

Greenwich DLR Station

Summary Information	
Site Reference	P1-GBW3
Address	Greenwich DLR Station
Area (ha)	0.2
Current Use	Station entrance ramp and open space.
Current Vulnerability	Essential Infrastructure
Proposed Use	Residential-led mixed-use B. Replacement access to Greenwich Station.
Proposed Vulnerability	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			Groundwater		
FZ2	0	% of site	Limited potential for flooding to occur	82.82	% of site
FZ3a	100	% of site	Potential for flooding of properties below ground level	0	% of site
FZ3b	0	% of site	Potential for flooding to occur at surface	17.18	% of site
Surface Water			Sewer Flooding		
High	4.83	% of site	Number of incidents within the predominant postcode	40+	
Medium	14.59	% of site	Is the site located within the Thamesmead area?	No	
Low	32.33	% 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.		

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, approximately 180m northwest of the site at its closest point. - The site is not impacted during both the 1 in 30 year and 1 in 100 year events. - During the 1 in 100 year plus climate change event, fluvial flood risk is concentrated in the western area of the site and along the main pathway through the middle of the site. - During the undefended 1 in 100 year plus climate change event, fluvial flood risk is concentrated in the western, north and eastern areas of the site.
Mitigation / FRA Requirements
- Self-contained basement dwellings and bedrooms are not permitted in FZ3a, in the western and central areas 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 4.2, 4.3 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 introduce fluvial flood risk to the site in the western and central areas. The introduced extent will have a maximum depth of 0.43m, a maximum velocity of 0.30m/s, a maximum flood level of 4.24mAOD and a maximum hazard of 1.22.

Risk Assessment (Fluvial) – Ravensbourne 2025				
Parameter	FZ3b	FZ3a	*FZ3a+CC	Units
Max. Depth	N/A	N/A	0.43	m
Max. Velocity	N/A	N/A	0.30	m/s
Max Flood Level	N/A	N/A	4.24	m AOD
Max Ground Level	N/A	N/A	8.47	m AOD
Min Ground Level	N/A	N/A	3.55	m AOD
Max Flood Hazard	N/A	N/A	1.22	N/A



1.2 Tidal

Description of Flood Mechanism
- The site is at risk of tidal breach flooding from the River Thames which is located approximately 500m to the north of the site. - During the 2005 Thames Upriver modelled event, tidal flood risk is concentrated in the western, northern, eastern and southeastern areas of the site. - During the 2100 Thames Upriver modelled event, the 2005 extent extends further south, but does not entirely inundate 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. - 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 further southwards. The maximum depth increases from 0.76m to 1.81m, the maximum velocity increases from 0.72m/s to 0.91m/s, the maximum flood level increases from 4.61mAOD to 5.57mAOD and the maximum hazard increases from 1.39 to 2.10.

Risk Assessment (Tidal – Thames Breach Upriver 2017)			
Parameter	2005	2100	Units
Max. Depth	0.76	1.81	m
Max. Velocity	0.72	0.91	m/s
Max Flood Level	4.61	5.57	m AOD
Max Ground Level	8.47	8.47	m AOD
Min Ground Level	3.55	3.55	m AOD
Max Flood Hazard	1.39	2.10	N/A

1.3 Surface Water

Description of Flood Mechanism
Surface water flood risk is concentrated in the northwestern, central and southeastern areas of the site. Small areas of high risk are located in the northwestern and southeastern corners of the site.



Mitigation – Flood Risk Requirements	Mitigation – Surface Water Drainage
Development should be directed away from the northwestern and southeastern areas of the site, and towards the northern, northeastern, southern and southwestern 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 from the northwest towards the centre of the site, along the main pathway, with a new area of high risk forming within the northwestern area of the site, below the main pathway. There is an increase in the area of high risk in the southeastern corner of the site. The maximum depth and hazard remain the same. The maximum velocity increases from 0m/s to 0.25m/s. During the medium risk events, the extent extends from the northwest towards the centre of the site, along the main pathway, and southward towards to the southwestern corner of the site. There is also an increase in the medium risk areas in the southeastern corner of the site. The maximum depth and velocity remain the same. The maximum hazard increases from 0.75 to 1.25. During the low risk events, the extent extends within each of the pre-existing areas of low risk, particularly in the northeastern and northwestern corners of the site. The maximum depth and velocity remain the same. The maximum hazard decreases from 1.25 to 0.75.	

Risk Assessment				
Parameter	High	Medium	Low	Units
Max. Depth	0.3	0.3	0.3	m
Max. Velocity	0	0.25	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	0.3	0.3	0.3	m
Max. Velocity	0.25	0.25	0.5	m/s



Max. Hazard	0.75	1.25	0.75	N/A
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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 combined 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.

1.5 Groundwater

Risk Assessment	Mitigation Requirements
This site has limited potential for groundwater flooding to occur for the majority of the site. There is potential for groundwater flooding to occur at the surface in the southernmost and easternmost areas of the site. The site is predominantly underlain by Thanet Sand Formation bedrock geology, with Lambeth group in the northwestern corner 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, mitigation actions must be proposed. 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 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.
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1.7 Planning Considerations – Safety of Development

A. Can the development be future proofed for climate change considerations?
- Climate change is expected to introduce fluvial flood risk to the site from the River Ravensbourne. - Climate change is expected to increase the extent of tidal flood risk onsite which extends southwards. The maximum depth, velocity, flood level and hazard increase. - Surface water flood risk extent is expected to increase in the high, medium and low risk events due to climate change. - 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 4.2, 4.3, 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 'Essential Infrastructure' to 'More Vulnerable'. - The site comprises a mix of both permeable and impermeable areas. - Development must mitigate any increase in impermeable area to the site with flood plain compensation and 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, northeastern, southern and southwestern 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 future 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?
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.

