

SITE ASSESSMENT - The Malthouse and River Reach

Address: 25-35 High Street, Kingston, KT1 1LL	Area: 0.26 Ha
	Site Reference: SA026

Current Use	Proposed Use
Commercial, Business	Mixed use (Residential, Business)

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			Groundwater		
FZ2	100	% of Site	<25	1.14	% of Site
FZ3a	44.5	% of Site	25-50	22.05	% of Site
FZ3b	0	% of Site	50-75	76.81	% of Site
Surface Water			>75	0	% of Site
1 in 30	0	% of Site	Artificial		
1 in 100	4.27	% of Site	Reservoir	Y	At risk?
1 in 1000	10.1	% 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/A	N/D	N/D	Hrs
Min. Depth	N/A	0.02	0.25	m
Max. Depth	N/A	0.1	1.49	m
Max. Velocity	N/A	0	0.47	m/s
Max Flood Level	N/A	7.16	8.56	m AOD
Max Ground Level	8.45	8.45	8.45	m AOD
Min Ground Level	6.94	6.94	6.94	m AOD
Max Flood Hazard	N/A	0.51	2.06	N/A
Duration of Flood	N/A	N/D	N/D	Hrs

* The +35% Climate Change Allowance event (central allowance) is reviewed

Risk Assessment (defended) - Hogsmill				
Parameter	FZ3b	FZ3a	*FZ3a+CC	Units
Speed of inundation	N/A	12.5	9.25	Hrs
Min. Depth	N/A	0	0.01	m
Max. Depth	N/A	0.18	0.29	m
Max. Velocity	N/A	0.5	0.91	m/s
Max. Hazard	N/A	0.86	1.18	N/A
Duration of Flood	N/A	>15.25	>18.5	Hrs

Description of Flood Mechanism
<ul style="list-style-type: none"> The site is at risk of flooding from the River Thames and the Hogsmill River. Flooding from the Hogsmill River originates from Kingston Hall Road and enters the site at the north-west corner. Flooding from the River Thames enters the site from the western border. The north-western half of the site is inundated in the 1 in 100 year flood event. The predicted flood risk extent for the climate change scenario is much greater, covering the entire site. The maximum flood depths and velocities are both greater under the climate change scenario. Figures 1 and 2 show the fluvial risk from the River Thames. <p>*Note: EA are due to update River Thames model*</p>

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress
<ul style="list-style-type: none"> Safe access and egress routes should be directed towards the south eastern corner of the site towards Kent road, where the flood risk is lower. Safe refuge areas should be provided on site to account for the predicted impact of climate change on flooding at the site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements
<ul style="list-style-type: none"> Development should be directed to the south-east half of the site where the flood risk is lower. Basement developments should be limited to 'Less Vulnerable' / water compatible uses in Flood Zone 3a. Self-contained basement dwellings and bedrooms are not permitted in Flood Zone 2 (the entire site). See SFRA Level 2 Report mitigation requirement number 4.10 for additional basement stipulations. See SFRA Level 2 Report mitigation requirement numbers 4.2, 4.3, 4.4, 4.5 and 4.6 for further development stipulations. Develop a Flood Emergency and Evacuation Plan for the site. Site users should be signed up to 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	0.15-0.30	0.30-0.60	m
Max. Velocity	0	0.00-0.25	1.00-2.00	m/s
Max. Hazard	0	0.75-1.25	1.25-2.00	N/A

*The 1 in 1000 year flood event represents the potential climate change adjusted impact of current risk

Description of Flood Mechanism
<ul style="list-style-type: none"> Surface water is predicted to pool in the centre of the site. Climate change is predicted to increase the flood extent on site and also inundate High Street and Kingston Hall Road which form the western and northern boundaries of the site. The maximum depth, velocity and hazard are all predicted to increase with climate change.

Site Access / Egress
Safe egress routes should be directed to the south-east corner towards Kent Road, 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 centre of the site. See SFRA - Level 2 Report mitigation requirement numbers 4.2, 4.3, 4.4, 4.5, and 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?**
- Yes. By directing development to areas of lower flood risk i.e. the south-east of the site.
 - See SFRA - Level 2 Report mitigation requirement numbers 4.2, 4.3 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 the 'Less Vulnerable' to 'More Vulnerable' classification. The site is proposed to be used for residential purposes.
 - The site is currently a brownfield site with hardstanding areas and no green space. This offers an opportunity to improve flood attenuation through the new development.
- D. How can the development reduce risk overall?**
- It is anticipated that runoff from the site is currently at an uncontrolled rate. New development can provide greater runoff management by introducing SuDS (see Mitigation - Surface Water Drainage). These should reduce runoff to sewer to greenfield rates.
 - 'Less Vulnerable' or water compatible categories of basements may be appropriate on site, but a site-specific Flood Risk Assessment must be completed. Self-contained basement dwellings and bedrooms are not permitted. See SFRA Level 2 Report mitigation requirement number 4.10 for additional basement stipulations.
 - 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?**
- No. The site is not located within 8m of a Main River or 5m of an Ordinary Watercourse.
- F. Is the Exception Test required?**
- The Exception Test is required for 'More Vulnerable' development in Flood Zone 3a.
 - 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 in developing at this site in terms of passing the Exception Test?**
- Given the high flood level expected on the site, significant floodplain compensation and voids will be required.
 - 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 requirement 4.3).



