable for development. The test is required for any development proposed in Flood Zone 2 or 3 (and occasionally also in Flood Zone 1 where there are flood risks present which are not identified on the Environment Agency's Flood Maps for Planning).

The aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. Development should not be allocated or permitted if there are reasonably available sites, appropriate for the proposed development, in areas with a lower probability of flooding.

### **1.5.2 Climate Change**

An issue emphasised in the Planning Policy Guidance is the requirement to take account of potential climate change effects. New development is generally accepted as having a 100 year design life for flood risk purposes. The Environment Agency's report "Flood risk assessments: climate change allowances", published in February 2016, recommends a 20 - 40% increase in peak rainfall intensity is taken into account for small and urban catchments for design horizons up to 2115. For the purposes of this Flood Risk Assessment, a 30% increase in peak rainfall intensity has been used for assessing storage requirements; 30% being an average between the "central" and "upper end" of the data range given in the report. It is recommended that the potential effects of an increase of 40% are considered in detailed design.

## **1.6 Application of the Sequential Test**

The site lies within Zone 1 and this report confirms that the site is not at significant risk of potential flooding from any source. Therefore, sequential testing is not required.



## 2.0 FLOOD RISK

### 2.1 Potential Sources of Flooding

Flood zone maps are intended for general guidance on flood risk and it is also necessary to consider other, more detailed, sources in relation to local factors.

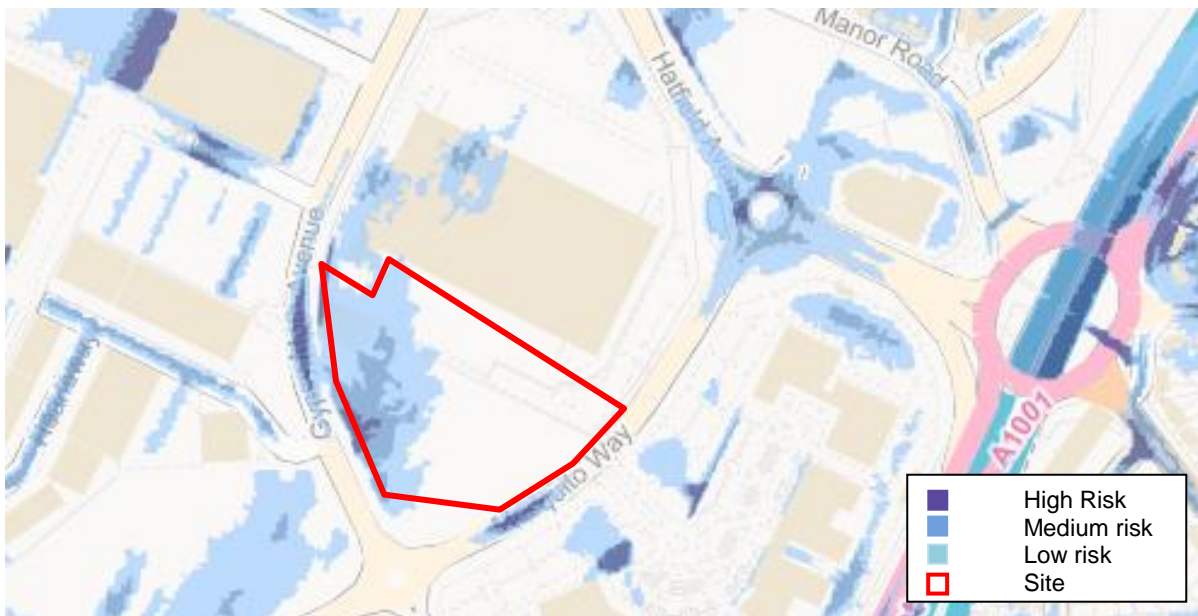
#### 2.1.1 Tidal/Fluvial

The nearest main watercourses are the River Lee, 1.9 km to the north-east of the site, and Ellen Brook, 1.2 km to the south-west of the site. Flood risk from this source is negligible.

There are no other recorded watercourses in the vicinity.

#### 2.1.2 Surface water

The Environment Agency surface water flood risk maps show the site to be predominantly at low and very low risk of flooding. The south-western edge of the site is shown to be at medium risk with a small area at high risk of flooding. This coincides with a natural low spot on the site.



*Environment Agency – Risk of surface water flooding map*

The Environment Agency map shows the high risk area (an area with a more than 1 in 30 chance of flooding each year) and the medium risk area (an area with a 1 in 30 to 1 in 100 year chance of flooding each year) of the site to be generally at risk of flooding to a depth of less than 300mm, locally to a depth of 300 to 900 mm.

### **2.1.3 Groundwater**

Groundwater is a potential flood risk to areas which are low lying and on permeable ground or, occasionally, to areas of higher ground in the vicinity of springs. These conditions may apply to some areas of Hatfield. The Strategic Flood Risk Assessment records a ground water flooding incident at an indoor tennis court 400m to the south of the site. This appears to be an isolated incident and the site is not identified as an area at risk of groundwater flooding.

### **2.1.4 Sewerage**

The sewers in the area are owned and maintained by Thames Water and there is no public record of any flood risk to the site associated with these sewers.

## **2.2 Residual Flood Risk**

The site is not at significant risk of flooding from any source. There is a medium to high risk of localised shallow surface water flooding but this risk is not a development constraint and can be managed by the flood mitigation measures outlined below.

The other flood risk to consider is to others, from surface water runoff as a result of developing the site. Surface water disposal is discussed in more detail in section 2.4 of this report.



## **2.3 General Flood Mitigation Measures**

- The proposed surface water drainage system is designed to current best practice and to the standards laid out in the publication “Sewers for Adoption (6<sup>th</sup> Edition)” and Building Regulations Part H 2002.
- In the event of surface water failure for rainfall in excess of the design standard, the site is laid out so that surface water runoff is directed away from buildings.
- Floor levels in the western half of the site are to be set 300 mm above the adjacent highway.

## **2.4 Proposals for Surface Water Disposal**

The final disposal strategy for surface water run-off requires detailed consideration during the design phase of the project. The final surface water drainage design will need the approval of the relevant statutory bodies but will broadly follow these principles:-

- Surface disposal is to the existing storm water attenuation pipes beneath the adjacent highways, as part of the wider development existing drainage design.
- Existing storage pipes within the highway were designed to provide attenuation for developments across the business park. Discharge rates for each plot have been established as part of the overall development strategic design.
- Attenuation storage should be provided underground and sized for the 1 in 100 year plus climate change event, based on the established discharge rates.

Refer to Eastwood and Partners Drainage Strategy document for further details on the surface water drainage design.

## **2.5 Proposals for Foul Water Disposal**

Foul effluent will discharge by gravity to the foul sewers within the adjacent highways.

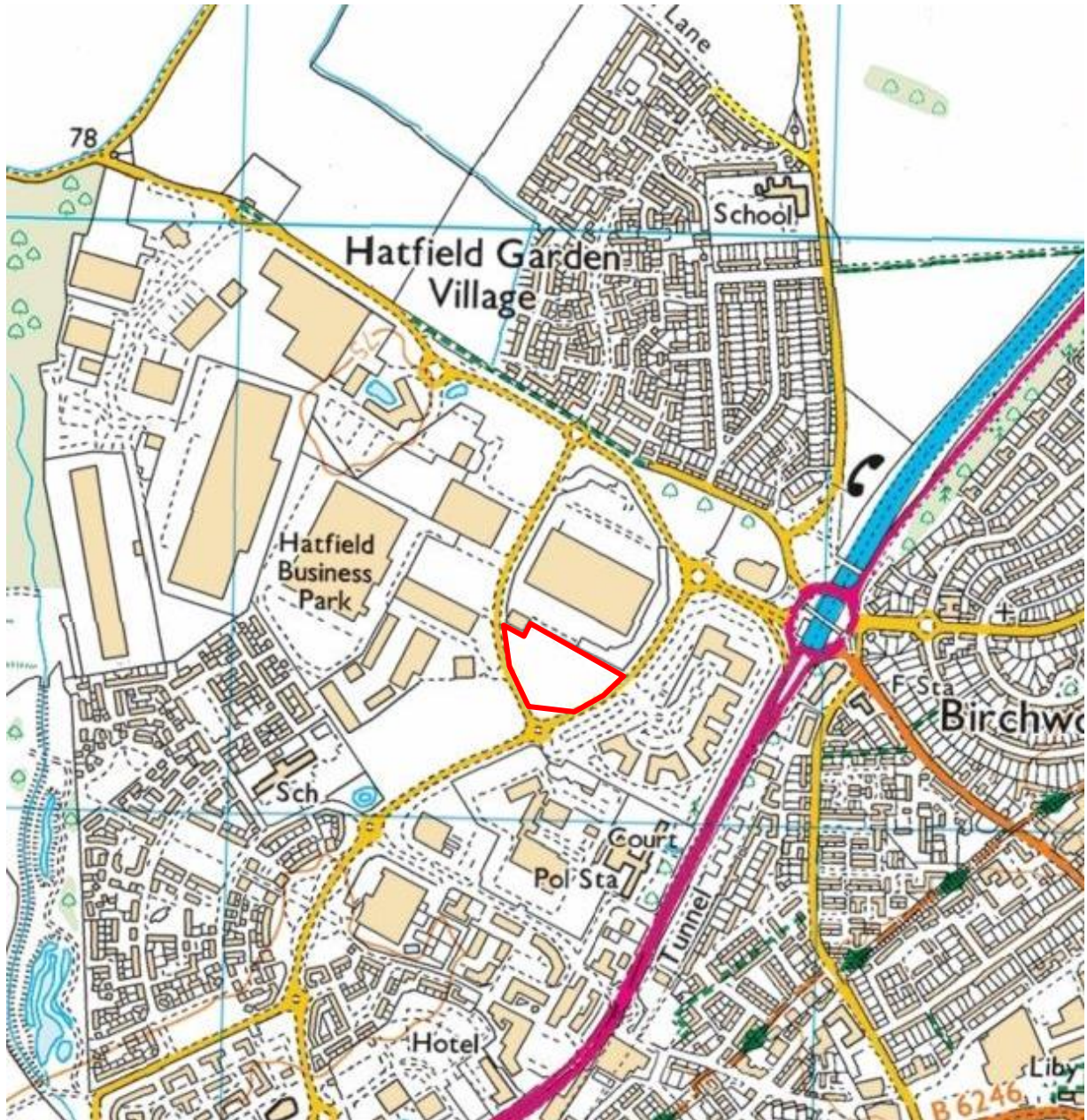
### **3.0 CONCLUSIONS**

1. The site does not lie within an area shown on flood maps as at risk of flooding and is not at significant risk of flooding from any source.
2. There is a risk of localised surface water flooding on the site. This risk can be managed by flood mitigation measures including minimum floor levels.
3. Surface water disposal will be to the public surface water sewer.
4. Surface water discharge will be attenuated to the agreed rate for the development plot.
5. Surface water attenuation storage will be provided in oversize sewer pipes or geocellular crates and will be sized for the 1 in 100 year plus climate change rainfall event.
6. The level of risk and safeguards available are considered appropriate to this class of development.

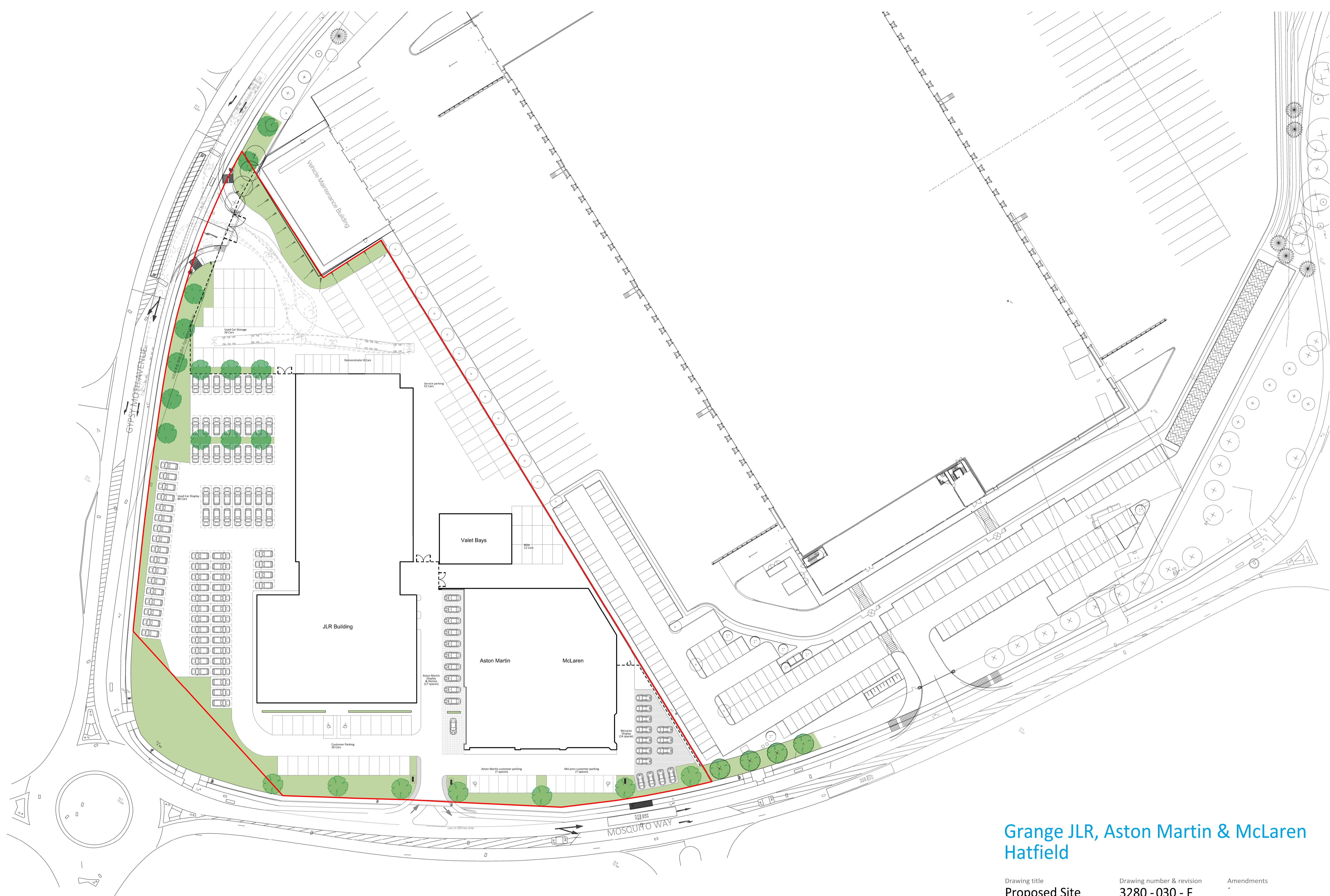
## **APPENDICES**

## Location Plan

Plot 4100, Hatfield Business Park

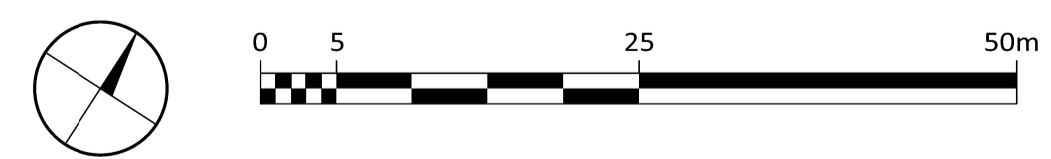






## Grange JLR, Aston Martin & McLaren Hatfield

Drawing title	Drawing number & revision	Amendments
<b>Proposed Site Plan</b>	<b>3280 - 030 - F</b>	-
Drawn by	Checked by	A1 Scale
HR	MR	1:500
		A3 Scale
		1:1000
	Date	Status
	25 August 2017	Draft Planning

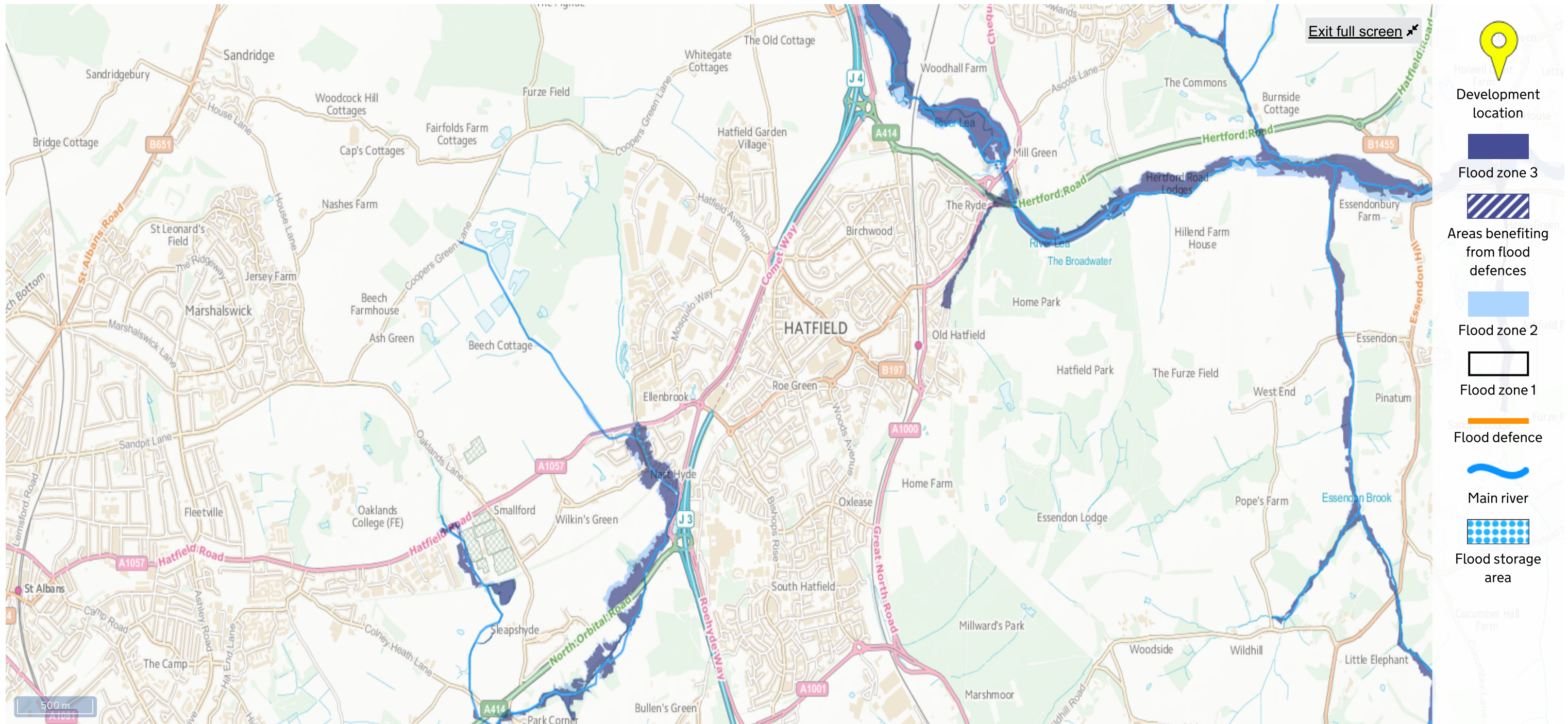


- Key**
- ▭ JLR site boundary  
1.28 hectare
  - ▭ Aston Martin and McLaren site boundary  
0.47 hectare

**SRA | ARCHITECTS**

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Basic view  Detailed view

Location



Extent of flooding

Depth and flow estimates at monitoring stations



Extent of flooding

High risk: depth

High risk: velocity

Medium risk: depth

Medium risk: velocity

Low risk: depth

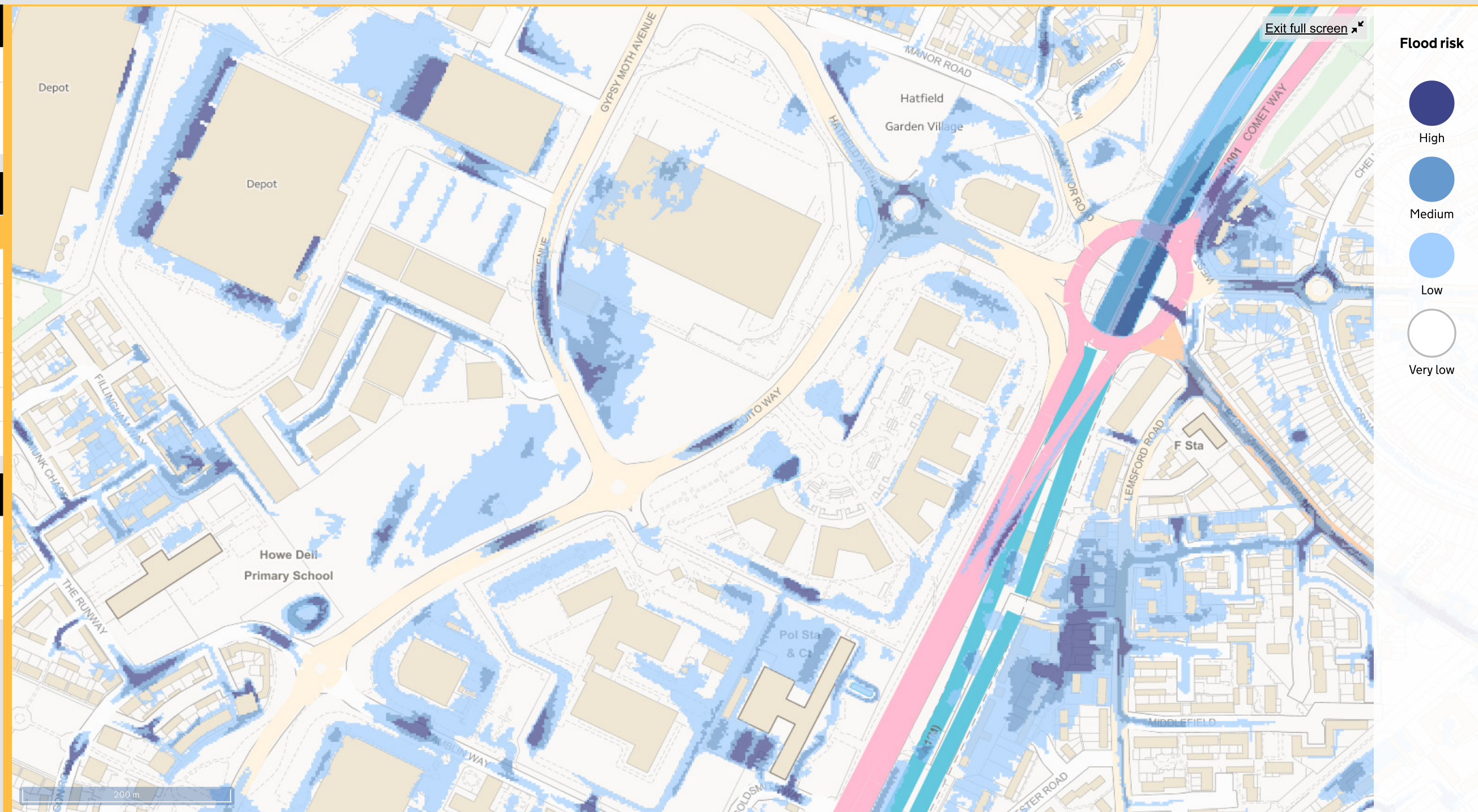
Low risk: velocity



Extent of flooding

Flood depth

Flood speed



Flood risk



High



Medium



Low

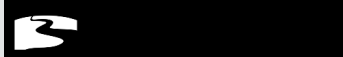


Very low

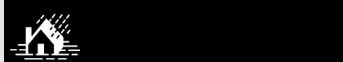


Basic view  Detailed view

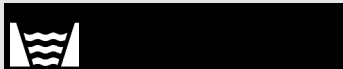
Location



- Extent of flooding
- Depth and flow estimates at monitoring stations



- Extent of flooding
- High risk: depth
- High risk: velocity
- Medium risk: depth
- Medium risk: velocity
- Low risk: depth
- Low risk: velocity



- Extent of flooding
- Flood depth
- Flood speed

