

SITE ASSESSMENT - 1 - 6 Riverside Walk

Address: 1-6 Riverside Walk, 2 Bishop's Hall and 19-31 Thames Street, KT1 1QN

Area: 0.7 Ha
Site Reference: SA 012

Current Use	Proposed Use
Commercial, Business	Residential, Commercial, Business (254 units - if 100% residential)

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			Groundwater		
FZ2	93.5	% of Site	<25	0	% of Site
FZ3a	47.84	% of Site	25-50	0	% of Site
FZ3b	3.54	% of Site	50-75	100	% of Site
Surface Water			>75	0	% of Site
1 in 30	2.23	% of Site	Artificial		
1 in 100	3.24	% of Site	Reservoir	Y	At risk?
1 in 1000	13.4	% of Site	Canal	N	At risk?
Sewer Flooding			Town Centre		
No. Incidents	65		Y/N		Y

Flood Defences
The site is not in an area benefitting from flood defences.
Flood Warning Area
The EA Flood Warning Service is available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended) - River Thames				
Parameter	FZ3b	FZ3a	*FZ3a+CC	Units
Speed of inundation	N/D	N/D	N/D	Hrs
Min. Depth	0.15	0	0.36	m
Max. Depth	0.176	0.96	2.34	m
Max. Velocity	0	0.15	0.29	m/s
Max Flood Level	6.19	7.1	8.52	m AOD
Max Ground Level	10.11	10.11	10.11	m AOD
Min Ground Level	5.05	5.05	5.05	m AOD
Max Flood Hazard	0.74	1.52	2.64	N/A
Duration of Flood	N/D	N/D	N/D	Hrs

*The +35% Climate Change Allowance event (upper end allowance extreme case) is reviewed

Risk Assessment (Undefended) - River Thames				
Parameter	FZ3B	FZ3a	*FZ3a+CC	Units
Speed of inundation	N/A	N/A	N/A	Hrs
Min. Depth	N/A	N/A	N/A	m
Max. Depth	N/A	N/A	N/A	m
Max. Velocity	N/A	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

Description of Flood Mechanism
<ul style="list-style-type: none"> The site is at risk of flooding from the River Thames, which flows alongside the western boundary of the site. Flooding enters the site along the west boundary and covers the south-west side of the site. Climate change is predicted to increase the flood extent, maximum depth, velocity and hazard rating. The predicted flood risk extent for the 1 in 100 year undefended scenario is 61.21%. <p>*Note: the EA are due to update River Thames model*</p>

[Figure 1 - Fluvial Flood Depth Map](#)

Site Access / Egress
<ul style="list-style-type: none"> Site access / egress routes should be directed towards the north-east of the site where there is a lower risk of flooding. Safe refuge areas must be provided on site to account for the predicted impact of climate change on the site.

[Figure 2 - Fluvial Flood Hazard Map](#)

Mitigation / FRA Requirements
<ul style="list-style-type: none"> Only water compatible or essential uses (subject to the Exception Test) are permitted in FZ3b i.e. along the western border of the site. Development in this area which is located above the design flood level is still designated as functional floodplain. 'More Vulnerable' development should be directed to the north-east of the site where there is a lower risk of flooding. Self-contained basement dwellings and bedrooms are not permitted in FZ2 & FZ3a. See SFRA Level 2 Report mitigation requirement number 4.10 for additional basement stipulations. See SFRA Level 2 Report mitigation requirement numbers 4.2, 4.4, 4.5 and 4.6 for further development stipulations. See SFRA Level 2 Report mitigation requirement number 4.8 for Main River stipulations. Develop a Flood Emergency and Evacuation Plan for the site. Site users should be signed up to the EA's Flood Warning Service.

SURFACE WATER

Risk Assessment				
Parameter	1 in 30	1 in 100	1 in 1000*	Units
Min. Depth	0	0	0	m
Max. Depth	0.30-0.60	0.60-0.90	0.60-0.90	m
Max. Velocity	0.25-0.50	0.25-0.50	0.25-0.50	m/s
Max. Hazard	1.25-2.00	1.25-2.00	1.25-2.00	N/A

*The 1 in 1000 annual probability extent represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism
<ul style="list-style-type: none"> A small section in the south-west corner of this site is at risk of surface water flooding. Surface water is predicted to pond along Bishop's Hall. Climate change is predicted to increase the extent of flooding. However, the maximum depth, hazard and velocity is not predicted to increase.

Site Access / Egress
Site access / egress routes should be directed towards the north of the site where there is no risk of surface water flooding.

[Figure 3 - RoFSW Flood Depth Map](#)

Mitigation - Flood Risk Requirements
<ul style="list-style-type: none"> Developments should be restricted to areas of lower flood risk and directed away from the south-eastern corner of the site. See SFRA - Level 2 Report mitigation requirement numbers 4.2, 4.5, 4.6 for further development stipulations.

[Figure 4 - RoFSW Flood Hazard Map](#)

Mitigation - Surface Water Drainage
<ul style="list-style-type: none"> A Kingston SuDS Proforma must be submitted with the planning application. Developments should apply the Sustainable Drainage Hierarchy set out in Policy SI13 of the London Plan. Ground investigations are required to confirm whether infiltration based SuDS are suitable.

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PLANNING CONSIDERATIONS

Safety of Development

- A. Can the development be future proofed for climate change considerations?**
- Restrict development away from the western boundary of the site. 'More Vulnerable' uses should be directed to the north-eastern corner where there is the lowest risk of flooding.
 - Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.2 and 4.4 for the required finished floor levels and flood resistant / resilient building stipulations.
- B. Can the development be designed safe throughout its lifetime without increasing flood risk elsewhere?**
- Yes. 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 4.5 and 4.6 for compensatory flood storage and void 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' as residential uses are proposed.
 - The site is currently a brownfield site with hardstanding areas and little green space. This offers an opportunity to improve flood attenuation through new development.
 - 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?**
- By directing development away from the western border of the site.
 - Include SuDS to manage surface water runoff and reduce runoff rates to comply with Policy DM 4 in Kingston's Core Strategy.
 - By complying with SFRA - Level 2 Report mitigation requirement numbers 4.2, 4.4 and 4.5.
- E. Will development require a flood risk permit/watercourse consent?**
- Yes. See SFRA - Level 2 Report mitigation requirement number 4.8 for Main River stipulations.
- F. Is the Exception Test required?**
- No 'Less', 'More' or 'Highly Vulnerable' development is permitted along the western border in Flood Zone 3b.
 - The Exception Test is required for 'More Vulnerable' development in Flood Zone 3a (the south-west side of the site).
 - This can be passed by making the site safe throughout its lifetime without increasing flood risk elsewhere (see questions A, B, and C). The site could also reduce flood risk overall with appropriate SuDS and flood storage compensation measures implemented (see Mitigation - Surface Water Drainage and Mitigation - Flood Risk Requirements boxes).
- G. What are the delivery challenges for developing on this site in terms of passing the Exception Test?**
- All new development must be set back 8m from the banks of the River Thames (See SFRA - Level 2 Report mitigation requirement numbers 4.8).
 - Due to the high flood levels predicted for the 1 in 100 year + CC event, achieving the required finished floor levels may not be feasible (See SFRA - Level 2 Report mitigation requirement numbers 4.3).
 - A large proportion of the site requires flood compensation storage which may not be feasible given the volume-for-volume / level- for- level stipulation (See SFRA - Level 2 Report mitigation requirement number 4.5).



