

Flood Risk Assessment

May 2021

The logo consists of a dark blue square with the letters 'EAS' in white, sans-serif font.

EAS

Musgrave House, Widewater Place, Denham

Fprop Offices General Partner Ltd

Document History

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D					
E					

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1 Executive Summary

- 1.1 The development site is at Musgrave House, Widewater Place, Moor Hall Road, Denham, UB9 6NS. It is almost completely impermeable, consisting of a large building with associated car parking.
- 1.2 The proposed development will convert the existing building into 36 residential units.
- 1.3 The site is located within Flood Zone 1 on the Environment Agency (EA) flood map, which indicates a 'low' risk of flooding from fluvial and tidal sources. 'Low' risk areas have an annual probability of flooding of less than 0.1% (or 1 in 1000 years).
- 1.4 The Environment Agency and West London SFRA surface water flood maps show that the building is not at risk of surface water flooding but in the low risk scenario the surrounding car park is, to depths less than 300mm.
- 1.5 As the car park is at risk of surface water flooding, a notice should be installed in a communal area making residents aware of the risk and what to do in the rare event of flooding. The building will provide safe refuge during any flooding to the car park.

2 Introduction

- 2.1 This Flood Risk Assessment (FRA) has been prepared in support of an application by Fprop Offices General Partner Ltd for a proposed permitted development application at Musgrave House, Widewater Place, Moor Hall Road, Denham, UB9 6NS. A location plan is included in **Appendix A**.
- 2.2 The proposed development consists of the internal reconfiguration of the building to create 36 residential units over three floors comprised of:
- 3 x 3-bedroom units
 - 20 x 2-bedroom units
 - 13 x 1-bedroom units
- 2.3 The contents of this FRA are based on the advice set out in The National Planning Policy Framework (NPPF) and the Technical Guidance to the NPPF revised in July 2018 and updated February 2019.
- 2.4 This document includes:
- Section 2 - describes relevant policy;
 - Section 3 - site description, including site levels, proximity to watercourses etc.;
 - Section 4 - outline potential sources of flooding and any mitigation measures required;
 - Section 5 – mitigation measures and access/egress details;
 - Section 6 – provides a summary and conclusions.

3 Policy Context

Introduction

3.1 This section sets out the policy context. The contents of this FRA are based on the advice set out in The National Planning Policy Framework (NPPF) published in March 2012, revised in July 2018 and updated February 2019, and the Planning Practice Guidance (PPG) published March 2014, which is updated on an ad hoc basis.

3.2 Paragraph 164 footnote 50 of the NPPF states:

“A site-specific flood risk assessment should be provided for all developments in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.”

3.3 The flood risk zones are defined as:

- Flood Zone 1- This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river flooding (<0.1%)
- Flood Zone 2- This zone comprises land assessed as having between a 1 in a 100 and 1 in 1,000 annual probability of river flooding.
- Flood Zone 3a- This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), and for tidal flooding at least a 0.5% annual probability of flooding from tidal sources.
- Flood Zone 3b- This zone comprises land where water has to flow or be stored in times of flood.

3.4 Paragraph 155 discusses the suitability of development location, particularly with regard to future risks induced by climate change:

“Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere”.

3.5 Paragraph 156 of the National Planning Policy Framework (NPPF) states:

“Strategic policies should be informed by a strategic flood risk assessment, and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards”.

3.6 The Flood Map for Planning shows the site to be located in Flood Zone 1, at ‘low’ risk of flooding from fluvial sources. This is considered to be an area with less than 1 in 1000 annual chance of flooding. All flood water is contained within the banks of the Fray’s River however, as there is a

bridge directly over the river the mapping doesn't differentiate between the bridge over the river and the river bed itself. The EA Flood Map has been enclosed in **Appendix B**.

- 3.7 It should be noted that within the PPG office use buildings are deemed to be a “less vulnerable” land use in terms of flood risk.

Local Policy

- 3.8 The Local Plan Part 2 was adopted by the Council in January 2020 and provides a development strategy for the borough up until 2026.
- 3.9 Policy DMEI 9 ‘Management of Flood Risk’ sets out the requirements for a development within Flood Zone 2 and 3. However, as the development is wholly within Flood Zone 1 it is considered that the development meets the requirements of DMEI 9.
- 3.10 As the proposals are for the conversion of the existing buildings there are no changes proposed to the existing drainage.

West London Strategic Flood Risk Assessment (SFRA) 2018

- 3.11 The West London SFRA was published in 2018 with the overarching aim “to provide the evidence base for ensuring development is steered away from areas identified most at risk from various flood sources, reducing the risk of flooding to its residents and buildings.”
- 3.12 The most relevant part of the SFRA for this report is Section 4 specifically 4.2.3. Part of which can be seen below.
- 3.13 The first paragraph of 4.2.3 relating to Site-Specific Flood Risk Assessments (FRA) states:
- “Site-specific FRAs should be proportionate to the degree of flood risk, making the best use of available information. They should also be appropriate to the scale, nature and location of the development. For example, developments such as single house extensions would generally require a less detailed assessment as they tend not to significantly increase the number of people present in an area at risk of flooding. Conversely, new developments comprising of multiple houses in a similar location would generally require FRAs with greater detail.”*
- 3.14 This site-specific FRA has been produced to provide an assessment which is proportionate to the degree of the flood risk.

London Borough of Hillingdon Surface Water Management Plan (SWMP) (2013)

- 3.15 The London Borough of Hillingdon SWMP was published in 2013 as part of the Drain London Project. The document outlines the preferred surface water management strategy in Hillingdon and considers flooding from sewers, drains, groundwater and runoff from land and identifies Critical Drainage Areas (CDA).
- 3.16 This site was not identified as being within a CDA within the SWMP.

London Plan 2021

- 3.17 The London Plan provides an overall strategic plan for the development of London over the next 20-25 years. It sets out the integrated economic, environmental, transport and social framework

and is legally part of each of London's Local Planning Authorities' Development Plan. This ensures that all planning decisions within Greater London take into account this plan. There is one main policy that must be incorporated into this report which is Policy SI 12 Flood Risk Management.

3.18 Policy SI 12 Flood Risk Management states:

A Current and expected flood risk from all sources (as defined in paragraph 9.2.12) across London should be managed in a sustainable and cost-effective way in collaboration with the Environment Agency, the Lead Local Flood Authorities, developers and infrastructure providers.

B Development Plans should use the Mayor's Regional Flood Risk Appraisal and their Strategic Flood Risk Assessment as well as Local Flood Risk Management Strategies, where necessary, to identify areas where particular and cumulative flood risk issues exist and develop actions and policy approaches aimed at reducing these risks. Boroughs should cooperate and jointly address cross-boundary flood risk issues including with authorities outside London.

C Development proposals should ensure that flood risk is minimised and mitigated, and that residual risk is addressed. This should include, where possible, making space for water and aiming for development to be set back from the banks of watercourses.

D Development Plans and development proposals should contribute to the delivery of the measures set out in Thames Estuary 2100 Plan. The Mayor will work with the Environment Agency and relevant local planning authorities, including authorities outside London, to safeguard an appropriate location for a new Thames Barrier.

E Development proposals for utility services should be designed to remain operational under flood conditions and buildings should be designed for quick recovery following a flood.

F Development proposals adjacent to flood defences will be required to protect the integrity of flood defences and allow access for future maintenance and upgrading. Unless exceptional circumstances are demonstrated for not doing so, development proposals should be set back from flood defences to allow for any foreseeable future maintenance and upgrades in a sustainable and cost-effective way.

G Natural flood management methods should be employed in development proposals due to their multiple benefits including increasing flood storage and creating recreational areas and habitat."

3.19 This flood risk assessment has considered this policy in depth to ensure that the proposals fully comply with the requirements of the 2021 London Plan.

4 Existing Site Assessment

Site Description

- 4.1 The development site is at Musgrave House, Widewater Place, Moor Hall Road, Denham, UB9 6NS. It is almost completely impermeable, consisting of a large building with associated car parking.
- 4.2 The site is on the north side of Moor Hall Road and is the west facing building within Widewater Place and is surrounded by two other large office blocks with associated car parking. A location plan is contained in **Appendix A**.
- 4.3 The proposed development will convert the existing Musgrave House building for residential development comprise of 36 residential units. The proposed development plans are included at **Appendix B**.

Local Watercourses

- 4.4 The Grand Union Canal is located along the western boundary of the site and the River Colne which is classified as a main river by the Environment Agency is located approximately 750m further west. The proposals will have no impact on either of these waterways as the proposals do not result in any additional built development.

Site Levels

- 4.5 A topographical survey has not been carried out but it can clearly be seen by visiting the site or even on Google Streetview that the car park is set lower than all the footways and buildings. It is assumed that this was a measure to prevent any historic flood risk from affecting the buildings.

5 Potential Sources of Flooding

Fluvial

- 5.1 A copy of the Environment Agency's Flood Map is enclosed in **Appendix C**. The mapping shows that the site is wholly located within Flood Zone 1, an area at 'very low' risk of flooding from fluvial or tidal sources. Areas in Flood Zone 1 have a less than 1 in 1000 probability of flooding each year.
- 5.2 The risk from fluvial flooding is therefore deemed to be very low.

Surface Water

- 5.3 Surface water flooding refers to flooding caused when the intensity of rainfall, particularly in urban areas, can create runoff which temporarily overwhelms the capacity of the local drainage systems including sewers, rivers and watercourses or does not infiltrate into the ground. The water ponds on the ground and flows towards low-lying land. This source of flood risk is also known as 'pluvial'.
- 5.4 A high-risk scenario indicates a greater than 1 in 30 probability of surface water flooding each year, i.e. the most frequently occurring scenario. The site is not shown to be at risk of flooding during this event.
- 5.5 A medium risk scenario indicates a probability of surface water flooding between 1 in 30 and 1 in 100 each year. In a medium risk scenario, there are very minor areas of flood risk shown within the car parking area and access road however there is no risk to any of the buildings.
- 5.6 A low risk scenario indicates a probability of surface water flooding between 1 in 100 and 1 in 1000 each year (i.e. the least frequent but worst-case scenario). In a low risk scenario, the majority of the car park and access road is shown to be at risk of depths below 300mm. Each of the three buildings within the site are set wholly outside of the flood risk.
- 5.7 The EA's surface water flood risk map and the West London SFRA mapping can be seen in **Appendix D**.
- 5.8 As such the risk of surface water flooding to the building is deemed to be low.

Groundwater

- 5.9 The West London SFRA mapping shows that the site has between than 25% and 50% susceptibility to groundwater flooding.
- 5.10 As the finished floor levels of the building are higher than surrounding ground levels and the SWMP confirms that there are no recorded flooding incidents within the vicinity, the risk of groundwater flooding to the site is considered to be low.

Artificial

- 5.11 The EA Flood Map for Planning and West London SFRA show the site is not at risk of flooding from artificial sources therefore the risk from artificial sources can be deemed low.

Sewer Flooding

- 5.12 Sewer flooding generally results from localised short-term intense rainfall events overloading the capacity of the private and public drainage or due to failures within the public sewer.
- 5.13 The SFRA mapping shows that there have been no instances of sewer flooding at this location.
- 5.14 Therefore, due to the lack of recorded instances of sewer flooding within the area the risk from sewer flooding is low.

6 Mitigation Measures

- 6.1 As discussed in Section 4, the proposed buildings are located wholly within Flood Zone 1 and at low risk of surface water flooding however, there is surface water flood risk surrounding the site within the car parking.

Finished Floor Levels

- 6.2 The surface water depths discussed in Section 4 show that the car parks surrounding the three buildings of Widewater Place.
- 6.3 The surface water flood maps clearly show that the areas directly surrounding the building are not impacted by the surface water flood extent for the low risk scenario and a considerable distance from any of the small areas of ponding shown during the medium risk scenario.
- 6.4 The buildings were designed with raised thresholds and there is no evidence within the Council's SFRA or SWMP that this area has flooded historically.

Flood Evacuation Plan

- 6.5 The onset of surface water flooding can occur quickly, and it is important to warn residents of the risk within the car park and when leaving or entering the building during an event like this. It is recommended that a flood notice is permanently located within the lobby for the residents within the block and within a notice board or other suitable area in the car park. An example of such a notice is included in Figure 1 below.

FLOOD WARNING NOTICE

In rare circumstances this car park is at risk of surface water flooding. There are currently no warning systems for surface water flooding.

Do not attempt to walk or drive through flood water. Seek refuge within the building if it is not safe to go outside and exercise caution at all times.

**CARS CAN BECOME
UNSTABLE IN 300mm
OF FLOODWATER!**

**IN THE EVENT OF AN
EMERGENCY CALL 999.**

Figure 1: Example of Flood Warning Notice

Safe Access/Egress

- 6.6 As mentioned previously, the proposed buildings will remain above the flood level for the low risk scenario which is the only scenario in which the surrounding area is shown to flood. As such, all residents will have safe refuge in the event of flooding however, they need to be made aware that there is a risk of flooding within the car park. In the event that flooding does occur on site, it is recommended that due to the unpredictable nature of surface water flooding that residents do not leave the site until the floodwater has receded.
- 6.7 If residents are leaving or returning to the site during extreme rainfall events then access should be gained to the car park coming from a westerly direction on Moor Hall Road as the stretch of road to the east of the site entrance is shown to flood to greater depths. All vehicular/foot traffic should also exit the site to the west. However, it is recommended that all unnecessary travel is avoided during times of flooding as the safest place for residents and visitors is to remain within the building during a flood event.

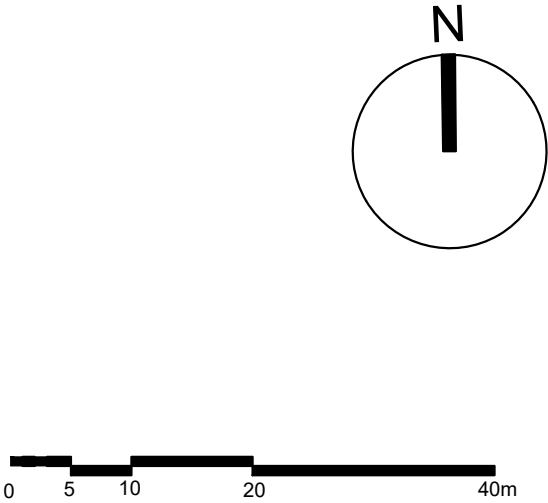
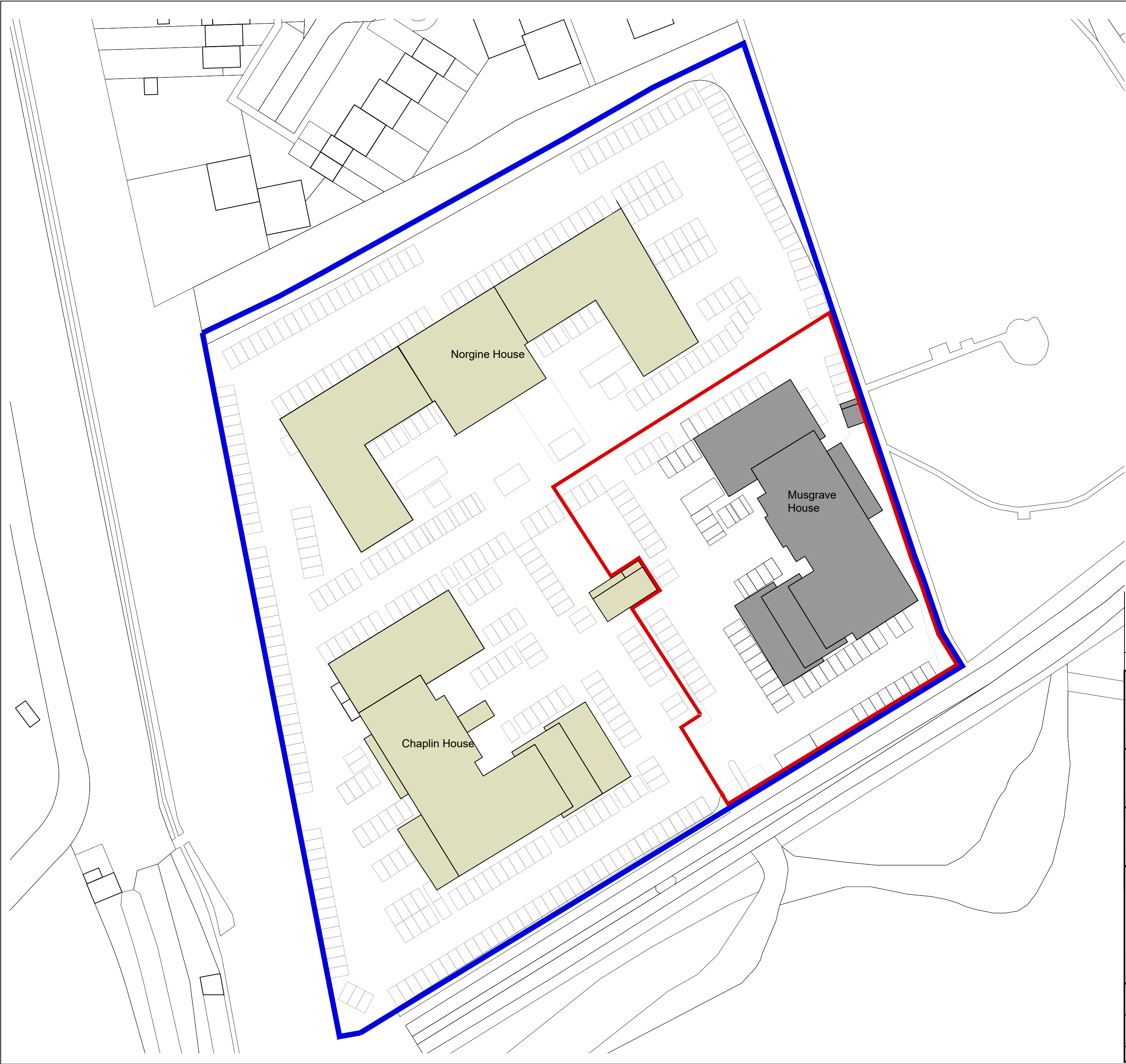
7 Conclusions

- 7.1 The site currently consists of an office block, there will be no external modifications only internal to convert the building to provide 36 self-contained residential units.
- 7.2 The site is located within Flood Zone 1 on the EA flood map, which indicates a 'low' risk of flooding from fluvial and tidal sources. 'Low' risk areas have an annual probability of flooding of less than 0.1% (or 1 in 1000 years).
- 7.3 The EA Flood Risk from Surface Water map and the West London SFRA flood mapping show that the building is at very low risk of surface water flooding but there is surface water flooding to depths of up to 300mm in the low risk scenario.
- 7.4 As the car park is at risk of surface water flooding, a notice should be installed in a communal area making residents aware of the risk and what to do in the rare event of flooding.
- 7.5 There is to be no increase in building roof area or hardstandings and therefore no amendments to the existing surface water drainage are required.
- 7.6 Overall, the site is at low risk of flooding from all sources of flood risk.

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Appendix: A – Location Plan



PROPOSED		
-	-	-
THIS DRAWING IS NOT TO BE SCALED, ONLY FIGURED DIMENSIONS ARE TO BE FOLLOWED (UNLESS THE DRAWING IS PART OF A PLANNING APPLICATION). CONTRACTORS ARE TO CHECK ALL DIMENSIONS BEFORE WORK COMMENCES, AND REFER ANY APPARENT DISCREPANCY TO THE ARCHITECT.		
THIS DRAWING IS THE SOLE PROPERTY OF M.R PARTNERSHIP LIMITED, AND MAY NOT BE COPIED OR REPRODUCED IN ANY MANNER WHATSOEVER WITHOUT THE OWNERS WRITTEN CONSENT. (c) COPYRIGHT.		
PROJECT	Musgrave House, Widewater Place Moorhall road, Uxbridge London W1	
DRAWING	Proposed Location Plan - Musgrave House	
CH+MRP ARCHITECTS 41-42 FOLEY STREET, LONDON W1W 7TS T: +(0) 207 253 2526 / +(0)207 631 5405 E: mail@ch-architects.com / info@mrpartnership.co.uk www.ch-architects.com / www.mrpartnership.co.uk		
DATE:	24/05/2021	SCALE: 1:1250@A4
		-
DWG No:	3155_061	DRAWN: CAD
		REV. No: /
FILE: 3155-SITE PLANS-MUSGRAVE.dwg		

Appendix: B – Proposed Development Plans



FIRST FLOOR x 13 APARTMENTS

- 9 x 2 BEDROOM APARTMENTS
- 2 x 1 BEDROOM APARTMENTS
- 2 x 3 BEDROOM APARTMENTS

GROSS INTERNAL AREA - 1256sqm



SECOND FLOOR x 8 APARTMENTS

- 6 x 2 BEDROOM APARTMENTS
- 1 x 1 BEDROOM APARTMENTS
- 1 x 3 BEDROOM APARTMENTS

GROSS INTERNAL AREA - 800sqm



GROUND FLOOR x 15 APARTMENTS

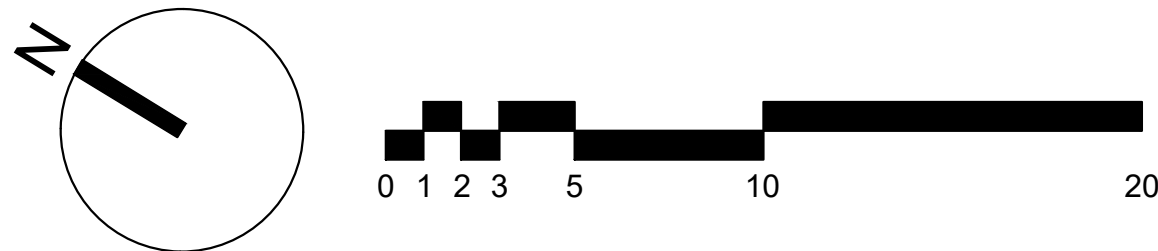
- 5 x 2 BEDROOM APARTMENTS
- 10 x 1 BEDROOM APARTMENTS
- 0 x 3 BEDROOM APARTMENTS

GROSS INTERNAL AREA - 1372sqm

NOTE:

The flats fully comply with the Nationally Described Space Standards (NDSS)

PRELIMINARY



-	-	-	-
THIS DRAWING IS NOT TO BE SCALED, ONLY FIGURED DIMENSIONS ARE TO BE FOLLOWED (UNLESS THE DRAWING IS PART OF A PLANNING APPLICATION). CONTRACTORS ARE TO CHECK ALL DIMENSIONS BEFORE WORK COMMENCES, AND REFER ANY APPARENT DISCREPANCY TO THE ARCHITECT.			
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PROJECT		Musgrave House, Widewater Place Moorhall road, Uxbridge London W1	
DRAWING		Proposed Ground Floor, First and Second Floor Plan	
 41-42 FOLEY STREET, LONDON W1W 7TS T: +(0) 207 253 2526 / +(0)207 631 5405 E: mail@ch-architects.com / info@mrpartnership.co.uk www.ch-architects.com / www.mrpartnership.co.uk			
DATE:	11/05/2021	SCALE: 1:200@A1 1:200@A1	DRAWN: CAD
DWG No:	3155_20_106		REV. No: /
FILE: 3155-PLANS-MUSGRAVE HOUSE.dwg			

Appendix: C – EA Flood Map for Planning

Flood map for planning

Your reference
MusgraveHouse

Location (easting/northing)
505106/188834

Created
18 May 2021 14:02

Your selected location is in flood zone 1, an area with a low probability of flooding.

This means:

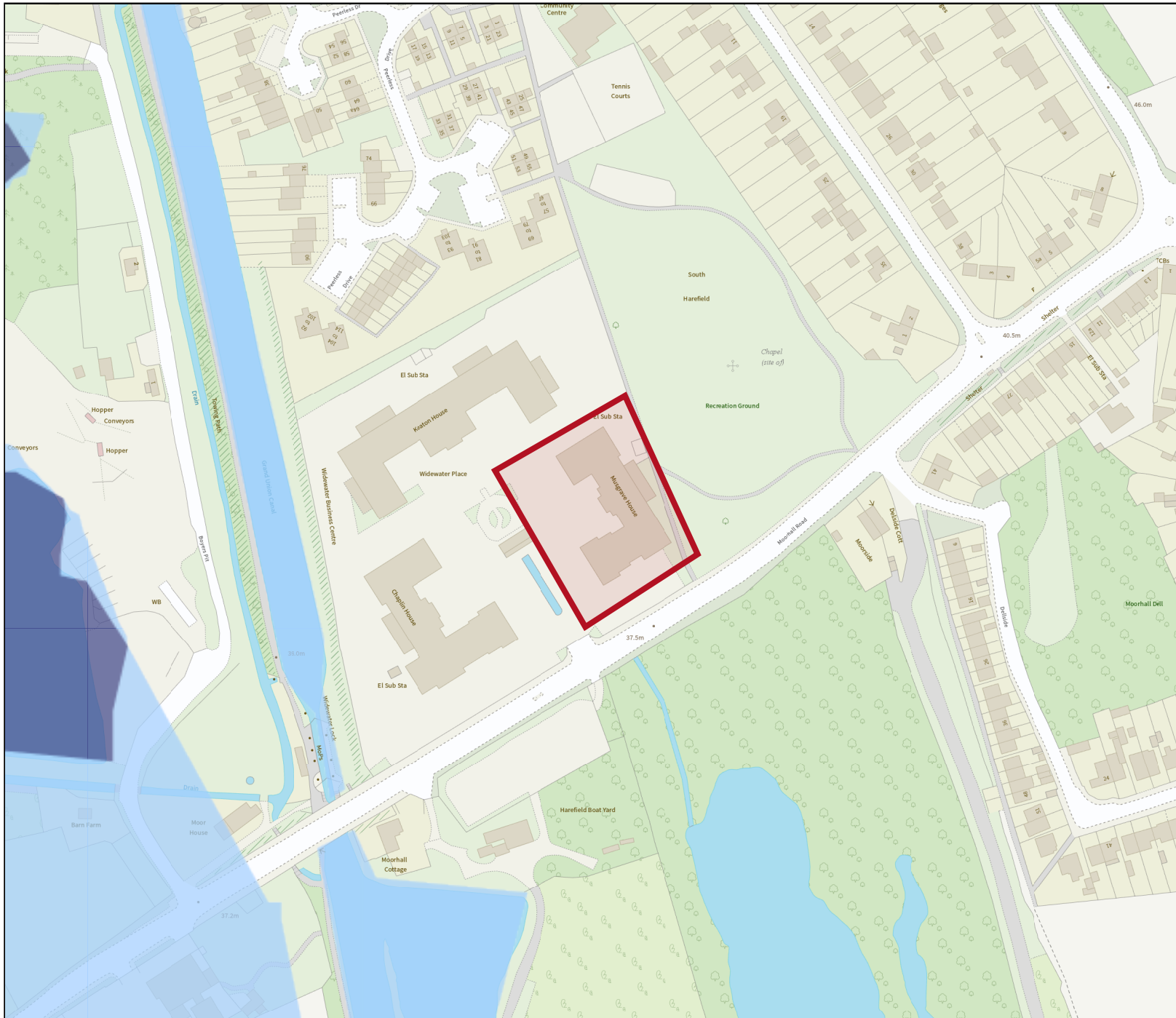
- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

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<https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>



Flood map for planning

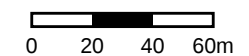
Your reference
MusgraveHouse

Location (easting/northing)
505106/188834

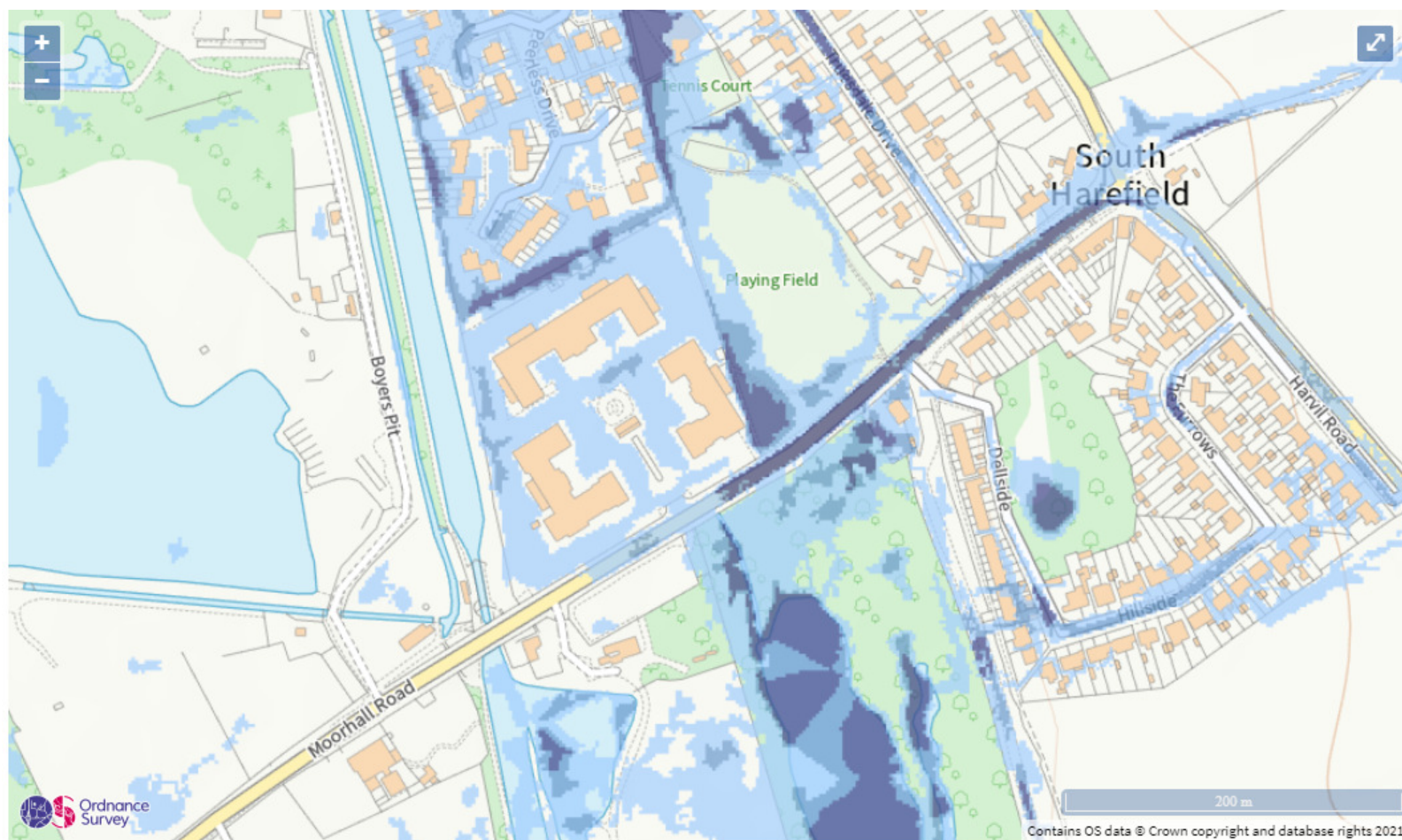
Scale
1:2500

Created
18 May 2021 14:02

-  Selected area
-  Flood zone 3
-  Flood zone 3: areas benefiting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area



Appendix: D – EA Surface Water Flood Map and West London SFRA Flood Maps



Extent of flooding from surface water

Source: <https://flood-warning-information.service.gov.uk/long-term-flood-risk/map?easting=528554&northing=286932&map=SurfaceWater>

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3.3% Extent



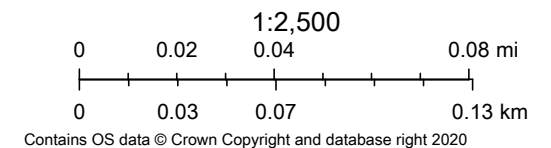
18/05/2021, 14:39:51

 Borough Boundary

 Study Area Boundary

 uFMSW 1 in 30 flood extent

Risk_of_Flooding_from_Surface_Water_Extent_3_3_percent_annual_chance



3.3% Depth



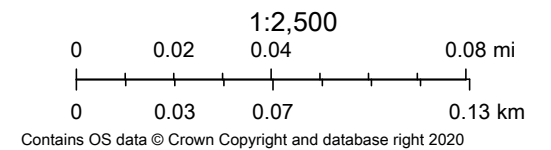
18/05/2021, 14:39:04

- Borough Boundary
- Study Area Boundary

DEPTH (Six bands)

- Below 150mm
- 150-300mm
- 300-600mm
- 600-900mm
- 900-1200mm
- Over 1200mm

Risk_of_Flooding_from_Surface_Water_Depth_3_3_percent_annual_chance



1% Extent

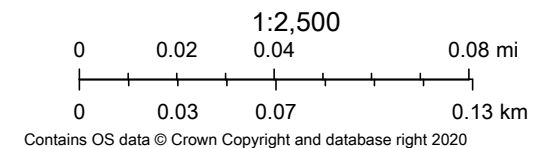


18/05/2021, 14:40:25

-  Borough Boundary
-  Study Area Boundary

 uFMSW 1 in 100 flood extent

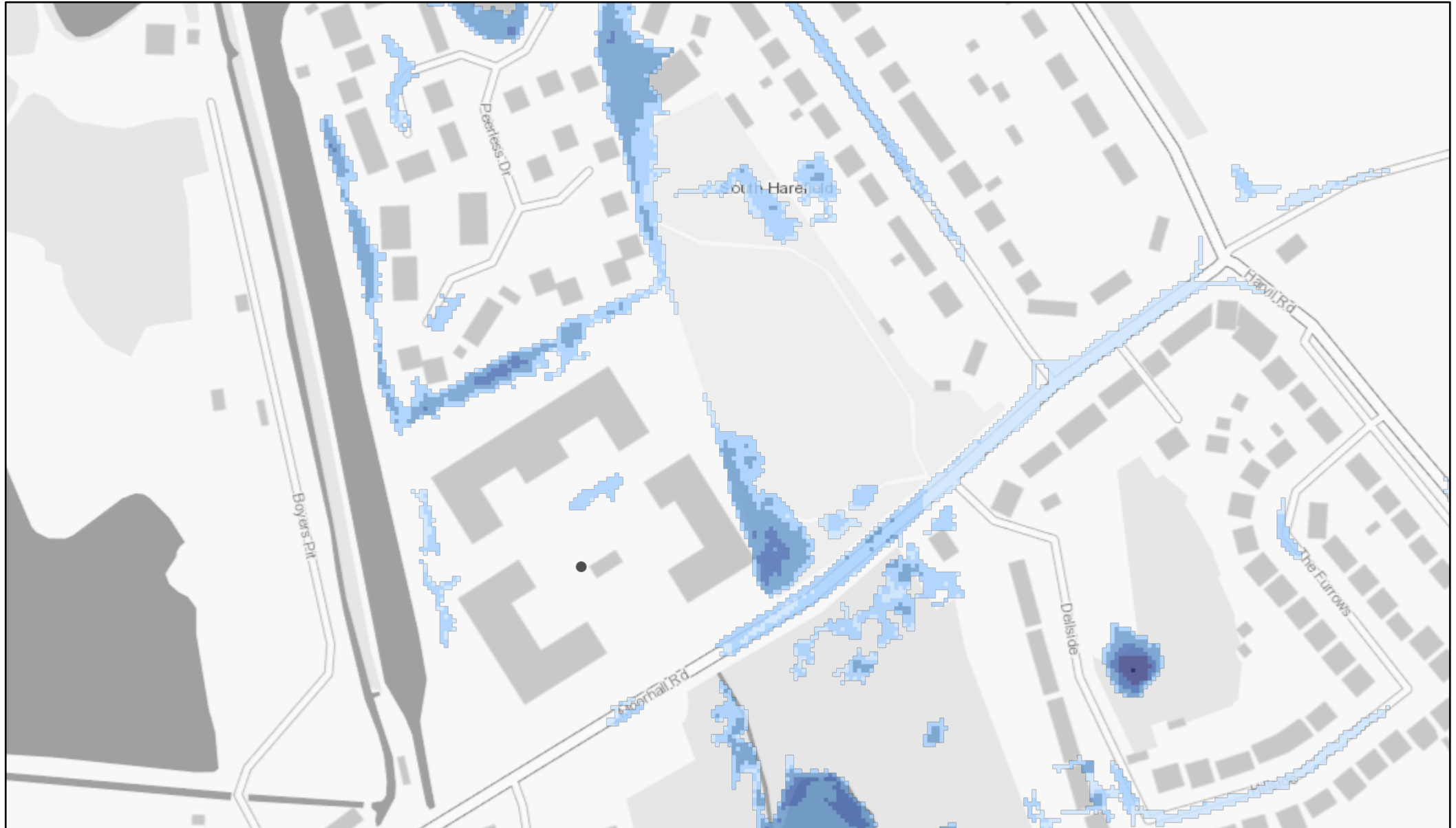
Risk_of_Flooding_from_Surface_Water_Extent_1_percent_annual_chance



London Boroughs of Brent, Barnet, Harrow, Hillingdon, Hounslow and Ealing

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1% Depth



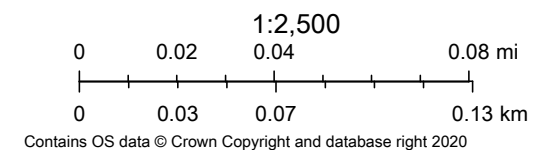
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- Borough Boundary
- Study Area Boundary

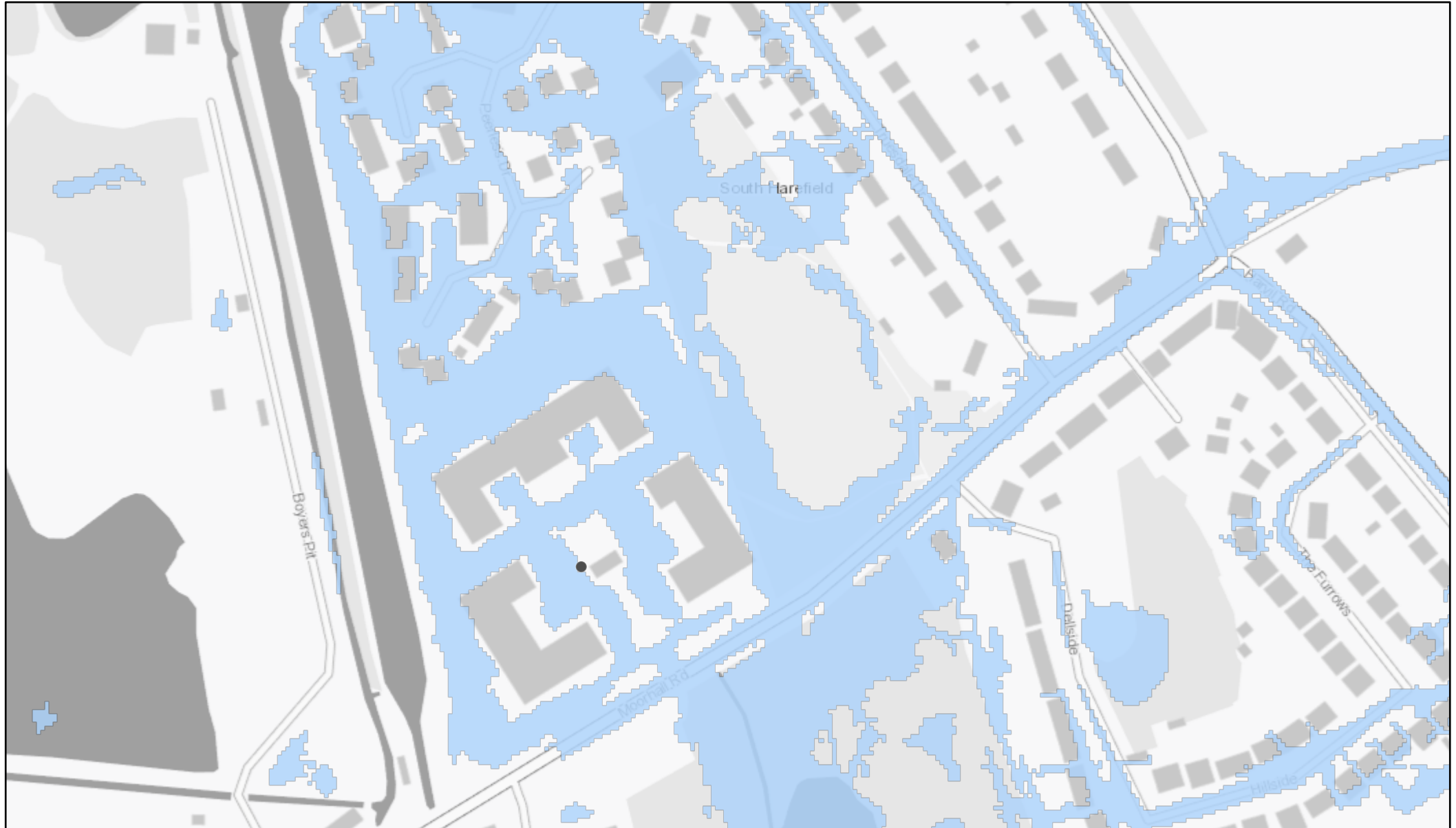
DEPTH (Six bands)

- Below 150mm
- 150-300mm
- 300-600mm
- 600-900mm
- 900-1200mm
- Over 1200mm

Risk_of_Flooding_from_Surface_Water_Depth_1_percent_annual_chance



0.1% Extent

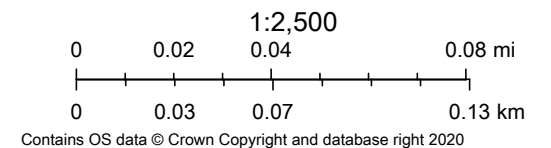


18/05/2021, 14:40:51

-  Borough Boundary
-  Study Area Boundary

 uFMISW 1 in 1000 flood extent

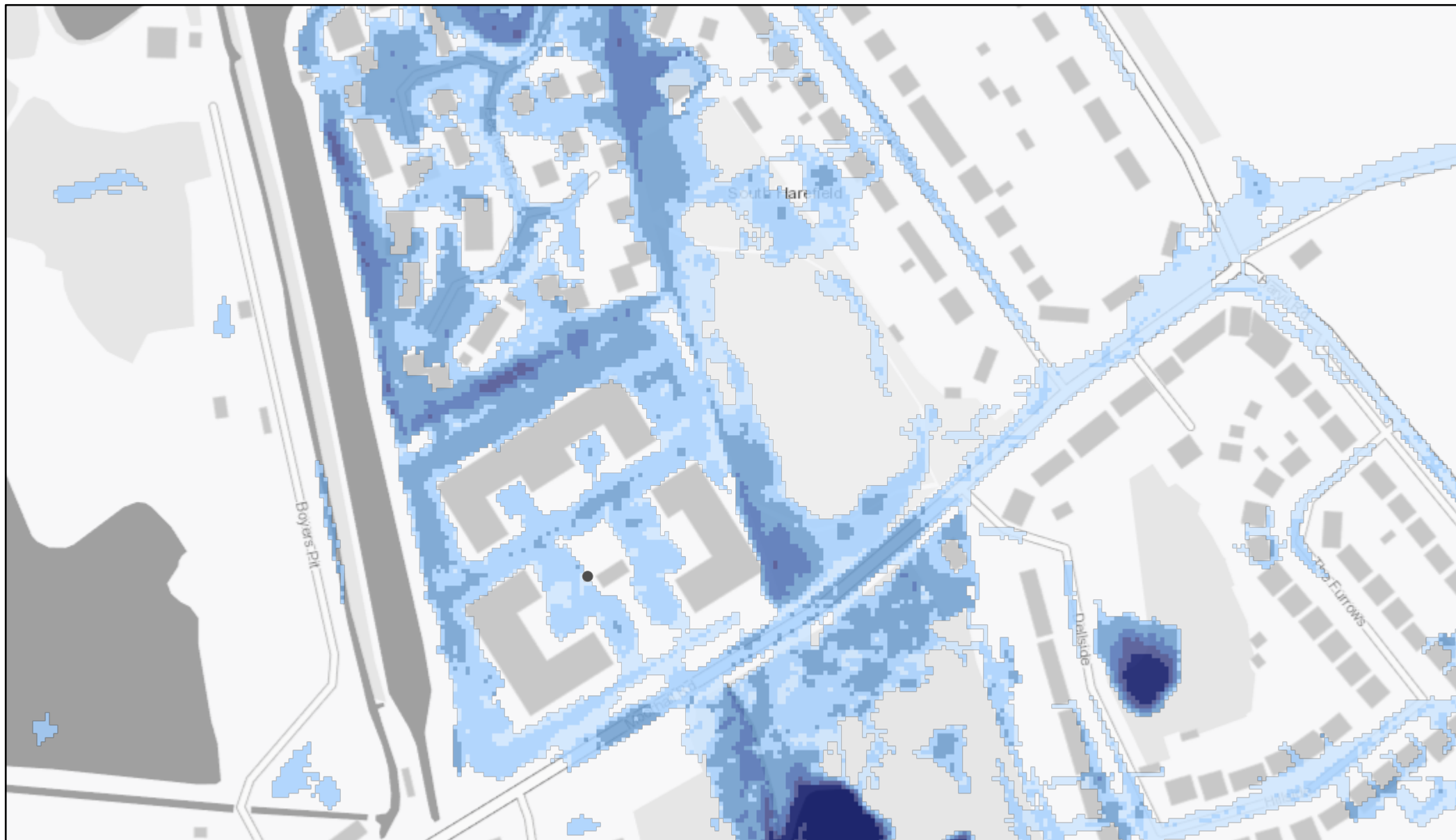
Risk_of_Flooding_from_Surface_Water_Extent_0_1_percent_annual_chance



London Boroughs of Brent, Barnet, Harrow, Hillingdon, Hounslow and Ealing

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0.1% Depth



18/05/2021, 14:42:10

- Borough Boundary
- Study Area Boundary

DEPTH (Six bands)

- Below 150mm
- 150-300mm
- 300-600mm
- 600-900mm
- 900-1200mm
- Over 1200mm

Risk_of_Flooding_from_Surface_Water_Depth_0_1_percent_annual_chance

