

Rubicon Project Consultancy Ltd

Flood Risk Assessment
20 Ranford Road
Manchester
M19 2GL

May 2024



Ranford Road © Google Maps

Version	Prepared by	Non-Technical Review by	Date
Draft	Rachel Gerrard	J. Tunnicliffe Wilson	2 May 2024
Final	Rachel Gerrard	J. Tunnicliffe Wilson	9 May 2024

Rubicon Project Consultancy Ltd

A Site Specific Flood Risk Assessment is required as supporting documentation for planning applications within the floodplain. The contents of this FRA follows the Site Specific Flood Risk Assessment checklist as specified in the Flood Risk and Coastal change guidance at:

<https://www.gov.uk/guidance/flood-risk-and-coastal-change#contents>

Contents

1 - Development Site and Location	1
2 - Development Proposal.....	2
3 - Sequential Test.....	3
4 - Climate change	3
5 - Site Specific Flood Risk	3
6 - Surface Water Management	4
7 - Occupants and Users of the Development.....	5
8 - Exception Test.....	5
9 - Residual Risk.....	5
10 - Flood Risk Assessment credentials.....	5
APPENDIX A – Other sources of Flood Risk.....	6
APPENDIX B –Environment Agency flood information - Cringle Brook 2017 model.....	7

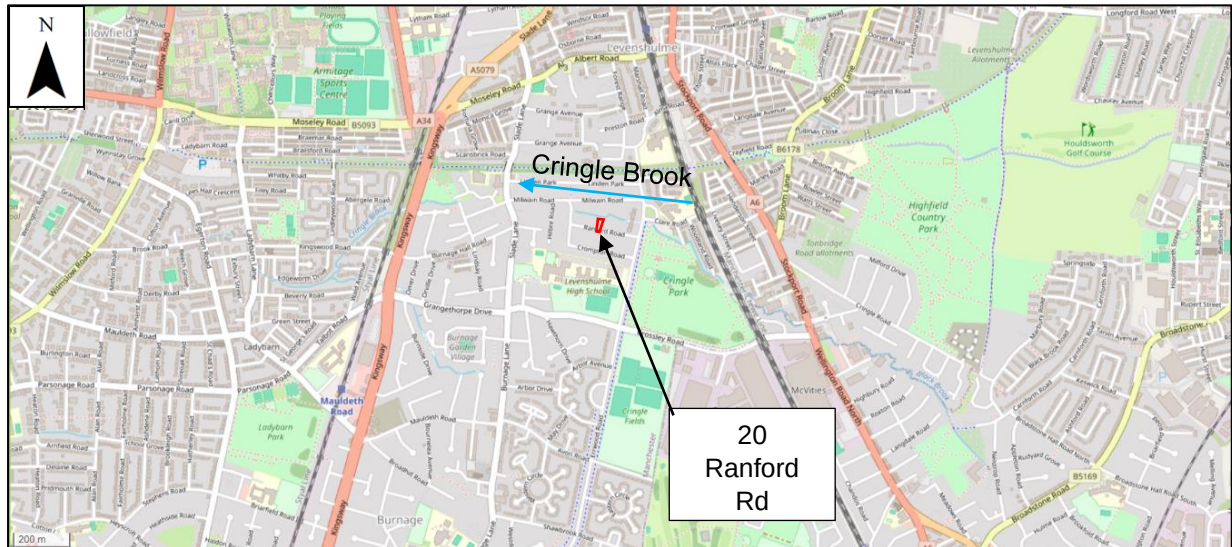
Figures

Figure 1 Location plan.....	1
Figure 2. 20 Ranford Road Flood Zones map	1
Figure 3 Site Plan	2
Figure 4 Elevations	2
Figure 5 Flood Routes.....	3
Figure 6 Photos of Property	4

1 - Development Site and Location

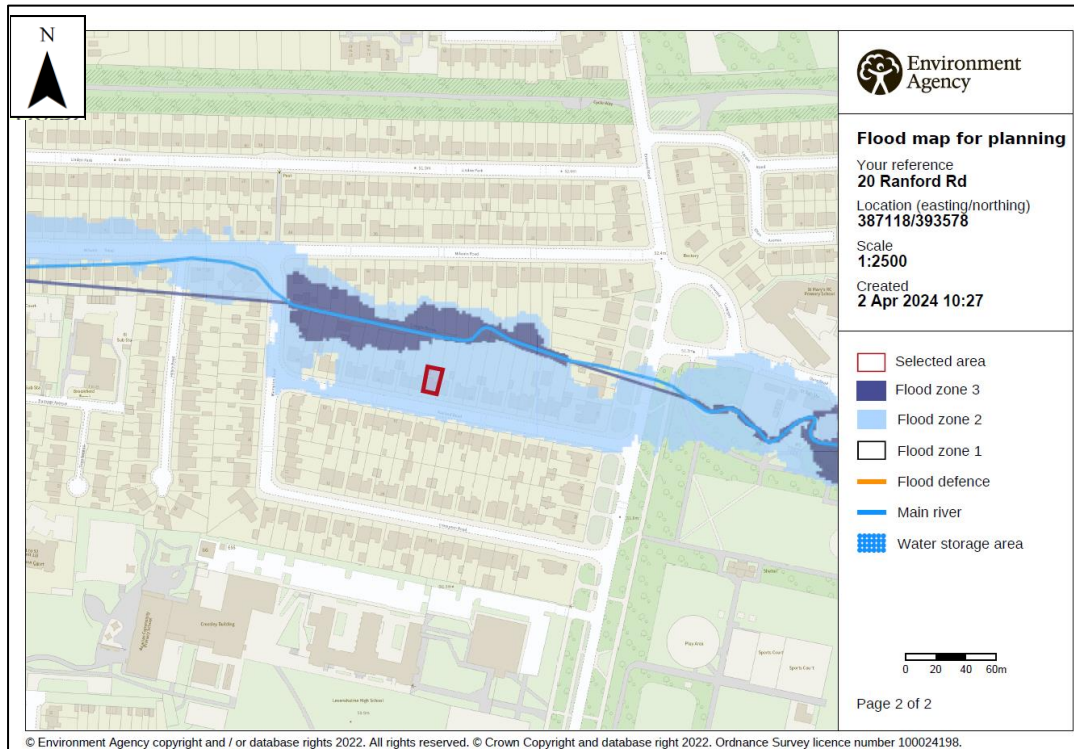
- a. 20 Ranford Road, Manchester M19 2GL is in a predominantly urban area of Manchester with Cringle Brook passing through the bottom of the garden. NGR SJ871935. See Figure 1, Location Plan.

Figure 1 Location plan



- b. This proposed extension is on the rear of the property.
c. 20 Ranford road is in Flood Zone 2. See Figure 2 below
d. The site is also at risk of Reservoir and Surface water flooding (Appendix A)

Figure 2. 20 Ranford Road Flood Zones map



2 - Development Proposal

- a. The proposal is to extend the rear of 20 Ranford Road. See Figures 3 and 4 below. For clarity see original drawings submitted with this planning application.

Figure 3 Site Plan

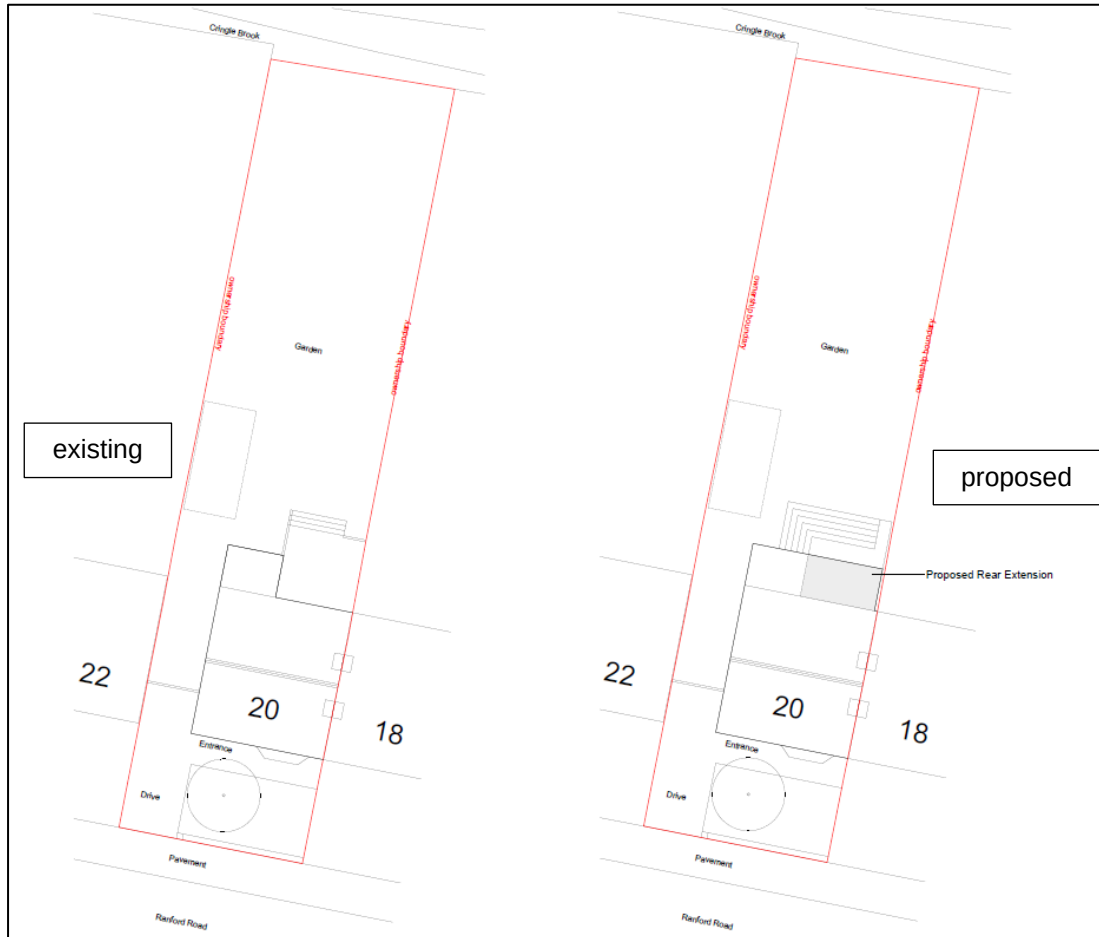
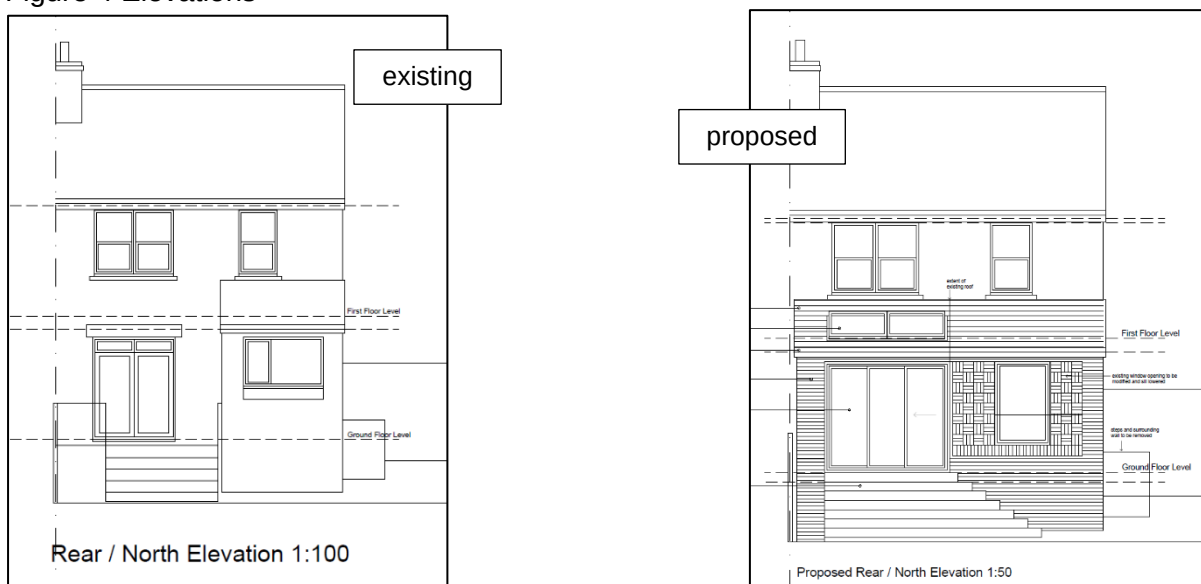


Figure 4 Elevations



- b. The flood risk vulnerability classification of the proposed development is “More Vulnerable”.
- c. For FRA purposes, the expected lifetime of the development is 100 years.

3 - Sequential Test

This is a small extension to an existing property so a sequential test is not required.

4 - Climate change

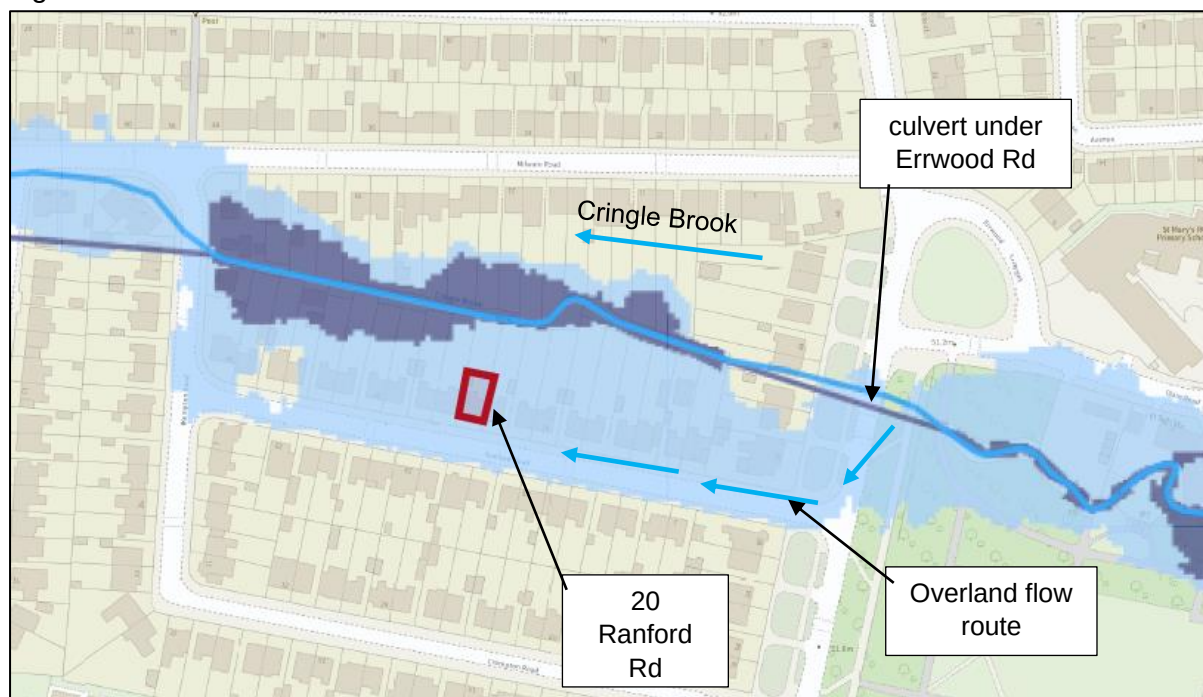
The potential flood risk at the site will increase with climate change. For a ‘More Vulnerable’ development, with an expected lifespan of 100 years in a Zone 2 floodplain, the use of the Central allowance is required for climate change. For the Upper Mersey Management Catchment the Central allowance for climate change is a 41% increase in peak flow.

The Environment Agency have supplied levels for the 1% plus 35% increase and 1% plus 70% increase; see appendix B. Interpolating between these gives a level of 48.60m AOD for the 1% plus 41% climate change increase.

5 - Site Specific Flood Risk

20 Ranford Road is at risk of flooding from the rear from Cringle Brook which crosses the bottom of the back garden. During high flows greater than the 0.5% flood the culvert upstream under Errwood Road is under capacity and the flood route is overland onto Ranford Road and to the front of the property. This explains the marked difference in flood risk levels provided by the Environment Agency for the garage (location 5) and the house (location 6) See map and data Appendix B.

Figure 5 Flood Routes



The front of 20 Ranford Road is a step up from the road and with the access to the garage down the side the overland flow in a 0.1% flood wouldn't enter the property but would bypass the house into the rear garden to re-join Cringle Brook.

Figure 6 Photos of Property

Front view - step above road level



Rear view



- a. The main source of flooding to the site is Cringle Brook. See Figure 2.
- b. From the modelling provided by the Environment Agency the probability of flooding is 0.1% (49.56 m AOD). See Appendix B.
- c. Reservoir maps and Surface water flood maps (see Appendix A) show that the site is at risk of flooding from these sources, to the same or a lesser extent than as shown on the Rivers flood map.
- d. The design (1%) flood level of 48.37 m AOD, is below the finished floor level of the property.
- e. Data from the Environment Agency shows that the property threshold is above the 1% plus 70% climate change flood level of 48.64m AOD so not expected to flood internally in the design flood.
- f. Increased flows and depth due to climate change have been calculated and found to give a potential climate change 1% flood level of 48.60 m AOD.
- g. The extension is replacing an area of decking at the property so there will be no increase in flood risk at the site or elsewhere.
- h. There are no opportunities offered by the development to reduce the causes and impacts of flooding.
- i. The flood information used to inform the risk level for this assessment have been taken from the Cringle Brook 2017 Study obtained from the Environment Agency. A modelled data source gives the highest level of certainty to the assessment.

6 - Surface Water Management

The surface water system will have a small increase in impermeable area due to the increase in roof area of 8m² and will be part of the existing site drainage, subject to building control approval.

7 - Occupants and Users of the Development

- a. The number of users of the property will not increase, it is only a small ground floor extension.
- b. The proposal will not change the nature and times of use of the property.

8 - Exception Test

This is a small extension to an existing property so a sequential test is not required.

9 - Residual Risk

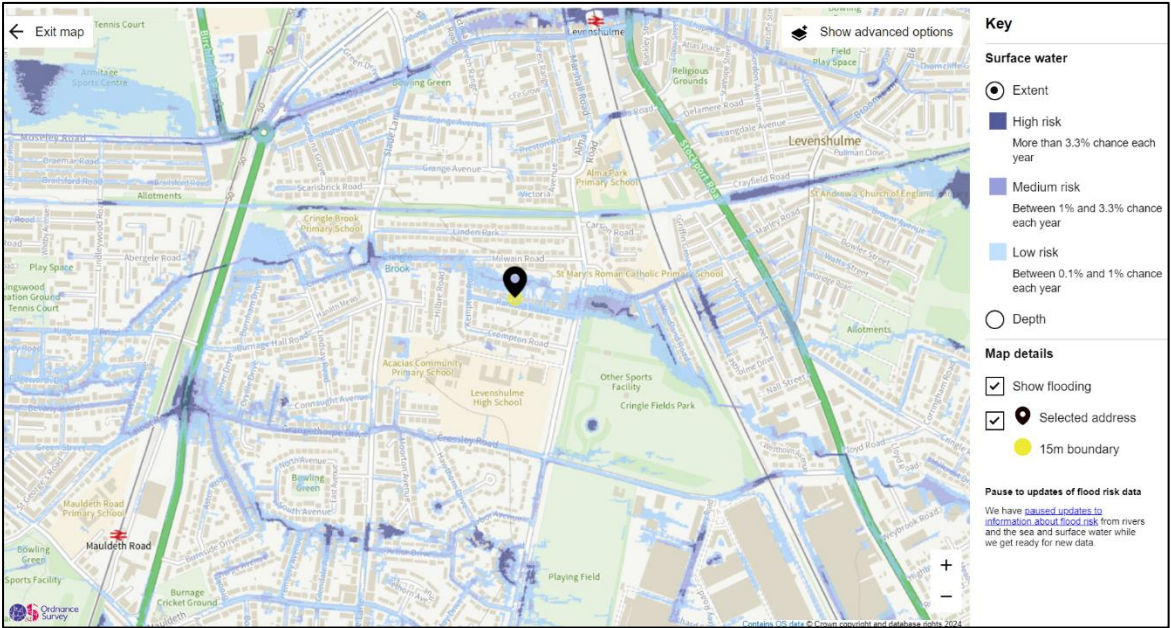
- a. The residual flood risk due to climate change will be managed by monitoring the brook during heavy rainfall.
- b. Over the lifetime of the development any increase in flood risk will be managed by the property owners.

10 - Flood Risk Assessment credentials

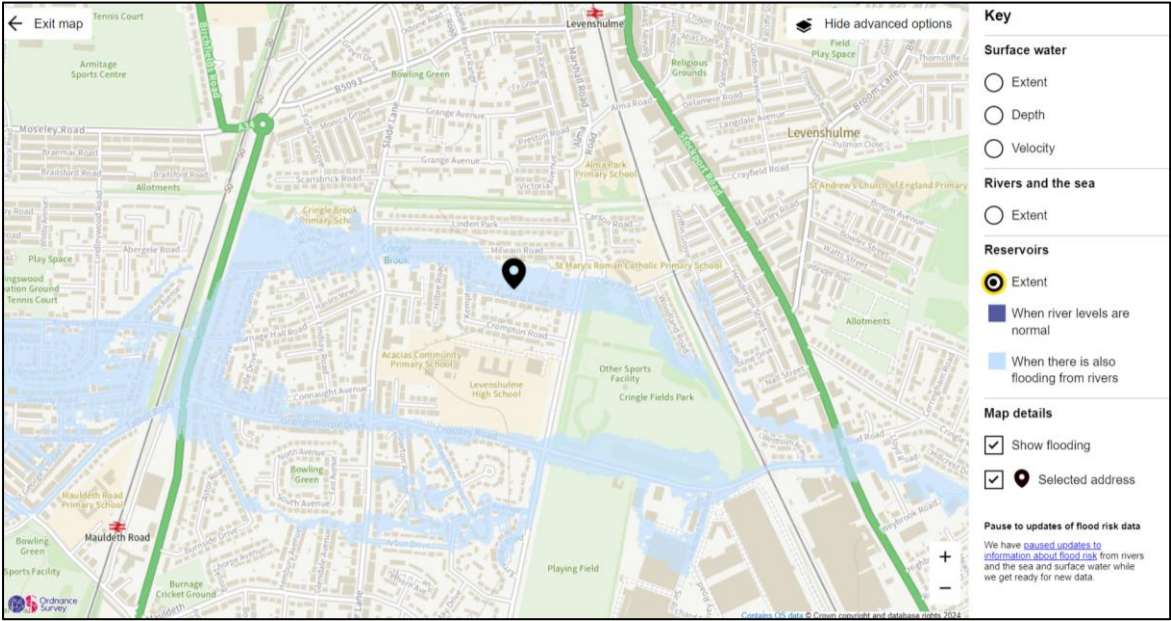
- a. This Flood Risk Assessment has been produced and written by:
Rachel Gerrard B.Eng C.Eng MICE
- b. The Flood Risk Assessment was completed May 2024

APPENDIX A – Other sources of Flood Risk

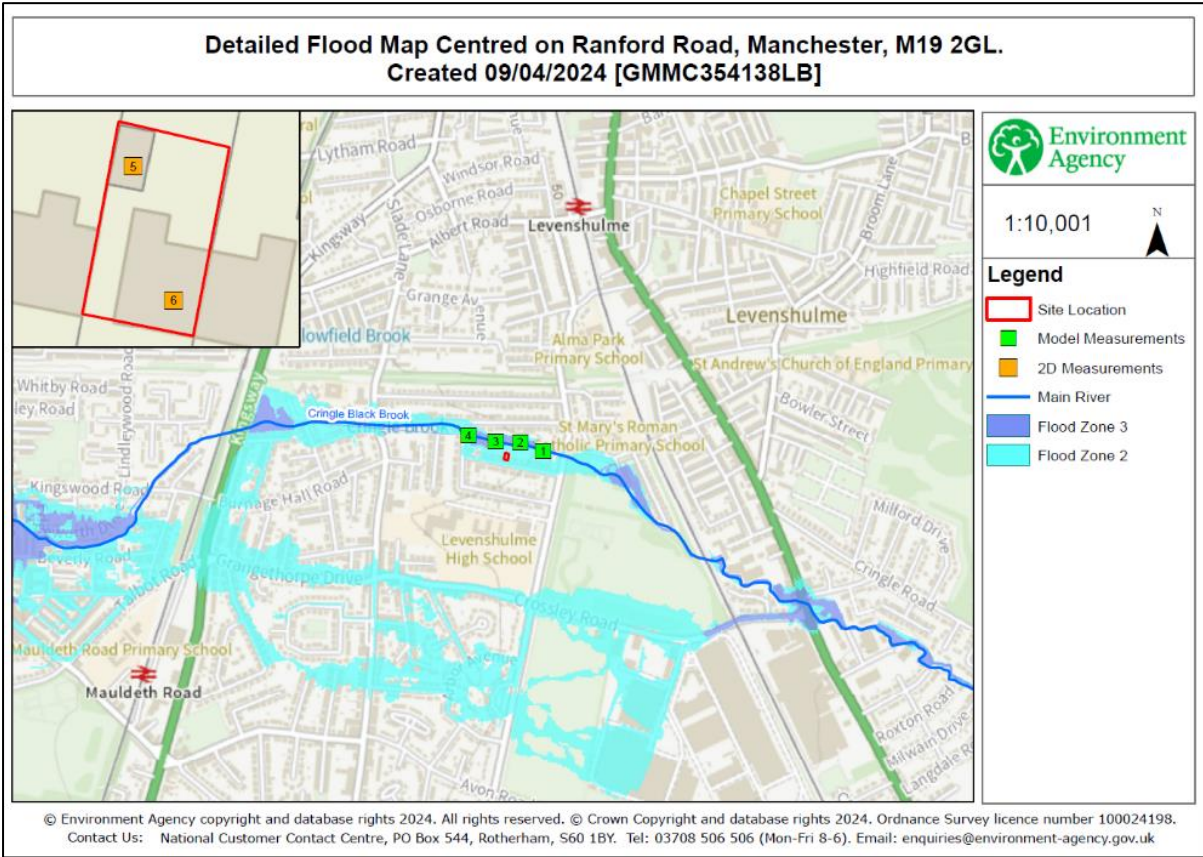
Surface Water Flood Risk



Reservoir Flood Risk



APPENDIX B –Environment Agency flood information - Cringle Brook 2017 model



Map Reference	Model Node Reference	Easting	Northing	Data	50 % AEP (1 in 2 year)	20 % AEP (1 in 5 year)	10 % AEP (1 in 10 year)	5 % AEP (1 in 20 year)
1	ea013_0238_CRND1_3269d	387208	393591	Modelled Water Level (m aodN)	48.58	48.67	48.76	48.83
				Modelled Flow (cumecs)	1.77	2.29	2.82	3.20
2	ea013_0238_CRND1_3209	387152	393613	Modelled Water Level (m aodN)	47.94	48.05	48.17	48.25
				Modelled Flow (cumecs)	1.77	2.29	2.82	3.20
3	ea013_0238_CRND1_3143	387092	393615	Modelled Water Level (m aodN)	47.61	47.74	47.90	48.01
				Modelled Flow (cumecs)	1.77	2.29	2.82	3.19
4	ea013_0238_CRND1_3074u	387025	393629	Modelled Water Level (m aodN)	47.10	47.29	47.50	47.64
				Modelled Flow (cumecs)	1.87	2.41	3.01	3.41
5	2D Levels	387116	393583	Modelled Water Level (m aodN)				
6		387119	393572	Modelled Water Level (m aodN)				

Model data taken from Cringle Brook 2017
AEP - Annual Exceedance 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 (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

Flood Defences

Start Date	Asset Type	Asset ID	Standard of Protection	Upstream Actual Crest Level (m aod)	Downstream Actual Crest Level (m aod)
37987	58923	Engineered High Ground	100	48.549999	47.70
37987	7469	Natural High Ground	100	47.700001	50.20

Map Reference	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	0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)	0.1 % AEP (1 in 1000 year) + 30% increase in flow
1	48.98	49.06	49.07	49.11	49.03	49.14	49.19
	4.30	5.15	5.27	5.78	4.86	5.87	5.91
2	48.43	48.58	48.60	48.66	48.53	48.75	48.84
	4.28	5.14	5.28	5.77	4.81	6.28	7.00
3	48.31	48.54	48.56	48.63	48.49	48.73	48.82
	3.86	3.67	3.69	3.70	3.69	3.91	4.35
4	48.06	48.30	48.32	48.41	48.23	48.55	48.69
	4.36	4.84	4.88	5.03	4.70	5.12	5.16
5						48.84	48.87
6						49.56	49.60

Undeferred							
Map Reference	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	0.5 % AEP (1 in 200 year)	0.1 % AEP (1 in 1000 year)	0.1 % AEP (1 in 1000 year) + 30% increase in flow
1	48.98	49.06	49.07	49.11	49.03	49.14	49.19
	4.30	5.15	5.27	5.78	4.86	5.87	5.91
2	48.43	48.58	48.60	48.66	48.53	48.75	48.84
	4.28	5.14	5.28	5.77	4.81	6.28	7.00
3	48.31	48.54	48.56	48.63	48.49	48.73	48.82
	3.86	3.67	3.69	3.70	3.69	3.91	4.35
4	48.06	48.30	48.32	48.41	48.23	48.55	48.69
	4.36	4.84	4.88	5.03	4.70	5.12	5.16
5						48.84	48.87
6						49.56	49.60