

# Flood Risk Assessment

## Flood Risk Assessment

### Introduction

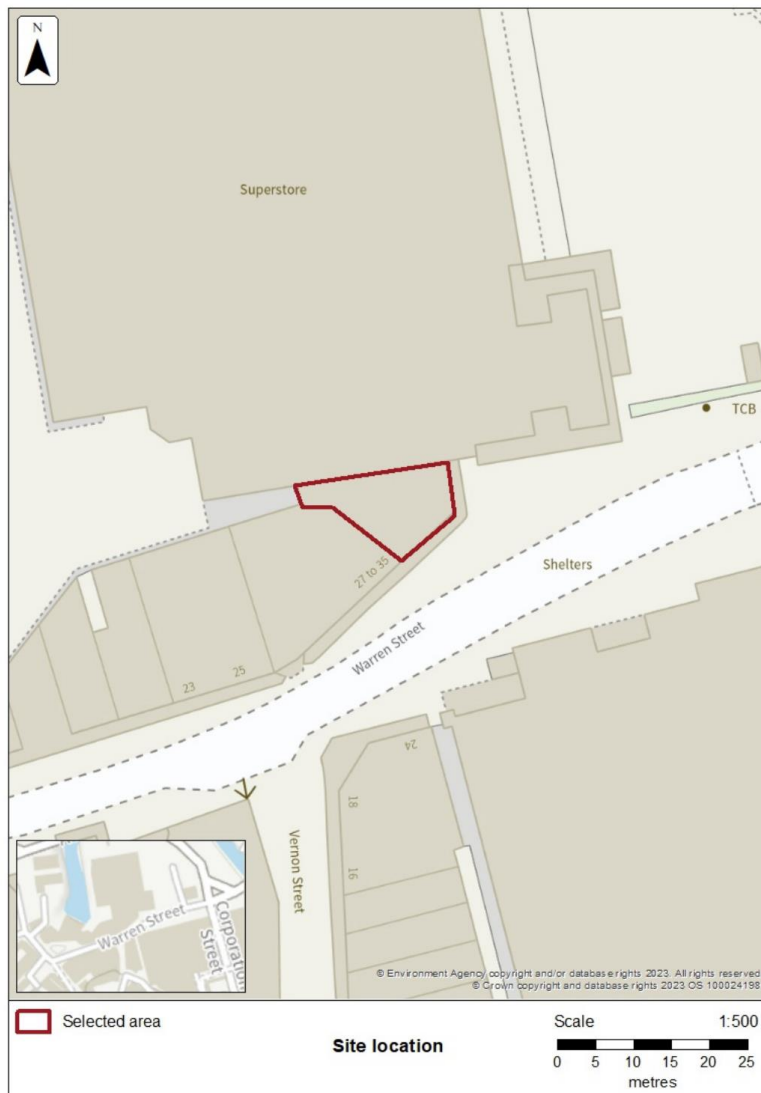
The following Flood Risk Assessment has been prepared in line with Planning Application Ref: DC/089998 - Unit 18, 35 Warren Street, Stockport, SK1 1UD

The proposed application is within a zone 2 flood risk location, therefore the local authority has asked us to submit a flood risk assessment in respect of the proposed works, this risk assessment will be proportionate to the works proposed.

### Address of Proposal Application

Unit 18, 35 Warren Street

Stockport, SK1 1UD



## Flood Zone 2 – Definition

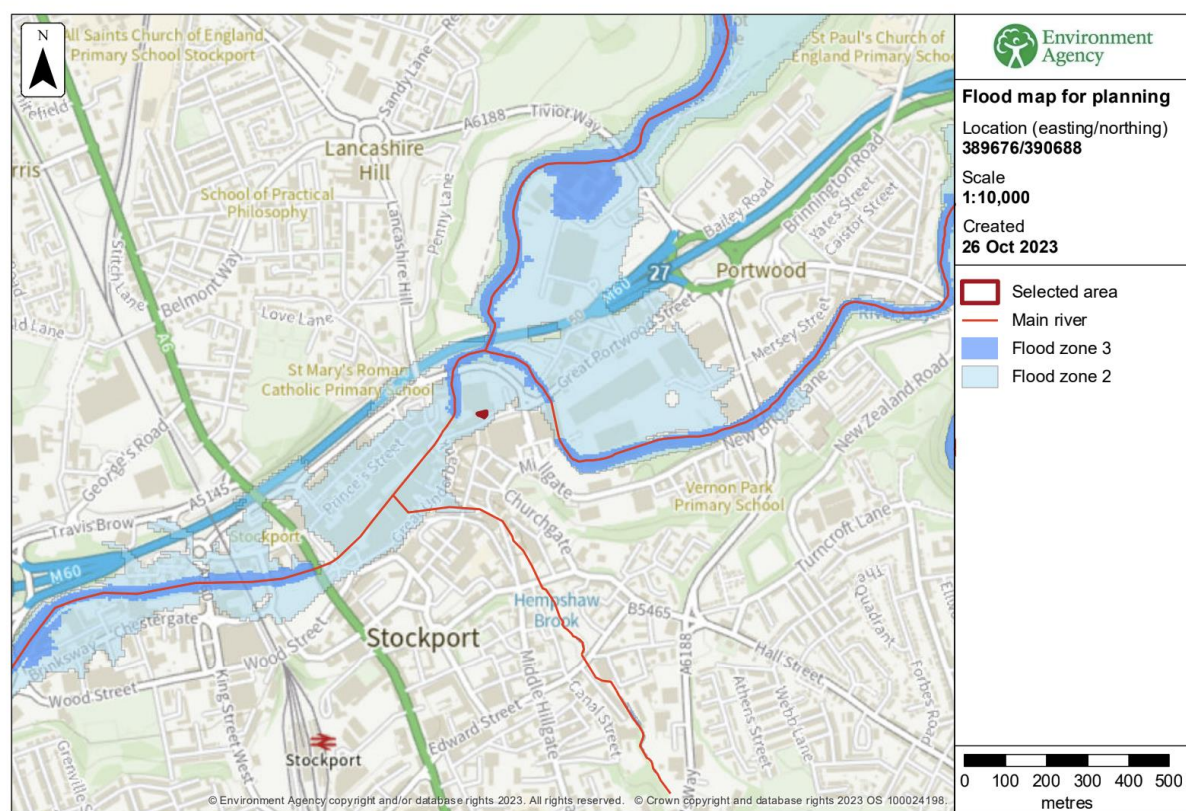
Unit 18, 35 Warren Street, Stockport, SK1 1UD is located within a Flood Zone 2 location (Environment agency Flood Map).

Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

between a 0.1% and 0.5% probability of occurring in any year for flooding from the

sea

between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

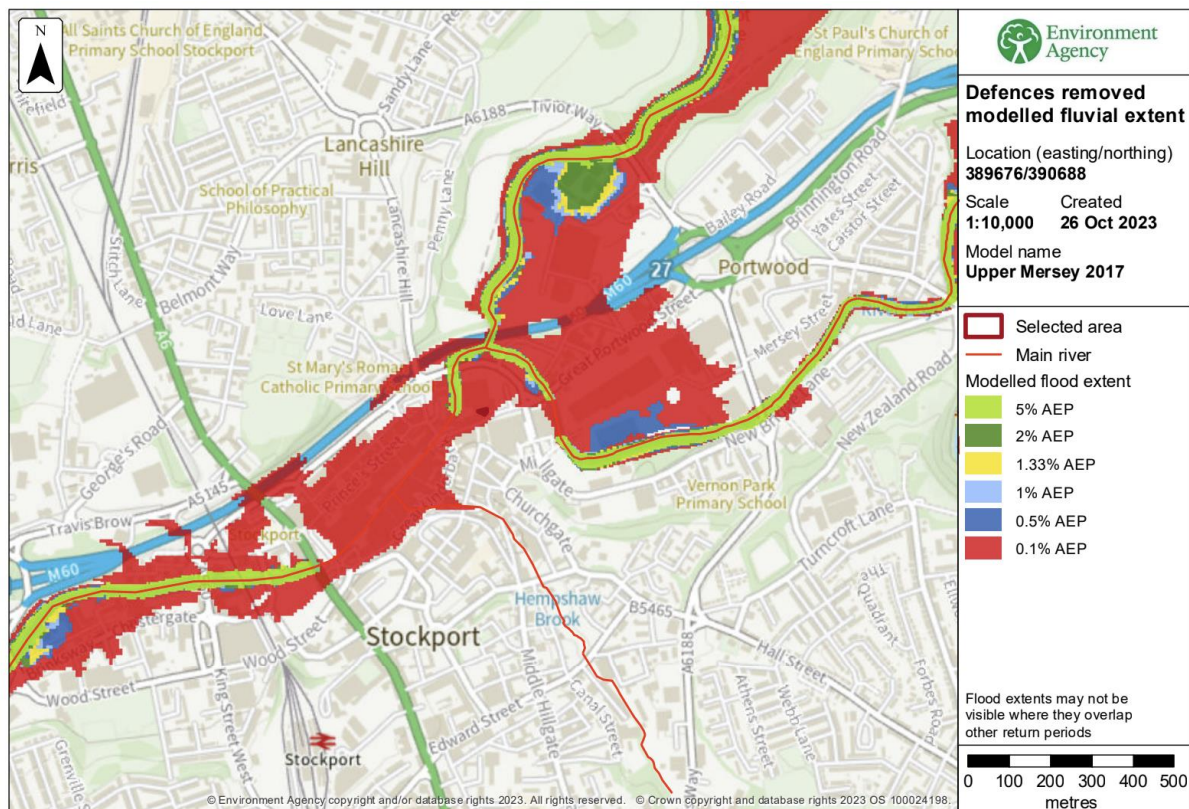
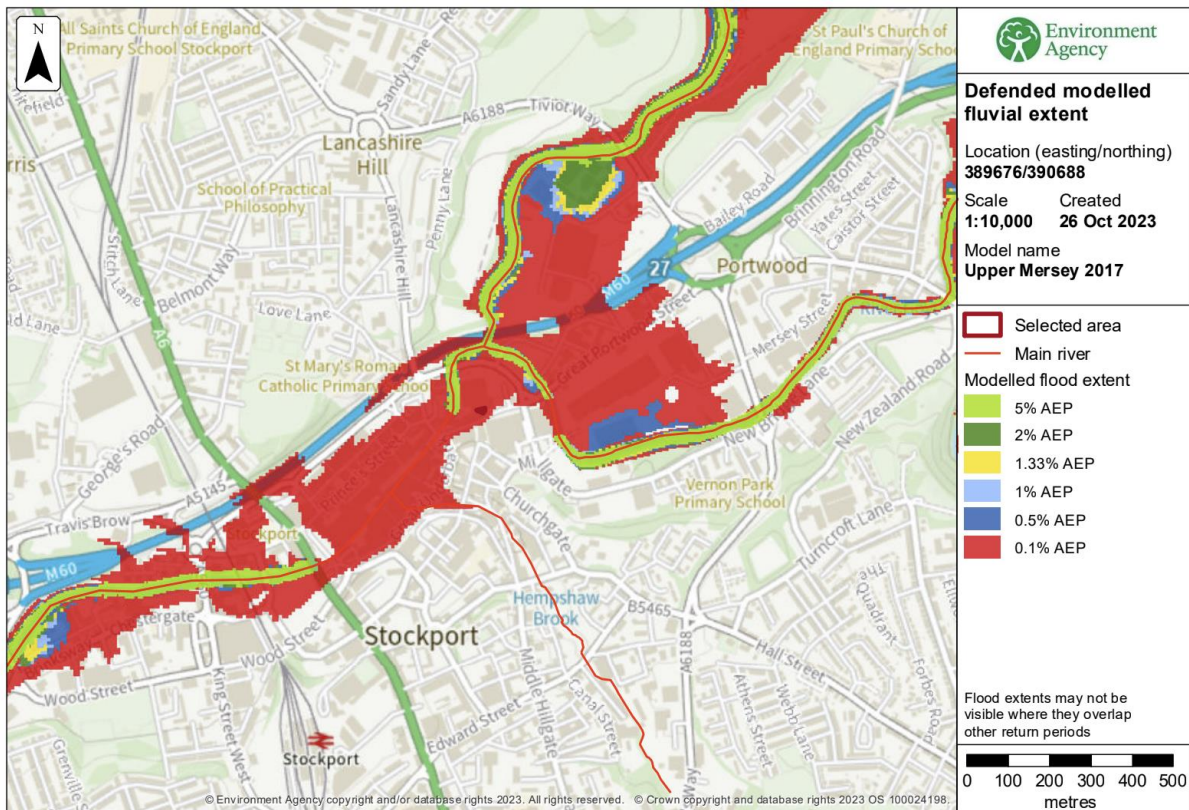


P01.Environment Agency Floor risk map

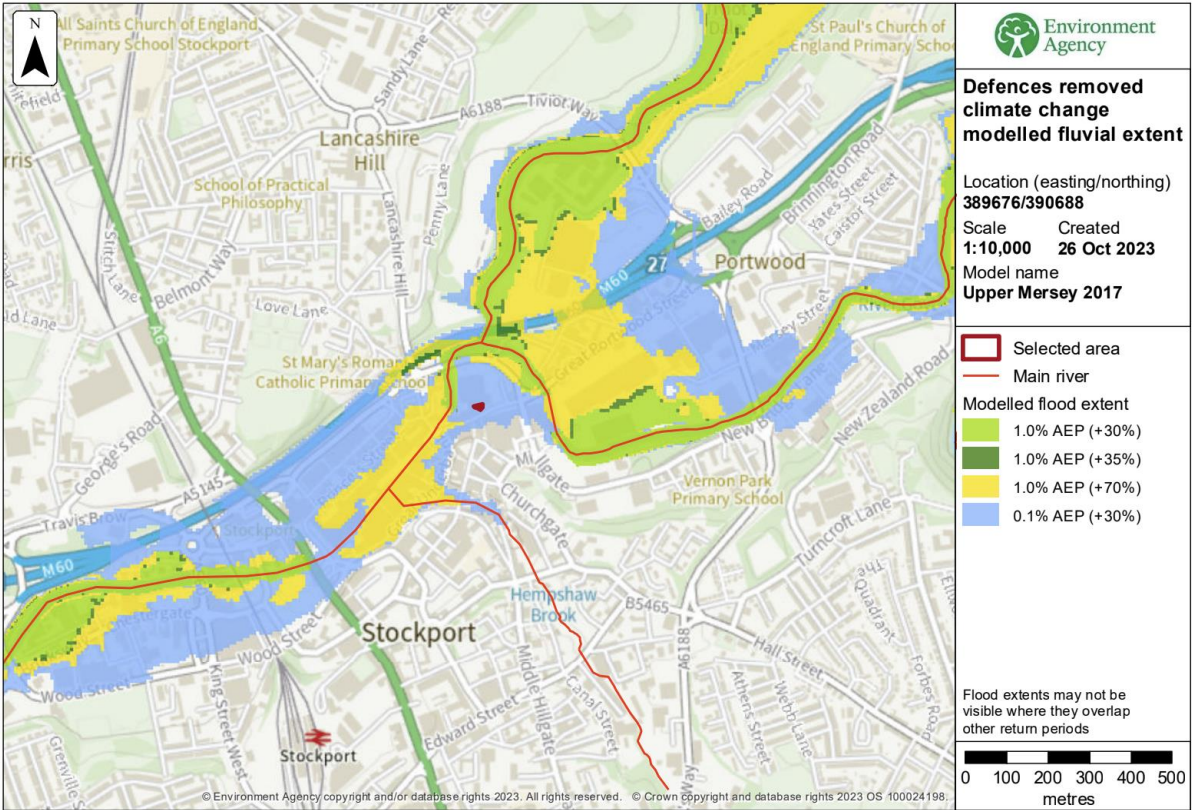
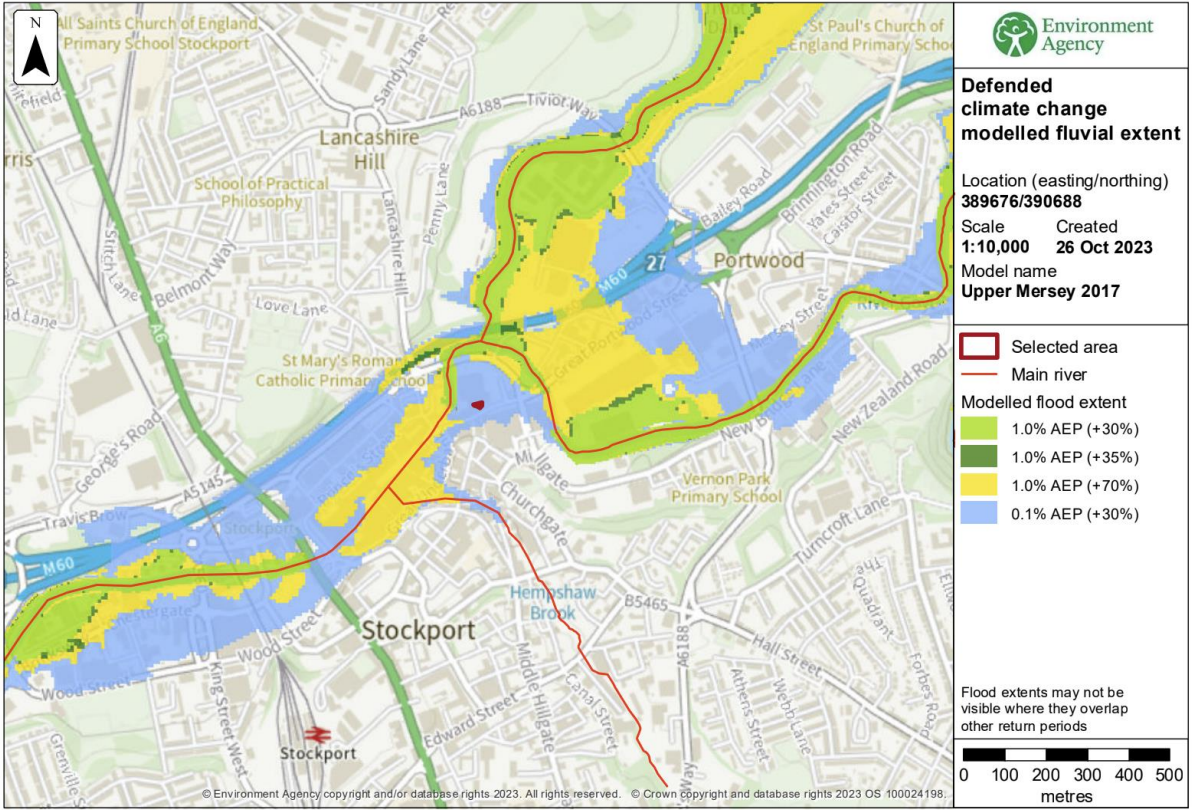
## Last Recoded Flood Outlines

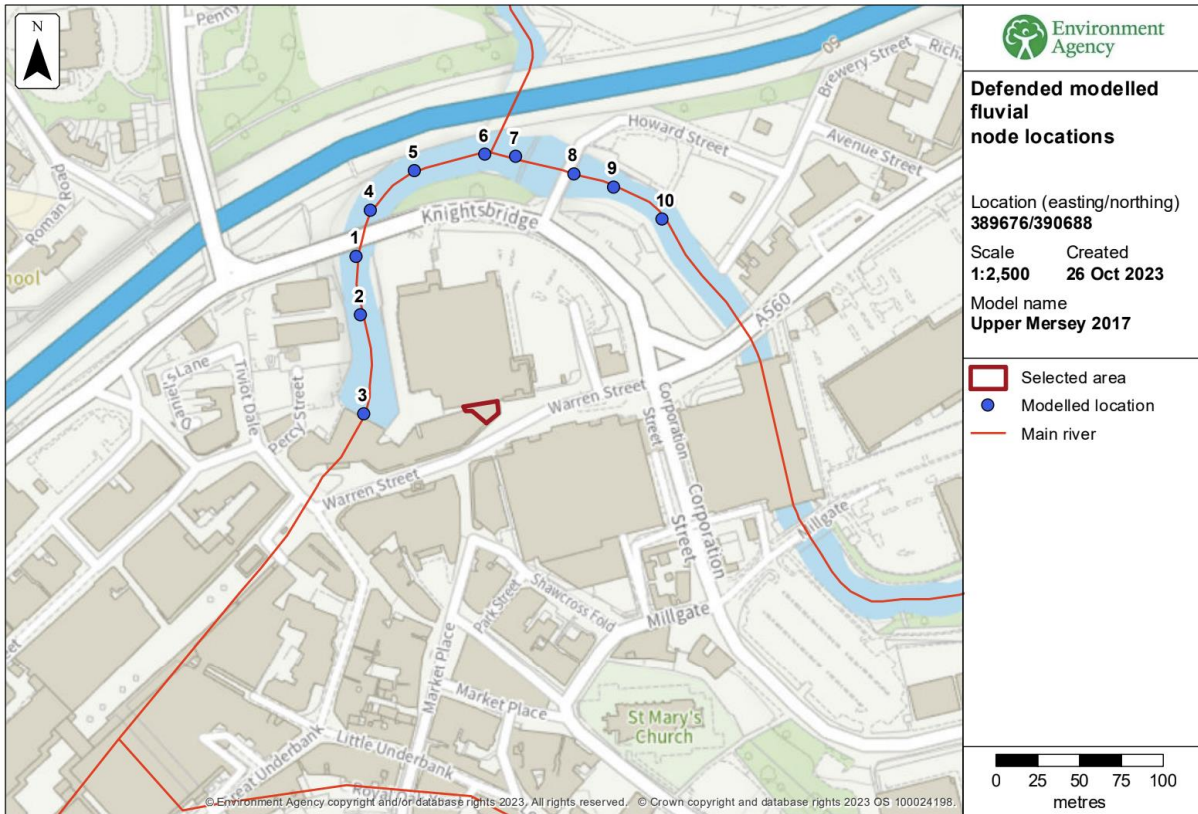
The last recoded floor outline date: 28/12/1978











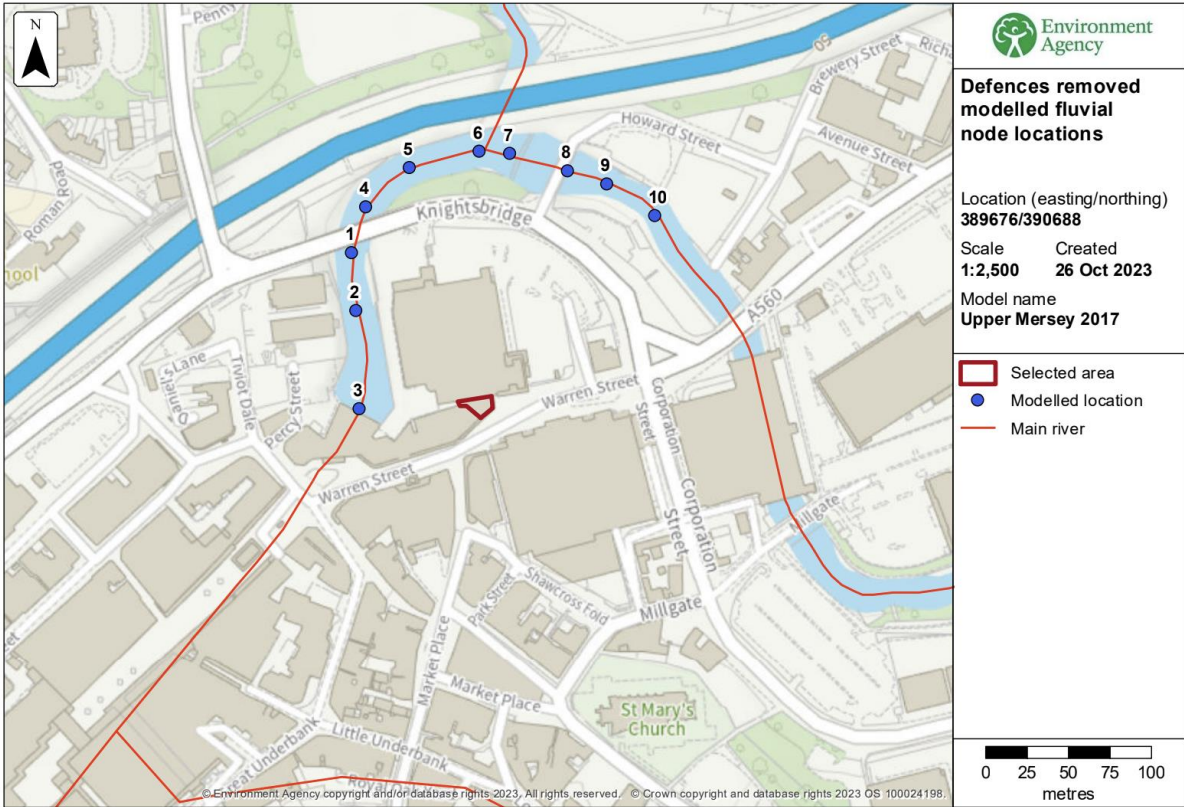
### Modelled node locations data

#### Defended

Label	Modelled location ID	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
				Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow
1	1290591	389599	390780	40.14	281.43	40.80	326.99	41.09	347.09	41.30	361.21	41.82	397.18	45.37	615.61
2	1290667	389602	390745	40.0	281.48	40.64	326.96	40.92	346.79	41.13	361.28	41.63	397.19	45.15	612.96
3	1290557	389604	390685	40.08	281.50	40.74	326.94	41.02	346.44	41.24	361.26	41.75	397.19	45.29	613.56
4	1290550	389608	390808	40.14	281.43	40.80	326.99	41.09	347.09	41.30	361.21	41.82	397.18	45.49	615.61
5	1290623	389634	390832	40.14	281.53	40.77	326.90	41.04	346.60	41.25	361.29	41.73	397.15	45.45	594.60
6	1290668	389677	390842	40.14	168.05	40.77	190.86	41.04	199.90	41.25	206.70	41.73	221.72	45.45	303.14
7	1290605	389695	390841	40.14	168.05	40.78	190.84	41.05	199.66	41.25	206.71	41.74	221.74	45.45	294.44
8	1290658	389730	390830	40.23	168.09	40.86	190.88	41.13	199.97	41.33	206.77	41.81	221.79	45.51	279.04
9	1290657	389754	390822	40.27	168.09	40.92	190.88	41.20	199.97	41.41	206.77	41.92	221.79	45.58	279.04
10	1290766	389783	390803	40.25	168.10	40.90	190.91	41.17	199.76	41.38	206.82	41.88	221.85	45.57	306.63

Data in this table comes from the Upper Mersey 2017 model.  
 Level values are shown in mAOD, and flow values are shown in cubic metres per second.  
 Any blank cells show where a particular scenario has not been modelled for this location.



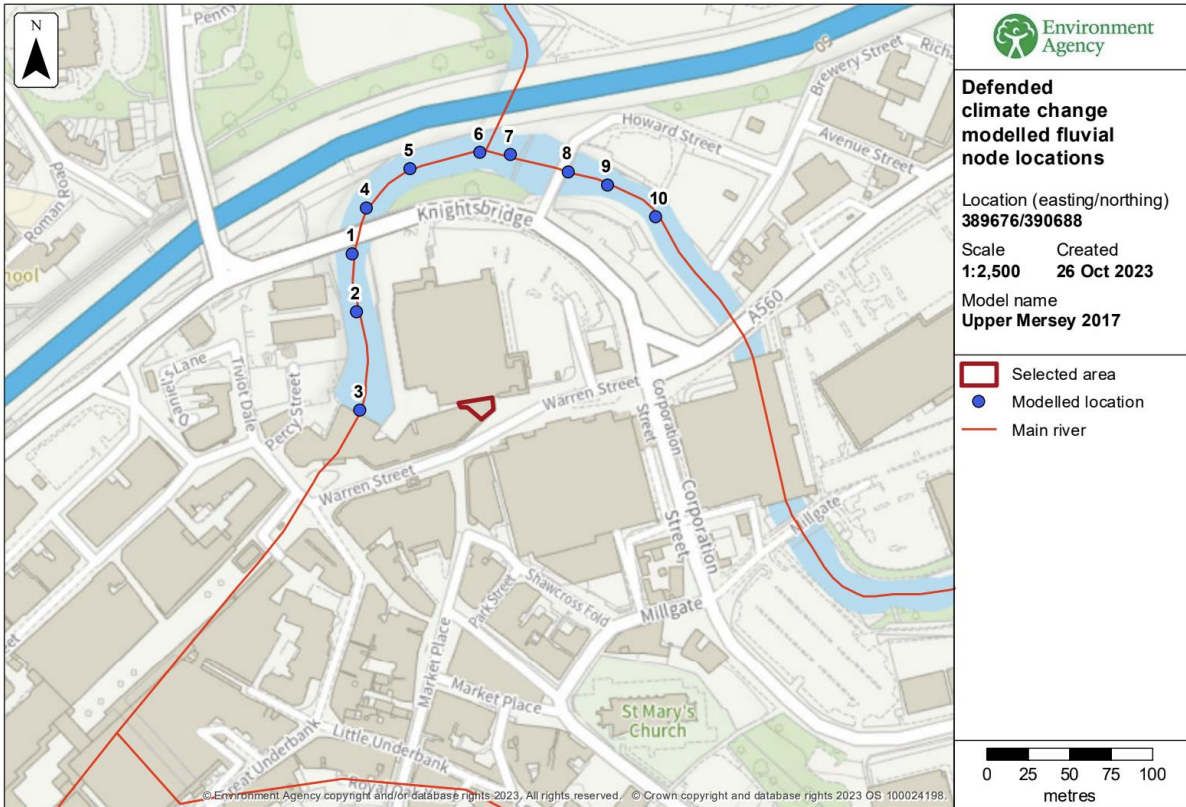


**Modelled node locations data**

**Defences removed**

Label	Modelled location ID	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
				Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow	Level	Flow
1	1290591	389599	390780	40.14	281.48	40.79	327.54	41.08	347.07	41.29	361.36	41.80	397.41	45.36	616.72
2	1290667	389602	390745	39.99	281.48	40.64	327.44	40.91	347.05	41.11	361.13	41.61	397.39	45.14	613.98
3	1290557	389604	390685	40.08	281.48	40.74	327.49	41.01	346.97	41.22	361.74	41.73	397.28	45.28	613.95
4	1290550	389608	390808	40.14	281.48	40.79	327.54	41.08	347.07	41.29	361.36	41.80	397.41	45.47	616.72
5	1290623	389634	390832	40.13	281.48	40.76	327.58	41.03	347.47	41.23	361.39	41.72	397.56	45.44	596.19
6	1290668	389677	390842	40.13	168.04	40.76	191.20	41.03	200.39	41.23	206.87	41.72	221.95	45.44	306.40
7	1290605	389695	390841	40.14	168.05	40.77	190.88	41.04	199.98	41.24	206.58	41.72	221.83	45.44	294.51
8	1290658	389730	390830	40.22	168.08	40.85	190.99	41.12	200.10	41.31	206.92	41.80	221.95	45.50	279.66
9	1290657	389754	390822	40.26	168.08	40.91	190.99	41.19	200.10	41.40	206.92	41.90	221.95	45.57	279.66
10	1290766	389783	390803	40.25	168.11	40.88	191.0	41.16	199.88	41.37	206.79	41.87	221.95	45.56	306.12

Data in this table comes from the Upper Mersey 2017 model.  
 Level values are shown in mAOD, and flow values are shown in cubic metres per second.  
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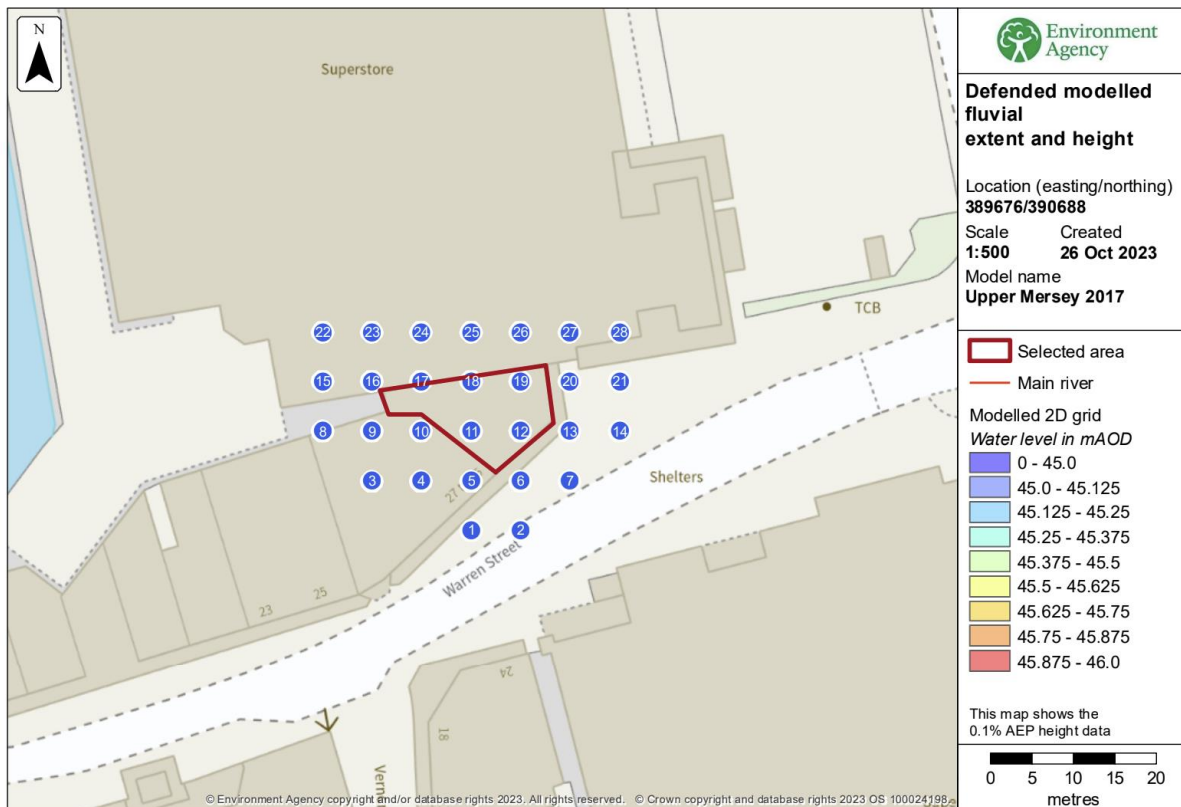


## Modelled node locations data

### Defended climate change

Label	Modelled location ID	Easting	Northing	1.0% AEP (+30%)		1.0% AEP (+35%)		1.0% AEP (+70%)		0.1% AEP (+30%)	
				Level	Flow	Level	Flow	Level	Flow	Level	Flow
1	1290591	389599	390780	42.76	466.33	42.99	482.49	44.56	586.86	46.88	638.75
2	1290667	389602	390745	42.55	465.48	42.78	482.48	44.33	585.53	46.65	636.27
3	1290557	389604	390685	42.69	465.55	42.92	482.48	44.49	580.38	46.79	616.94
4	1290550	389608	390808	42.76	466.33	43.0	482.49	44.60	586.86	47.02	638.75
5	1290623	389634	390832	42.64	467.04	42.86	485.88	44.42	592.26	47.02	592.84
6	1290668	389677	390842	42.64	267.76	42.86	276.51	44.42	306.38	47.02	312.01
7	1290605	389695	390841	42.65	267.09	42.87	273.86	44.45	293.91	47.0	310.90
8	1290658	389730	390830	42.72	265.83	42.94	272.28	44.51	288.18	47.03	284.12
9	1290657	389754	390822	42.92	265.83	43.16	272.28	44.64	288.18	47.06	284.12
10	1290766	389783	390803	42.87	265.24	43.11	275.14	44.56	311.56	47.06	319.12

Data in this table comes from the Upper Mersey 2017 model.  
 Level values are shown in mAOD, and flow values are shown in cubic metres per second.  
 Any blank cells show where a particular scenario has not been modelled for this location.



## Sample point data

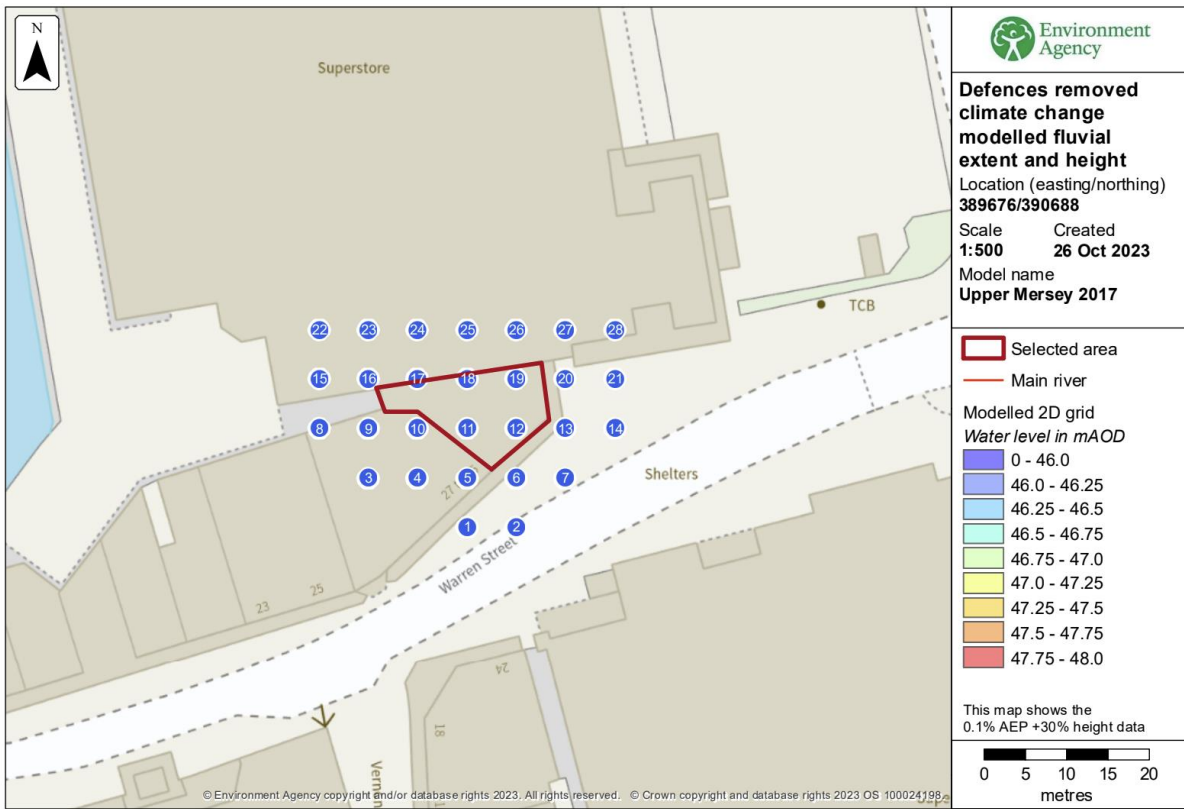
### Defended

Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
1	389675	390674	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.53	45.39
2	389681	390674	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.40	45.40
3	389663	390680	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.78	45.39
4	389669	390680	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.66	45.40
5	389675	390680	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.56	45.40
6	389681	390680	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.41	45.41
7	389687	390680	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.26	45.40
8	389657	390686	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.81	45.41
9	389663	390686	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.89	45.42
10	389669	390686	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.81	45.43
11	389675	390686	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.74	45.43
12	389681	390686	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.59	45.44
13	389687	390686	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.42	45.45
14	389693	390686	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.19	45.45
15	389657	390692	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.86	45.42
16	389663	390692	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.96	45.43



Label	Easting	Northing	5% AEP		2% AEP		1.33% AEP		1% AEP		0.5% AEP		0.1% AEP	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height	Depth	Height
17	389669	390692	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.95	45.45
18	389675	390692	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.91	45.45
19	389681	390692	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.79	45.46
20	389687	390692	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.55	45.46
21	389693	390692	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.26	45.47
22	389657	390698	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.96	45.45
23	389663	390698	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	1.12	45.46
24	389669	390698	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	1.25	45.47
25	389675	390698	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	1.28	45.47
26	389681	390698	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	1.30	45.47
27	389687	390698	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	1.03	45.47
28	389693	390698	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	NoData	0.37	45.47

Data in this table comes from the Upper Mersey 2017 model.  
 Height values are shown in mAOD, and depth values are shown in metres.  
 Any blank cells show where a particular scenario has not been modelled for this location.  
 Cells which contain text 'NoData' for a scenario show that return period has been modelled but there is no flood risk for that return period for that location.



## Sample point data

### Defences removed climate change

Label	Easting	Northing	1% AEP (+30%)		1% AEP (+35%)		1% AEP (+70%)		0.1% AEP (+30%)	
			Depth	Height	Depth	Height	Depth	Height	Depth	Height
1	389675	390674	NoData	NoData	NoData	NoData	NoData	NoData	2.03	46.88
2	389681	390674	NoData	NoData	NoData	NoData	NoData	NoData	1.90	46.90
3	389663	390680	NoData	NoData	NoData	NoData	NoData	NoData	2.24	46.85
4	389669	390680	NoData	NoData	NoData	NoData	NoData	NoData	2.14	46.87
5	389675	390680	NoData	NoData	NoData	NoData	NoData	NoData	2.05	46.88
6	389681	390680	NoData	NoData	NoData	NoData	NoData	NoData	1.90	46.90
7	389687	390680	NoData	NoData	NoData	NoData	NoData	NoData	1.77	46.91
8	389657	390686	NoData	NoData	NoData	NoData	NoData	NoData	2.25	46.85
9	389663	390686	NoData	NoData	NoData	NoData	NoData	NoData	2.33	46.86
10	389669	390686	NoData	NoData	NoData	NoData	NoData	NoData	2.27	46.88
11	389675	390686	NoData	NoData	NoData	NoData	NoData	NoData	2.20	46.90
12	389681	390686	NoData	NoData	NoData	NoData	NoData	NoData	2.06	46.92
13	389687	390686	NoData	NoData	NoData	NoData	NoData	NoData	1.89	46.92
14	389693	390686	NoData	NoData	NoData	NoData	NoData	NoData	1.67	46.94
15	389657	390692	NoData	NoData	NoData	NoData	NoData	NoData	2.29	46.85
16	389663	390692	NoData	NoData	NoData	NoData	NoData	NoData	2.40	46.86

## Description of Proposed of External Works

1-Installation of new extractor fan on the rear of the property.

2- Internal decorative changes without foundation.

There is no proposal ground work on the proposal. The proposal includes flue extractor application and internal stud wall changes and decorative changes.

## Risks and Prevention

The river/sea around the site location for flood risk: Rivers Tame, Goyt and Mersey

-There is no flood defences protecting this area. (Environment agency: Flood Defence Map)

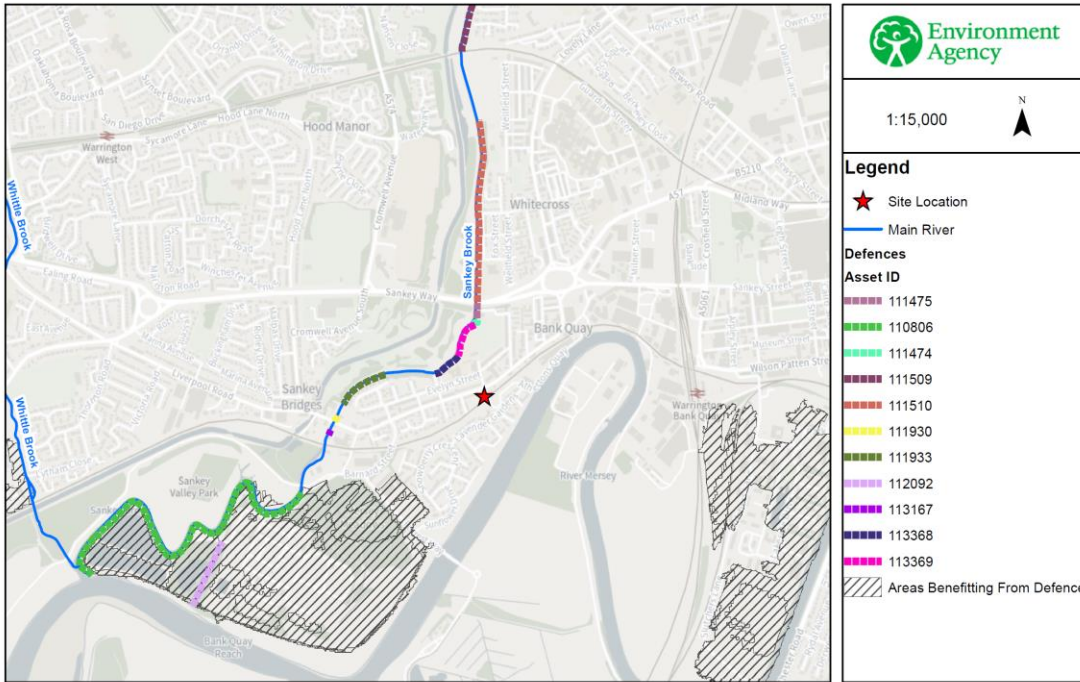
-Proposal is extractor flue application work above the ground floor levels.

-Any new sockets and any electricity will be higher than 60 cm from ground floor level to prevent from a risk of the potential flood.

- Surface water will be discharged to the existing mains drainage arrangement as for the existing building.



Flood Defence Map centred on Old Liverpool Road, Warrington, WA5 1BU.  
Created on 04/03/2022 [GMMC251636SW]



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Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 9-6). Email: enquiries@environment-agency.gov.uk

Map Reference	Model Node Reference	Easting	Northing	Data	Undefended (Fluvial)		Defended (Fluvial)			
					1% AEP (1 in 100 year)	0.1% AEP (1 in 1000 year)	50% AEP (1 in 2 year)	10% AEP (1 in 10 year)	5% AEP (1 in 20 year)	2% AEP (1 in 50 year)
1	ea013_Model_SANK02_009	359136	388181	Modelled Water Level (m aodN)	7.77	8.15	7.15	7.42	7.58	7.78
				Modelled Flow (cumecs)	41.31	50.62				
2	ea013_Model_SANK02_013	359091	387872	Modelled Water Level (m aodN)	7.53	7.93	6.94	7.21	7.37	7.56
				Modelled Flow (cumecs)	41.11	50.57				
3	ea013_Model_SANK02_014	358781	387814	Modelled Water Level (m aodN)	7.47	7.91				
				Modelled Flow (cumecs)	41.39	50.58				
4	ea013_Model_MERE01_008	359507	387896	Modelled Water Level (m aodN)	6.46	6.46	6.48	6.48	6.47	6.47
				Modelled Flow (cumecs)	347.68	624.57				
6	ea013_Model_MERE01_011	359317	387608	Modelled Water Level (m aodN)	6.44	6.44	6.45	6.45	6.45	6.45
				Modelled Flow (cumecs)	347.74	624.42				
8	ea013_Model_MERE01_014	359108	387251	Modelled Water Level (m aodN)	6.42	6.42	6.43	6.43	6.43	6.43
				Modelled Flow (cumecs)	347.79	624.25				

Model data taken from Warrington Tidal and Fluvial 2009 Study

AEP - Annual Exceedance Probability

m aodN - metres above ordnance datum Newlyn

cumecs - cubic metres per second

(Environment Agency/Flood level tables)

Undefended (Tidal)		Defended (Tidal)					
0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)	50 % AEP (1 in 2 year)	10 % AEP (1 in 10 year)	5 % AEP (1 in 20 year)	2 % AEP (1 in 50 year)	1.33 % AEP (1 in 75 year)	0.5 % AEP (1 in 200 year)
7.52	7.54	7.38	7.38	7.38	7.38	7.38	7.54
27.06	27.06						
7.46	7.48	7.27	7.27	7.27	7.27	7.27	7.48
27.16	27.22						
7.44	7.46						
29.44	29.67						
7.42	7.43	7.10	7.10	7.10	7.10	7.10	7.49
278.13	277.02						
7.40	7.42	7.09	7.09	7.09	7.09	7.09	7.46
288.97	284.07						
7.39	7.42	7.08	7.08	7.08	7.08	7.08	7.44
301.27	295.13						

## (Environment Agency/Flood level tables)

Notes: Climate Change Scenario - We do not hold climate change measurements at this location. For further guidance on climate change within the GMNC area please see the attachment 'Risk assessments: Climate change allowances'. Particularly section 3, table B which shows the Local precautionary allowances for potential climate change impacts.

Map Reference	Model Node Reference	Easting	Northing	Data	Undefended						
					5 % AEP (1 in 20 year)	0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)	50 % AEP (1 in 2 year)	20 % AEP (1 in 5 year)	10 % AEP (1 in 10 year)	5 % AEP (1 in 20 year)
4	ea013_0229MSY11729	359551	387916	Modelled Water Level (m aodN)	6.96	7.27	7.44	6.87	7.02	7.13	7.18
				Modelled Flow (cumecs)							
5	ea013_0229MSY11583	359443	387808	Modelled Water Level (m aodN)	6.95	7.27	7.44	6.86	7.02	7.12	7.18
				Modelled Flow (cumecs)							
6	ea013_0229MSY11313	359339	387810	Modelled Water Level (m aodN)	6.95	7.28	7.48	6.84	7.01	7.11	7.17
				Modelled Flow (cumecs)							
7	ea013_0229MSY11043	359228	387417	Modelled Water Level (m aodN)	6.95	7.29	7.48	6.83	6.99	7.10	7.16
				Modelled Flow (cumecs)							
8	ea013_0229MSY10908	359140	387276	Modelled Water Level (m aodN)	6.95	7.29	7.48	6.82	6.99	7.10	7.16
				Modelled Flow (cumecs)							

Map Reference	Model Node Reference	Easting	Northing	Data	Undefended	Defended		
					0.1 % AEP (1 in 1000 year)	0.5% AEP (1 in 200year) 2065 Climate Change Scenario (Tidal)	0.5% AEP (1 in 200year) 2115 Climate Change Scenario (Tidal)	0.1 % AEP (1 in 1000 year)
9	2D Measurements	359148	387725	Modelled Water Level (m aodN)			7.37	
10		359171	387733	Modelled Water Level (m aodN)			7.37	
11		359175	387723	Modelled Water Level (m aodN)	6.92	7.02	7.37	6.88
12		359193	387709	Modelled Water Level (m aodN)			7.37	

Model data taken from Mersey Estuary 2016

AEP - Annual Exceedance Probability

m aodN - metres above ordnance datum Nealyth

cumecs - cubic metres per second

## (Environment Agency/Flood level tables)

### Recorded Flood Outlines

Flood Event Code	Name	Start Date	End Date	Source of Flooding	Cause of Flooding
18142	SANK	28/12/1978	28/12/1978	Main River	Unknown
18274	SANK	28/10/2000	28/10/2000	Unknown	Unknown
4094870	Warrington	20/01/2021	20/01/2021	Main River	Channel capacity exceeded (no raised defences)

### Flood Defences

Start Date	Asset Type	Asset ID	Standard of Protection	Upstream Actual Crest Level (m aod)	Downstream Actual Crest Level (m aod)
01/03/2021	Natural High Ground	111475	50	7.92	7.91
01/10/2012	Embankment	110806	50	8.06	7.18
01/01/1981	Wall	111474	50	8.11	8.05
01/10/2012	Engineered High Ground	111509	50	6.94	6.52
01/10/2012	Engineered High Ground	111510	50	9.68	6.56
01/01/1981	Wall	111930	50	7.8	7.79
01/01/1993	Wall	111933	50	7.73	7.79
01/10/2012	Embankment	112092	50	7.87	7.69
01/10/2012	Wall	113167	50	7.41	7.35
01/01/1981	Wall	113368	50	8.03	8.01
01/01/1981	Embankment	113369	50	7.37	7.65

## (Environment Agency/Flood level tables)



**Flood risk from rivers and the sea: LOW**

**Flood Risk from Surface Water: LOW**

**Flood Risk Vulnerability Classification: Less Vulnerable**

**Flood Risk River and Sea: LOW RISK**

**Flood Surface Water: LOW RISK**

**Flood Groundwater: Unlikely**

### **Considerations / conclusion**

The proposed external or internal works are minimal and above the ground floor level.

The proposed flue extractor will not require a ground work.

The proposed non-permanent structure will not have any foundation and will not require a ground work.

We therefore do not see any inherent risk with the proposed external or internal works, should a flood in this location occur. All other works are above ground level and would therefore not be effect in the event of any flooding. We therefore have considered all risks and deduce there are no risks to the proposal with the Flood Zone.



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