

Charlton Riverside - Herringham Road and Riverside

Summary Information	
Site Reference	P3-C4
Address	Anchorage Point / Herringham Road
Area (ha)	5.135
Current Use	Industrial, Commercial, Leisure.
Current Vulnerability	Less Vulnerable
Proposed Use	Mixed-use development comprising residential, commercial, and light industrial uses.
Proposed Vulnerability	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			Groundwater		
FZ2	7.23	% of site	Limited potential for flooding to occur	100	% of site
FZ3a	92.47	% of site	Potential for flooding of properties below ground level	0.00	% of site
FZ3b	5.25	% of site	Potential for flooding to occur at surface	0.00	% of site
Surface Water			Sewer Flooding		
High	3.26	% of site	Number of incidents within the predominant postcode	10 - 20	
Medium	4.55	% of site	Is the site located within the Thamesmead area?	No	
Low	12.28	% 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. A flood defence is located along the northern boundary of the site.			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 along the northern boundary of the site. • During the 2005 Thames Upriver modelled event, tidal flood risk is concentrated in the eastern and central areas of the site, and along the western boundary. • During the 2100 Thames Upriver modelled event, tidal flood risk inundates the majority of the site other than some small isolated areas in the centre of the site, and some larger areas in the western section of the site. • During the 1 in 200 year (2005) Thames Downriver modelled event, tidal flood risk is concentrated in the eastern and central areas of the site, and along the western boundary. • During the 1 in 1000 year (2005) Thames Downriver modelled event, the 1 in 200 year extent extends slightly to cover some more of the central and western areas. • During the 1 in 200 year (2115) Thames Downriver modelled event, tidal flood risk inundates the majority of the site other than some small isolated areas in the centre of the site, and some areas in the western section of the site. • During the 1 in 1000 year (2115) Thames Downriver modelled event, tidal flood risk inundates almost the whole site other than some small isolated areas in the centre of the site.
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, 4.4, and 4.5, 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. • Future defence raisings may be required in line with the TE2100 Plan crest levels guidance. They must consider the lifetime of the development and the status of current flood defence crest levels in the site-specific FRA.
Climate Change Considerations



The Thames Breach Upriver and Downriver scenarios show an increase in the extent of inundated areas due to climate change, with the Upriver scenario increasing the extent across the central and western areas of the site, and the Downriver scenario increasing the extent across the western and central areas of the site in the 1 in 200 year event, and almost fully inundating the site in the 1 in 1000 year event. The Downriver modelled scenario was used for the analysis below as this represents the worst-case scenario.

During the Thames Breach Downriver 1 in 200 year events, climate change is expected to increase the maximum depth from 3.19m to 3.82m, the maximum velocity from 1.13m/s to 1.97m/s, the maximum flood level from 5.47mAOD to 6.12mAOD and the maximum hazard from 2.74 to 3.92.

During the Thames Breach Downriver 1 in 1000 year events, climate change is expected to increase the maximum depth from 3.39m to 4.06m, the maximum velocity from 1.16m/s to 2.42m/s, the maximum flood level from 5.69mAOD to 6.36mAOD and the maximum hazard from 3.17 to 4.22.

Risk Assessment (Tidal – Thames Breach Downriver 2018)					
Parameter	2005_0200	2005_1000	2115_0200	2115_1000	Units
Max. Depth	3.19	3.39	3.82	4.06	m
Max. Velocity	1.13	1.16	1.97	2.42	m/s
Max Flood Level	5.47	5.69	6.12	6.36	m AOD
Max Ground Level	6.24	6.24	6.24	6.24	m AOD
Min Ground Level	2.10	2.10	2.10	2.10	m AOD
Max Flood Hazard	2.74	3.17	3.92	4.22	N/A

1.2 Surface Water

Description of Flood Mechanism	
The surface water flood risk is primarily located along the southern boundary of the site, extending northwards, and in the central areas of the site. The highest risk areas are concentrated at the centre of the southern area of the site, with a small area to the west.	
Mitigation – Flood Risk Requirements	Mitigation – Surface Water Drainage
Development should be directed away from some of the central and southern areas of the site, and towards the eastern, northern and some of the western areas of the site.	See SFRA Level 2 Report mitigation requirement 5.0 for further development stipulations.
Development should comply with SFRA - Level 2 Report Section 4 mitigation requirement numbers 4.3 and 4.9.	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 around the pre-existing areas of high surface water flood risk within the site, with a new area of high risk in the northern-central area of the site. The maximum depth, velocity, and hazard remain unchanged. During the medium risk events, the extent increases slightly around the pre-existing areas of medium risk with a particular increase in the central-western area of the site. The velocity, depth and hazard remain unchanged. During the low risk events, the extent expands around the pre-existing areas of low risk, with new areas of low risk in the southwestern, southeastern and central areas of the site. The maximum depth increases from 0.6m to 0.9m. The maximum velocity increases from 1.0m/s to 1.25m/s and the maximum hazard remains unchanged.	

Risk Assessment				
Parameter	High	Medium	Low	Units
Max. Depth	0.2	0.3	0.6	m
Max. Velocity	0.25	0.5	0.5	m/s
Max. Hazard	0.75	0.75	1.25	N/A

Risk Assessment – with Climate Change				
Parameter	High	Medium	Low	Units
Max. Depth	0.2	0.3	0.9	m
Max. Velocity	0.25	0.5	1.0	m/s
Max. Hazard	0.75	0.75	1.25	N/A

1.3 Sewer

Risk Assessment	Mitigation Requirements
The site falls within a postcode area where there are 10 – 20 reported flood incidents in the central and eastern areas of the site. In the western area of the site, it falls within a postcode area where there are 20 – 30 reported flood incidents from sewer flooding.	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.



The site is assumed to be served by separate combined and foul sewer networks, given their proximity to the site.	
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1.4 Groundwater

Risk Assessment	Mitigation Requirements
The site has limited potential for groundwater flooding to occur. The site is predominantly underlain by Sussex White Chalk Formation bedrock geology with no available information for the superficial deposits.	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, King George V, and William Girling reservoirs in a dry day scenario, and is at risk of flooding from the Banbury, High Maynard, King George V, Lockwood, Queen Elizabeth II, Queen Mary, Warwick East, Walthamstow No.4, Walthamstow No.5, Wraysbury, and William Girling reservoirs in a wet day scenario. The reservoir extent map predicts that if these reservoirs breach on a dry or 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?
- Surface water flood risk extent is expected to increase in the high, medium and low risk events due to climate change. The maximum depth and velocity increases in the low risk event. - The tidal breach scenarios show an increase in extent in both the Upriver and Downriver models. The maximum depth, velocity and hazard increase in a climate change scenario.



	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, 4.5, 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 changing from 'Less Vulnerable' to 'More Vulnerable'. - The site is currently predominantly impermeable. There is a small strip of permeable land to the west of the site and along the northern boundary of the site. This offers an opportunity to improve flood attenuation through the new development. - 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 eastern, northern and some of the western areas of the site, where there is less 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 requirements 4.4.
E.	Which safe access and egress routes are recommended?
	- Safe access and egress should be directed towards New Lydenburg Street 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?
Yes, the site is within 16m of a Tidal River.	



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.
- A small area of the site is located within Flood Zone 3b, therefore 'More Vulnerable' development is not permitted in the area within this Flood Zone.

