

Charlton Riverside - Eastmoor Street and Westmoor Street

Summary Information	
Site Reference	P3-C6
Address	Eastmoor Street / Westmoor Street
Area (ha)	2.224
Current Use	Residential, Industrial and Commercial uses.
Current Vulnerability	More Vulnerable
Proposed Use	Mixed-use development comprising residential, commercial, light industrial and community uses. Indicative development capacity B. 540 homes C. 5660 sqm of commercial and light industrial uses, suitable for vertical co-location with residential uses.
Proposed Vulnerability	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			Groundwater		
FZ2	0.00	% of site	Limited potential for flooding to occur	99.25	% of site
FZ3a	100	% of site	Potential for flooding of properties below ground level	0.75	% of site
FZ3b	0.00	% of site	Potential for flooding to occur at surface	0.00	% of site
Surface Water			Sewer Flooding		
High	20.35	% of site	Number of incidents within the predominant postcode	10 - 20	
Medium	93.52	% of site	Is the site located within the Thamesmead area?	No	
Low	97.73	% of site			
Flood Defences			Flood Warning Area		
The site is at risk of flooding from rivers taking into account the presence and condition of flood defences according to the EA's RoFRS layer.			The EA Flood Warning Service is available at this site.		

See webmap supporting assessment: [Greenwich - Level 1 and 2 SFRA](#)



1.1 Tidal

Description of Flood Mechanism					
The site is at risk of tidal breach flooding from the River Thames which is located approximately 135m north of the site at its closet point. - During the 2005 Thames Upriver modelled event, the site is almost fully inundated with the exception of the southern boundary of the site. - During the 2100 Thames Upriver modelled event, the 2005 extent extends slightly further into the southern boundary of the site, with only a small area remaining dry. - The entire site is inundated in all Thames Downriver modelled events.					
Mitigation / FRA Requirements					
- A FRA must be submitted as part of a planning application. - Include appropriate flood resistance or resilience measures to address predicted flood depths. - See SFRA Level 2 Report mitigation requirement numbers 4.3 and 4.4, Policies E2 and E3 of the existing Greenwich Local Plan, and Policy EN6 of the draft Local Plan for further development stipulations. Site users should be signed up to the EA's Flood Alert and Flood Warning Service. - Sea Level Allowances, provided by the EA, should be considered to inform flood resilient construction and design measures. - The development should allow for safe, dry access to high ground as the extent of inundation covers the entire site in most scenarios.					
Climate Change Considerations					
Although the site is impacted by both the Thames Breach Upriver and Downriver models, as the Upriver model indicates higher depths, this model will be assessed. Developers will need to consider both models. Under both Downriver breach scenarios, the site remains inundated and therefore there is no change in the extent due to climate change. During the Thames Breach Downriver 1 in 200 year event, climate change is expected to increase the maximum depth from 4.34m to 4.99m, the maximum velocity from 2.16m/s to 2.65m/s, the maximum flood level from 5.49mAOD to 6.17mAOD and the maximum hazard from 4.41 to 6.49. During the Thames Breach Downriver 1 in 1000 year event, climate change is expected to increase the maximum depth from 4.55m to 5.22m, the maximum velocity from 2.22m/s to 2.69m/s, the maximum flood level from 5.72mAOD to 6.41mAOD and the maximum hazard from 5.10 to 7.20.					

Risk Assessment (Tidal – Thames Breach Downriver 2018)					
Parameter	2005_0200	2005_1000	2115_0200	2115_1000	Units
Max. Depth	4.34	4.55	4.99	5.22	m
Max. Velocity	2.16	2.22	2.65	2.69	m/s



Max Flood Level	5.49	5.72	6.17	6.41	m AOD
Max Ground Level	5.80	5.80	5.80	5.80	m AOD
Min Ground Level	1.05	1.05	1.05	1.05	m AOD
Max Flood Hazard	4.41	5.10	6.49	7.20	N/A

1.2 Surface Water

Description of Flood Mechanism	
The surface water flood risk covers the majority of the site area other than a small section on the southern border of the site. High risk areas are concentrated in the southern section of the site and along the eastern boundary.	
Mitigation – Flood Risk Requirements	Mitigation – Surface Water Drainage
Development should be directed away from the eastern boundary and part of the southern section of the site, and towards the northern and central areas of the site. Development should comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.3 and 4.9.	See SFRA Level 2 Report mitigation requirement 5.0 for further development stipulations. Developments should apply the Sustainable Drainage Hierarchy set out in Policy SI 13 of the London Plan as well as Policy E2 of the existing Greenwich Local Plan and Policy EN6 of the draft Local Plan. Ground investigations are required to confirm whether infiltration SuDS are suitable.
Climate Change Considerations	
During the high risk events, the extent increases across the site to cover the majority of the site area, other than the northern and southern boundaries of the site, and some other small areas across the site. The maximum depth and velocity remain unchanged, with the maximum hazard increasing from 0.75 to 1.25. During the medium risk events, the flood extent increases both to the north and south of the site. Some areas previously classified as low risk areas become medium risk within the central areas of the site. The maximum depth increases from 0.6m to 0.9m and the maximum velocity increases from 0.5m/s to 1.0m/s. The maximum hazard remains unchanged. During the low risk events, the extent increases slightly in the southern area of the site. The maximum depth and velocity remain the same with the maximum hazard increasing from 1.25 to 2.0.	



Risk Assessment				
Parameter	High	Medium	Low	Units
Max. Depth	0.3	0.6	1.2	m
Max. Velocity	0.5	0.5	1.0	m/s
Max. Hazard	0.75	1.25	1.25	N/A

Risk Assessment – with Climate Change				
Parameter	High	Medium	Low	Units
Max. Depth	0.3	0.9	1.2	m
Max. Velocity	0.5	1.0	1.0	m/s
Max. Hazard	1.25	1.25	2.0	N/A

1.3 Sewer

Risk Assessment	Mitigation Requirements
The site falls within a postcode area where there are 10 - 20 reported flood incidents from sewer flooding. The site is assumed to be served by separate combined, surface water, and foul sewer networks, given their proximity to the site.	The applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections. If historic flooding has occurred, the applicant must demonstrate how this risk will be managed throughout the development's lifetime.

1.4 Groundwater

Risk Assessment	Mitigation Requirements
The site has limited potential for groundwater flooding to occur with a small area in the southeast of the site that has potential for flooding of properties below ground level. The site is underlain by Sussex White Chalk Formation bedrock geology and the superficial deposits in the most southern part of the site are comprised of Alluvium.	For new developments that involve groundworks, especially if basements are planned, the applicant should carry out a screening study (as a minimum) to establish if there are any subterranean flood risk issues that may require further investigation. If there is a potential level of impact, mitigation actions must be proposed. This must be prepared by a chartered professional or specialist.



1.5 Artificial

Risk Assessment	Mitigation Requirements
This site is at risk of flooding from the Banbury, High Maynard, King George V, Lockwood, Queen Elizabeth II, Walthamstow No.4, Walthamstow No.5, William Girling, and Wraysbury reservoirs. The reservoir extent map predicts that if any of these reservoirs breach on a wet day, the site will be at risk of flooding.	Propose appropriate and proportionate risk management measures. A suitable emergency response plan should be put in place, including an emergency warning system in the event of a reservoir flooding incident. Local Authority Emergency Planning Officers must be consulted to create a reservoir failure emergency and evacuation plan.

1.6 Planning Considerations – Safety of Development

A. Can the development be future proofed for climate change considerations?	
- Climate change is not expected to increase the extent of tidal flood risk as the site remains fully inundated within both Downriver modelled scenarios. The maximum depth, velocity, flood level and hazard increase in a climate change scenario. - Surface water flood risk extent is expected to increase during all events due to climate change, particularly the high risk event. The maximum depth and velocity increase in a medium risk event and the maximum hazard increases in a high risk and low risk event. - See SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for the required flood resistant / resilient building stipulations.	
B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?	
- The development must use surface water drainage techniques to manage surface water runoff onsite through above ground SuDS and / or below ground attenuation. - Green drainage infrastructure should be prioritised to provide wider ecological / biodiversity benefits as per London Plan Policy SI 13. - See SFRA Level 2 Report mitigation requirement numbers 4.3, 4.7, 4.8 and 4.9 and Policies E2, E3 of the Greenwich Local Plan and Policy EN6 of the draft Local Plan for further development stipulations.	
C. What is the cumulative impact of the development land use change and will flood risk increase?	
- The development land use is not changing from 'More Vulnerable'. - The site is mostly impermeable, with a small permeable area located in the south of the site and along the site boundary.	



Development must mitigate any increase in impermeable area to the site with runoff storage to prevent any increase in flood risk. An increase in impermeable area coverage on site will increase surface water runoff and flood risk if not managed properly.
D. How can the development reduce risk overall?
- Development should be directed towards the northern and central areas of the site, away from existing areas at high risk of surface water flooding. - By complying with Policy E2 of the Greenwich Local Plan and Policy EN6 of the draft Local Plan through demonstrating that the development will avoid or minimise all sources of flood risk to people and property taking climate change into account, and incorporating SuDS measures in order to manage surface water runoff as close to its source as possible and to meet the required SuDS performance standards. - By complying with SFRA - Level 2 Report Section 4 mitigation requirement 4.4.
E. Which safe access and egress routes are recommended?
- Safe access and egress should be directed towards Woolwich Road where there is less risk of surface water flooding. - Given the risk of tidal flooding to the available access and egress routes, the applicant should provide a Flood Risk Emergency Plan in line with Adept guidance.
F. Will development require a flood risk permit / watercourse consent?
No, the site is not within 16m of a Tidal River, 8m of a Main River or 5m of an Ordinary Watercourse.
G. Can the site pass the Exception Test?
The site is located within Flood Zone 3a and the proposed vulnerability classification is 'More Vulnerable', therefore the Exception Test is required.

