

Brookmarsh Industrial Estate and Phoenix Wharf

Summary Information	
Site Reference	P1-GBW2
Address	Lower Norman Road, SE10
Area (ha)	0.89
Current Use	Part vacant (former Tideway Tunnel construction site), Industrial estate, railway arches.
Current Vulnerability	Less Vulnerable
Proposed Use	Mixed use scheme including light industrial and residential uses alongside public access to Deptford Creek.
Proposed Vulnerability	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			Groundwater		
FZ2	0	% of site	Limited potential for flooding to occur	65.82	% of site
FZ3a	100.00	% of site	Potential for flooding of properties below ground level	0	% of site
FZ3b	0.33	% of site	Potential for flooding to occur at surface	0	% of site
Surface Water			Sewer Flooding		
High	0.36	% of site	Number of incidents within the predominant postcode	40+	
Medium	2.68	% of site	Is the site located within the Thamesmead area?	No	
Low	13.39	% 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 the site.		
There are flood defences located alongside the western boundary of the site.					

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



1.1 Fluvial

Description of Flood Mechanism
- The site is at risk from fluvial flooding from the River Ravensbourne, which flows northward immediately adjacent to the east of the site. - During both the 1 in 30 year and 1 in 100 year events, fluvial flood risk is concentrated within a small area in the very western borders of the site. - During the 1 in 100 year with climate change event, fluvial flood risk is concentrated in the eastern area of the site, including some of the building curtilage, as well as a small area in the very western borders of the site. - During the undefended 1 in 100 year with climate change event, fluvial flood risk is concentrated in the eastern area of the site, including some of the building curtilage, as well as small areas in the western, northwestern and southwestern corners of the site.
Mitigation / FRA Requirements
- Only water compatible or essential uses (subject to the Exception Test) are permitted in FZ3b, in the very western border of the site. - Self-contained basement dwellings and bedrooms are not permitted in FZ3a, located predominantly in the eastern area of the site. See SFRA Level 2 Report mitigation requirement numbers 4.7 and 4.8 for additional basement stipulations. - 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 4.1, 4.2, 4.3, 4.5 and 4.9, Policies E2 and E3 of the existing Greenwich Local Plan, and Policy EN6 of the draft Local Plan for further development stipulations. - Develop a Flood Risk Emergency Plan for the site. - Site users should be signed up to the EA's Flood Warning Service.
Climate Change Considerations
Climate change is expected to increase the extent of fluvial flood risk onsite to concentrate in the eastern areas and expand along the western border of the site. The maximum depth decreases from 2.85m to 1.33m, the maximum velocity decreases from 0.23m/s to 0.22m/s, the maximum flood level increases from 3.98mAOD to 4.60mAOD and the maximum hazard decreases from 3.08 to 1.99.

Risk Assessment (Fluvial) – Ravensbourne 2025				
Parameter	FZ3b	FZ3a	*FZ3a+CC	Units
Max. Depth	2.83	2.85	1.33	m
Max. Velocity	0.21	0.23	0.22	m/s
Max Flood Level	3.96	3.98	4.60	m AOD
Max Ground Level	5.67	5.67	5.67	m AOD



Min Ground Level	2.21	2.21	2.21	m AOD
Max Flood Hazard	3.01	3.08	1.99	N/A

1.2 Tidal

Description of Flood Mechanism
- The site is at risk of tidal breach flooding from the River Ravensbourne, immediately adjacent to the west boundary of the site, which is influenced by the River Thames located approximately 440m northeast of the site. - During the 2005 Thames Upriver modelled event, tidal flood risk is concentrated in the northern, eastern and southern areas of the site. - During the 2100 Thames Upriver modelled event, most of the site is inundated with the exception of areas along the western boundary and in the southwestern corner 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 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. - Future defence raisings are 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. - Sea Level Allowances, provided by the EA, should be considered to inform flood resilient construction and design measures.
Climate Change Considerations
Climate change is expected to increase the extent of tidal flood risk to inundate most of the site with the exception of areas along the western boundary and in the southwestern corner of the site. The maximum depth increases from 1.65m to 2.32m, the maximum velocity increases from 1.10m/s to 3.75m/s, the maximum flood level increases from 4.75mAOD to 5.71mAOD and the maximum hazard increases from 3.60 to 7.63.

Risk Assessment (Tidal – Thames Breach Upriver 2017)			
Parameter	2005	2100	Units
Max. Depth	1.65	2.32	m
Max. Velocity	1.10	3.75	m/s
Max Flood Level	4.75	5.71	m AOD



Max Ground Level	5.67	5.67	m AOD
Min Ground Level	2.21	2.21	m AOD
Max Flood Hazard	3.60	7.63	N/A

1.3 Surface Water

Description of Flood Mechanism	
Surface water flooding is primarily concentrated in the eastern area of the site. A small area of high risk is located in the northeastern corner of the site.	
Mitigation – Flood Risk Requirements	Mitigation – Surface Water Drainage
Development should be directed away from the eastern area of the site, towards the western, northern and southern 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 extends westward from the eastern boundary further into the northeastern corner of the site. The maximum depth increases from less than 0.2m to 0.2m, whilst the maximum velocity and hazard remain the same. During the medium risk events, the extent extends westward from the eastern boundary. The maximum depth and velocity remain the same, whilst the maximum hazard increases from 0.5 to 0.75. During the low risk events, the extent extends westward from the eastern boundary to also reach the building curtilage. The maximum depth, velocity and hazard remain the same.	

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



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

1.4 Sewer

Risk Assessment	Mitigation Requirements
The site falls within a postcode area where there are 40+ reported flood incidents from sewer flooding. The site is assumed to be served by a combined sewer network, given its 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.

1.5 Groundwater

Risk Assessment	Mitigation Requirements
This site has limited potential for groundwater flooding to occur in the southern area of the site. There is no information available for the rest of the site. The site is underlain by a bedrock geology of Thanet Sand formation, in the southern area of the site, and Lambeth Group, in the northern area of the site. The superficial geology is 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, a screening assessment should be undertaken to confirm the level of risk and determine appropriate mitigation actions. This must be prepared by a chartered professional or specialist.



1.6 Artificial

Risk Assessment	Mitigation Requirements
This site is at risk of flooding from the Queen Elizabeth II, South Norwood, Sutcliffe Park Flood Detention Area, Weigall Road Flood Storage Area, Wraysbury, Banbury, Lockwood and William Girling reservoirs. The reservoir extent map predicts that if any of these reservoirs breach on both wet and dry days, 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.

1.7 Planning Considerations – Safety of Development

A.	Can the development be future proofed for climate change considerations?
	- Climate change is expected to increase the extent of fluvial flood risk onsite.. - Climate change is expected to increase extent of tidal flood risk onsite. - Climate change is expected to extend the surface water extents westward from the eastern boundary, with the low risk extent impacting the building curtilage. - 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 4.1, 4.2, 4.3, 4.5, 4.7, 4.8, 4.9 and 5.0 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 predominantly impermeable with no permeable areas present. - This offers an opportunity to improve flood attenuation through the new development.
D.	How can the development reduce risk overall?



- Development should be directed toward the central and southern areas of the site where there is less risk of fluvial and 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 4.2 and 4.4.

E. Which safe access and egress routes are recommended?

Given the risk of fluvial, tidal breach and surface water 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 8m of a Main River.

G. Can the site pass the Exception Test?

- 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.
- The site is located within Flood Zone 3a and the proposed vulnerability classification is 'More Vulnerable', therefore the Exception Test is required.

