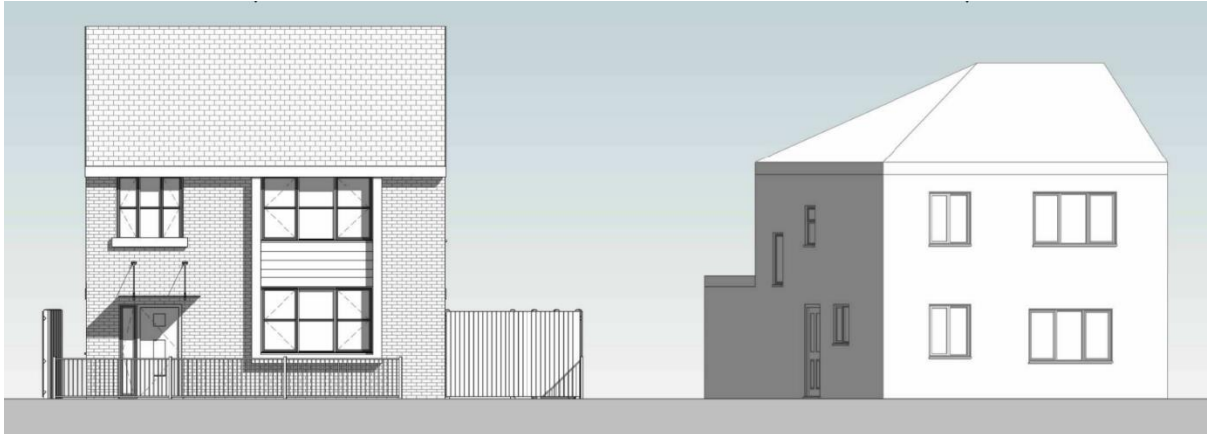


Flood Risk Assessment

Land Next To 7 Deepdale Ave, Withington, Manchester M20 1GU



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Introduction

The following FRA is being undertaken in connection with the planning application for the proposed development at 7 Deepdale Ave M20 1GU.

A full assessment of the flood risk to the site and consideration of the surface water management will be taken because of the development and will be considered as part of this analysis. Data has been gathered from several sources including: the Environment Agency (EA), the British Geological Society (BGS), National Soil Research Institute (NSRI), aerial photographs, Ordnance Survey (OS), commercially available historical mapping and relevant strategic documents developed by the Manchester City Council, in their capacity as the Local Planning Authority and Lead Local Flood Authority.

Development site

The proposed development site is located at 7 Deepdale Ave, Withington, Manchester M20 1GU and is currently land/unused garden space attached to the above address (Figure 2). Looking over the lifetime of the proposed development, the site lies within Flood Zone 2 (Figure 3) and therefore a Flood Risk Assessment is required for this planning application.

The street consists of semi-detached houses dating back to the 1920's with some newer developed houses and flats immediately opposite and to the side of No 7 Deepdale.



Figure 1 Ex Location Plan



Figure 2 PP Location Plan

Proposed development

The proposed development for this application is for the erection of a single detached dwelling house on the land attached/next to No7 Deepdale (See Figure 2). It is anticipated that the new development will be constructed at or close to existing levels, and the development is not that major and will not require any major if any retaining structures.

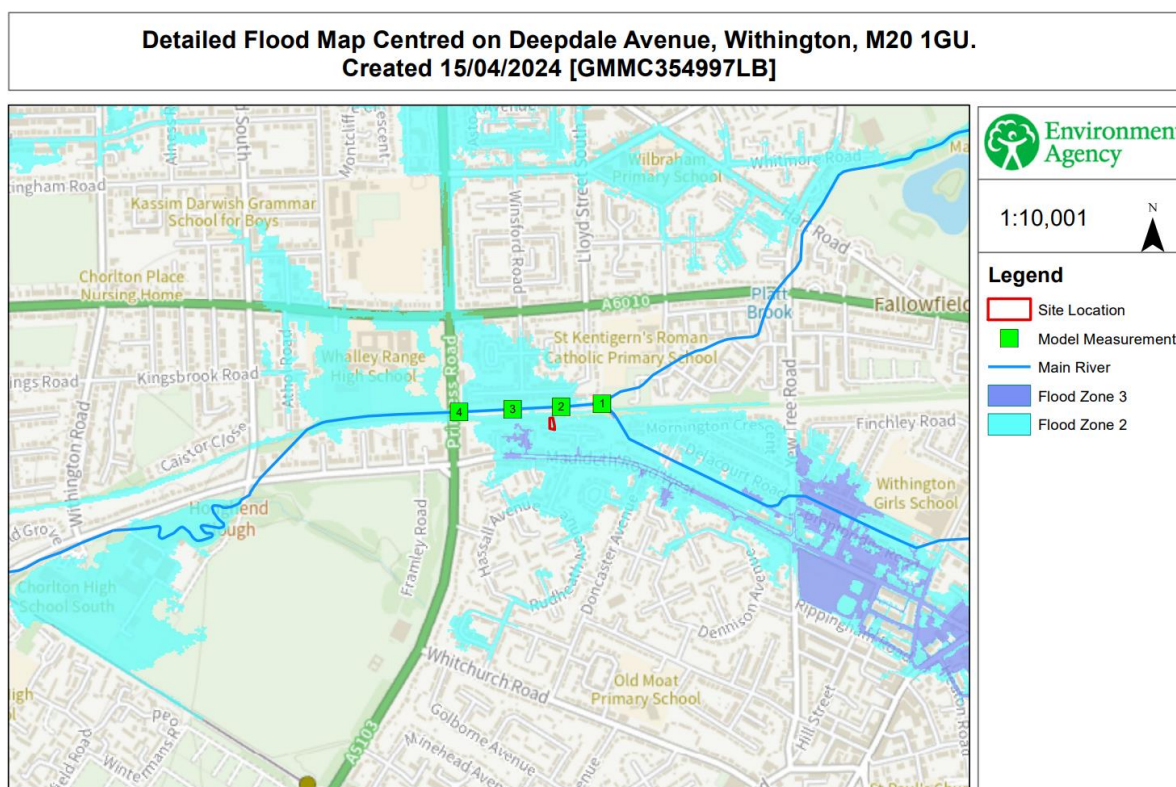


Figure 3 Flood Zone 2 Detailed Map

Site Specific Flood Hazards

The proposed development site lies within Flood Zone 2 with the main risk of flooding coming from a river source. The Environment Agency flooding from Reservoirs map identifies that the proposed development is within the extent of flooding following a breach of a reservoir as shown within (Figure 8). It is apparent that reservoir flooding is extremely unlikely to happen and there has been no loss of life in the UK from reservoir flooding since 1925. As such the risk of flooding from this source to the site is considered to be low.

Sequential/ Exception Test

Due to this application not being a major development and lies within a low-risk zone a sequential test is not required. However, the requirements of the sequential test have been met. Flood model data for the site suggests that over the lifetime of the development, there is a very low flood risk from flooding which is supported by the Environment Agency flood maps which indicates that the proposed development site is within Flood Zone 2 which has a 1 in 100 and 1 in 1000 annual probability of flooding. The development does not increase the flood risk elsewhere. The requirements of the exception test have been met. In accordance with Table 2 'Flood Risk Vulnerability Classification' of the Technical Guidance to the National Planning Policy Framework, residential sites are defined as 'more vulnerable' development. 'More Vulnerable' developments within flood zone 2 are considered appropriate development and as such the undertaking of a Sequential/Exception Test will not be required. See Table 1 below.

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Flood Zone	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test Required	✓	✓
	Zone 3a	Exception Test Required	✓	x	Exception Test Required	✓
	Zone 3b	Exception Test Required	✓	x	x	x

Table 1: Flood Risk Vulnerability and Flood Zone Compatibility

Sources of flooding

Fluvial/Tidal

The Environment Agency's Flood Map for Planning (Rivers and Sea) identifies fluvial and tidal flood zones and provides an indication of whether these zones are protected, due to the presence of flood defences (Figure 5). Figure 4, below, presents the Flood Map for the surrounding area. The EA Flood Map identifies the development site to lie within Flood Zone 2, where the chance of flooding in any given year is between 1 in 1000 (0.1%) and 1 in 100 (1%) in a flood event.

It appears that the flood risk occurs from the possibility of the over-topping of Platt Brook, which is immediately north of the site. In addition, current guidelines set out in the National Planning Policy Framework (NPPF) requires flooding from all sources to be considered any potential flooding on site and potential to cause flooding elsewhere. Therefore, the assessed risks are as follows.

Surface water

Surface water at the site is currently managed by United Utilities. The proposals for surface water management are to connect to the existing surface water system. Extent of flooding is low from surface water flooding (Figure 4). Flood depths of below 300mm (Figure 6) can be expected and will be of low velocity as shown in (Figure 7). Flooding from surface water is difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding. A low risk of surface water flooding means that this area has a chance of flooding of between 0.1% and 1% each year.

A drainage design is beyond the remit of this Flood Risk Assessment however as the proposed development is for a new build it is proposed that the new development will utilise the existing surface water drainage infrastructure serving the site.

Flooding from Rivers/Watercourses

The site is indicated as being in Flood Zone 2 and the risk of flooding can be assessed as LOW. Low risk means that this area has a chance of flooding of between 0.1% and 1% each year.

Flooding from the Sea

In view of the distance from the coast and the elevation above ordnance datum, the risk of flooding from the sea is assessed as ZERO.

Flooding from Land

There are no obvious overland paths of flood water, nor does it appear that there is any known history of flooding within the local area. Flooding from land is therefore deemed to be assessed as VERY LOW

Flooding from Sewers

Sewers in the area appear to have ample capacity for the likely present and future flows, and therefore this risk is assessed as VERY LOW.

Flood Defences

A review of the Environment Agency modelled data indicates that the proposed development site is protected from fluvial flooding from Platt Brook/Chorlton Platt Gore by flood defences as shown in the below (Figure 5).

Historic Flooding

Analysis of strategic flood risk documents developed by the Manchester City Council does not indicate flooding any historic flooding at the development site. Section 2.8 of the Manchester City, Salford City and Trafford Councils Strategic Flood Risk Assessment Level 1 (March 2010) provides a table of historical flood events in the Manchester area from 1799 – 2008. A review of the table indicates that there is no reference to Platt Brook/Chorlton within Section 2.8 of the MST Strategic Flood Risk Assessment. At present the Environment Agency do not hold any records of flooding at the site.

Climate change

Current planning policy guidelines indicate that climate change will bring about an increase in rainfall intensities in the future. For an estimated design life not exceeding 100 years for residential development, any necessary designs for drainage, soakaways, or other suitable disposal methods limiting surface water flows should incorporate rainfall intensities that have been increased by 30% to take account of the effects of climate change up to the year 2116. The Environment Agency have supplied a table (Table 2) for the increase in levels.

Site Specific Flood Hazards

The proposed development site lies within Flood Zone 2 with the main risk of flooding coming from a river source. The Environment Agency flooding from Reservoirs map identifies that the proposed development is within the extent of flooding following a breach of a reservoir as shown within (Figure 8). It is apparent that reservoir flooding is extremely unlikely to happen and there has been no loss of life in the UK from reservoir flooding since 1925. As such the risk of flooding from this source to the site is considered to be very low if not at all.

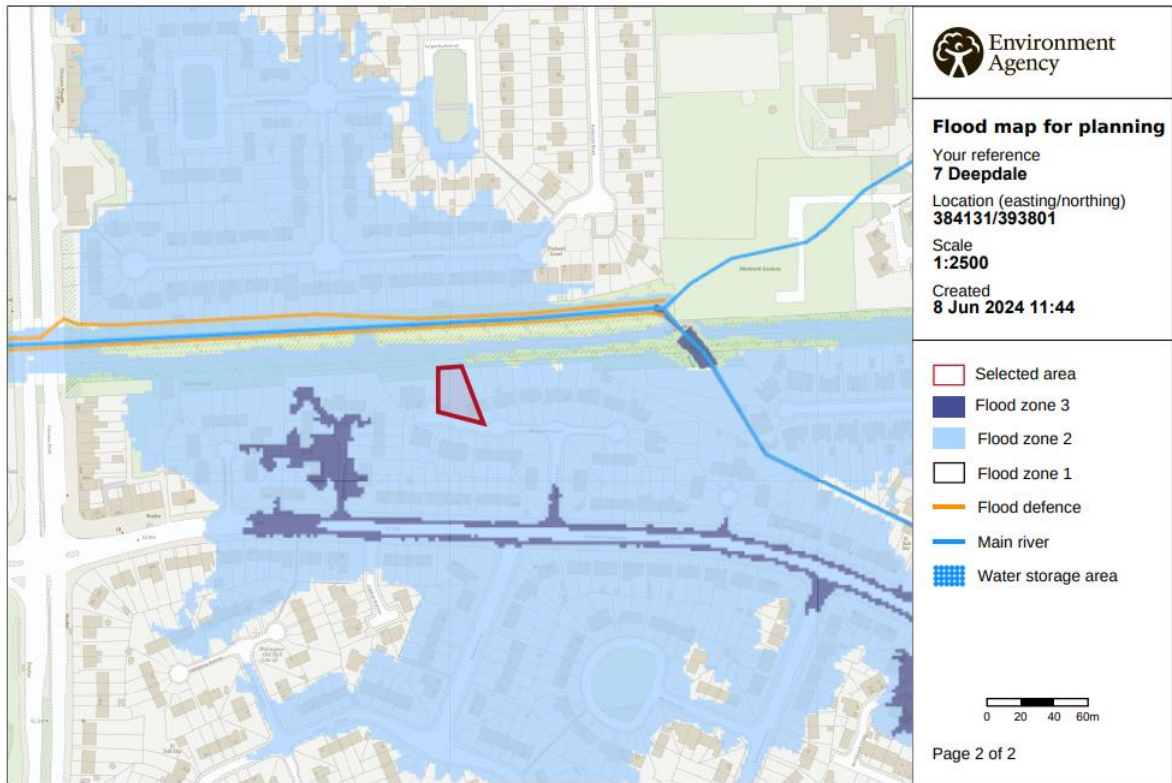


Figure 4 Flood Map

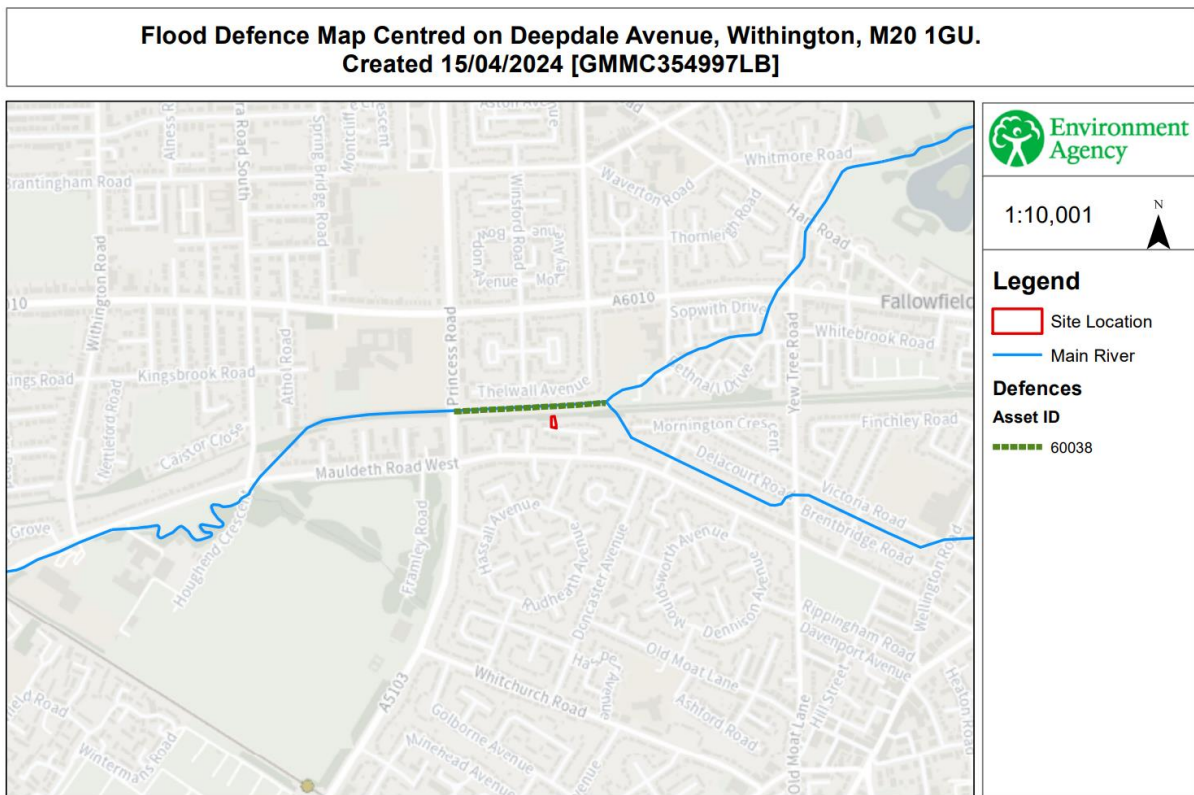


Figure 5 Flood Defence Map

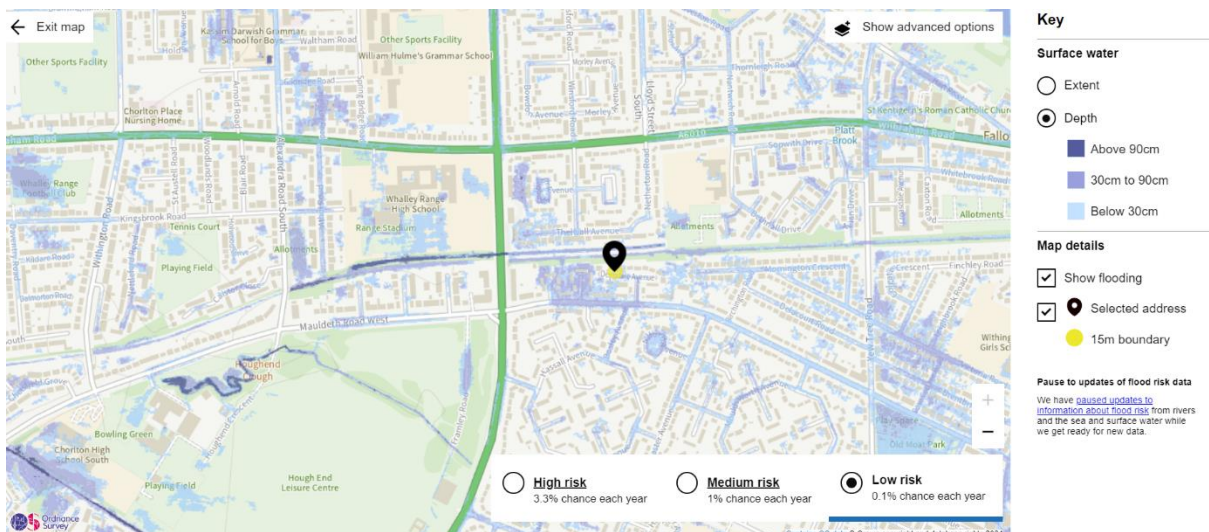


Figure 6 Depth From Surface Water



Figure 7 Low Risk Velocity Water Flood Risk

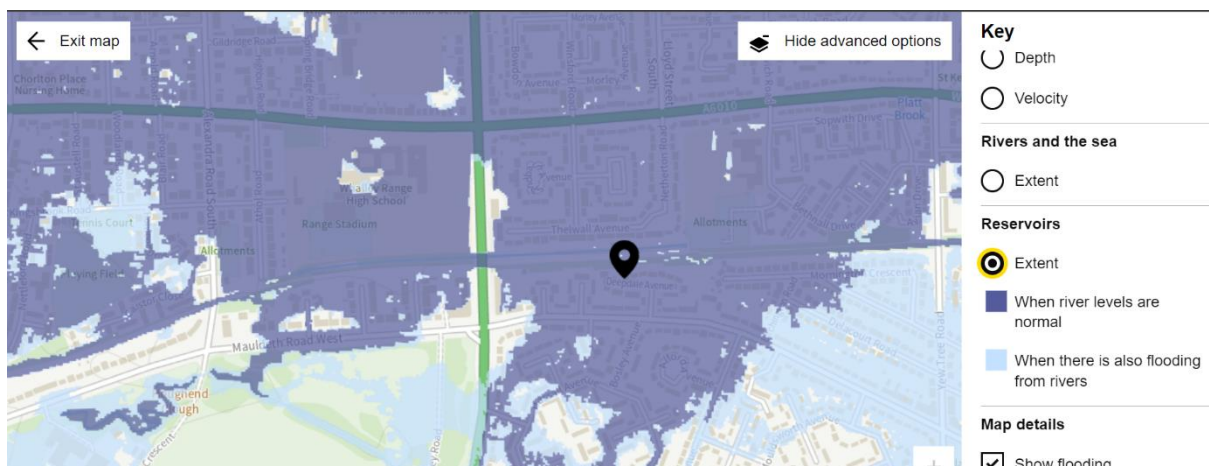


Figure 8 Environment Agency Reservoir Flood Map

Map Reference	Model Node Reference	Easting	Northing	Data	Undeveloped					
					10 % AEP (1 in 10 year)	4 % AEP (1 in 25 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% increase in flow	1 % AEP (1 in 100 year) + 35% increase in flow
1	ea013_0171_CHOP01_4770d	384247	393852	Modelled Water Level (m aodN)	31.39	31.61	31.81	31.64	31.99	32.01
				Modelled Flow (cumecs)	10.14	13.52	16.85	17.59	21.07	21.54
2	ea013_0171_CHOP01_4664	384146	393845	Modelled Water Level (m aodN)	31.24	31.47	31.67	31.71	31.86	31.88
				Modelled Flow (cumecs)	10.25	13.65	17.01	17.73	21.21	21.68
3	ea013_0171_CHOP01_4544	384027	393840	Modelled Water Level (m aodN)	31.08	31.29	31.48	31.52	31.66	31.67
				Modelled Flow (cumecs)	10.25	13.64	17.00	17.72	21.16	21.60
4	ea013_0171_CHOP01_4414u	383896	393833	Modelled Water Level (m aodN)	30.80	31.02	31.22	31.26	31.39	31.41
				Modelled Flow (cumecs)	10.25	13.64	17.00	17.71	20.23	20.44

Undeveloped										
1 % AEP (1 in 100 year) + 70% increase in flow	0.1 % AEP (1 in 1000 year)	50 % AEP (1 in 2 year)	10 % AEP (1 in 10 year)	4 % AEP (1 in 25 year)	1.33 % AEP (1 in 75 year)	1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 30% increase in flow	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow	0.1 % AEP (1 in 1000 year)
32.11	32.13	30.97	31.39	31.61	31.81	31.85	32.02	32.04	32.18	32.20
24.00	24.07		10.14	13.52	16.87	17.63	20.98	21.44	24.12	24.19
31.99	32.01	30.62	31.24	31.46	31.72	31.90	31.92	32.08	32.09	32.09
32.17	24.47		10.25	13.65	17.03	17.77	21.12	21.97	24.26	24.57
31.83	31.84	30.64	31.06	31.29	31.49	31.53	31.71	31.74	31.92	31.92
23.72	23.83		10.25	13.67	17.03	17.76	21.12	21.96	24.26	24.61
31.62	31.64	30.34	30.80	31.02	31.22	31.26	31.44	31.48	31.69	31.70
23.09	23.19		10.25	13.67	17.03	17.76	21.11	21.94	24.23	24.14

Model data taken from Chorlton Platt Gore 2012

AEP - Annual Exceedence Probability

m aodN - metres above ordnance datum Newlyn

cumecs - cubic metres per second

Notes:

*Climate Change Scenario - 30%, 35% and 70% increases in flow calculated for the 2080's (2070 - 2115).

Please see <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances> for more information regarding the new climate change guidance. The location of the site and the type (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

Flood Defences

			Standard of	Upstream Actual Crest Level	Downstream Actual Crest
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Table 2

Conclusion

It is clear that there is no previous record of a flood affecting the property or the area stated by the Environmental agency and all supporting documents/maps. There is a current flood defence within the area. The site is shown to be located within Flood Zone 2 of the Environment Agency Flood map. The primary sources of flood risk to the site is identified to be from Platt Brook/Chorlton Platt Gore and has low risk in regards to depth of the flood and velocity. The proposed floor level is to be no lower than the existing floor level. It is proposed that the new development will utilise the existing surface water drainage infrastructure serving the site. Secondary sources such as artificial water sources, groundwater flooding and pluvial flooding have been investigated and are deemed to present a very low/low risk of flooding to the site.

This report has considered flooding from a number of sources in accordance with NPPF guidelines, and it is believed that the site is not at risk of flooding, nor does the proposed development create a risk of flooding elsewhere.