NE05

SITE ASSESSMENT - Bunzl, Hook Road, Epsom

Address:	Bunzl, Hook Road, Epsom
Area:	0.17 **Ha**
Site Reference:	SA4

Current Use	Proposed Use
Office	Residential

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	1.9	% of Site
FZ3b	0	% of Site	50-75	98.1	% of Site
Surface Water			>75	0	% of Site
1 in 30*	35.42	% of Site	**Artificial**		
1 in 100*	46.73	% of Site			
1 in 1000*	100	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					6

* return periods for potential flood events

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

FLUVIAL / TIDAL

Risk Assessment (Defended)				
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 Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

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

Description of Flood Mechanism

N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress

N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements

N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	N/A	0.00 - 0.15	0.00 - 0.15	m
Max. Depth	N/A	0.15 - 0.30	> 1.20	m
Max. Velocity	N/A	1.00 - 2.00	> 2.00	m/s
Max. Hazard	N/A	0.75 - 1.25	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

- The site is at high risk of surface water flooding, particularly in the south western parts of the site.
- Climate change will increase the maximum surface water depth, maximum velocity and maximum hazard of surface water flooding.

Site Access / Egress

Safe access and egress routes should be directed towards Hook Road where there is a lower risk of flooding.

Figure 3 - RoFSW Flood Depth Map

Mitigation - Flood Risk Requirements

- Development should be directed away from the south western areas of the site where there is higher risk of surface water flooding.
- See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Surface Water Drainage

- All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma.
- Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG).
- Ground investigations are required to confirm whether infiltration SuDS are suitable.

0.9-1.2

1.2

SITE ASSESSMENT - Bunzl, Hook Road, Epsom

SEWER	GROUNDWATER	ARTIFICIAL
Risk Assessment	**Risk Assessment**	**Risk Assessment**
• The site falls within a postcode area where there are 6 reported flood incidents from sewer flooding. • The site is assumed to be served by a foul sewer network, given their proximity to the site.	• The site is classified as having mostly a 50-75% susceptibility to groundwater flooding.	• This site is not at risk of flooding from reservoirs.
Figure 5 - Thames Water Sewer Flood Map	Figure 6 - Areas Susceptible to Groundwater Flooding Map	Figure 7 - Outline Reservoir Flood Map
Mitigation Requirements	**Mitigation Requirements**	**Mitigation Requirements**
• Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections. • Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.	• 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. • Must be prepared by a chartered professional or specialist.	N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?

• Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

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 Policy S16 and S18 of EEBC's Prropposed Submission Local Plan.

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 the 'More vulnerable' classification, as residential uses have been proposed.
• The site is covered by impermeable areas. This offers an opportunity to improve flood attenuation through the new development.

D. How can the development reduce risk overall?

• Direct development away from south western areas of the site.
• Safe access routes should be directed to the southwest of the site towards Hook Road where there is a lower risk of flooding.
• Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S16 in EEBC's Proposed Submission Local Plan.
• By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?

• No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?

• The Exception Test is not required as the site is not located within Flood Zone 3a.

SITE ASSESSMENT - 63 Dorking Road

Address:	63 Dorking Road Epsom, KT18 7JU
Area:	0.14 **Ha**
Site Reference:	**SA28**

Current Use	Proposed Use
Public House	Residential (Extra Care)

Current Vulnerability Classification	Proposed Vulnerability Classification
More Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	100	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	0	% of Site
1 in 30*	0	% of Site	**Artificial**		
1 in 100*	0	% of Site			
1 in 1000*	16.97	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					16

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences.

Flood Warning Area
The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
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 Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

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

Description of Flood Mechanism
N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress
N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements
N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	N/A	N/A	0.00 - 0.15	m
Max. Depth	N/A	N/A	0.00 - 0.15	m
Max. Velocity	N/A	N/A	N/A	m/s
Max. Hazard	N/A	N/A	N/A	N/A

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

Description of Flood Mechanism
• The site is at low risk of surface water flooding on the south eastern boundary of the site and south western corner of the site (currently a car park) • Climate change will increase the maximum surface water depth, maximum velocity and maximum hazard of surface water flooding.

Figure 3 - RoFSW Flood Depth Map

Site Access / Egress
Safe access and egress routes should be directed to the north west towards Hylands Mews where there is a lower risk of flooding.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Flood Risk Requirements
• Development should be directed away from the areas of the site where there is higher risk of surface water flooding. • See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Mitigation - Surface Water Drainage
• All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma. • Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG). • Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - 63 Dorking Road

SEWER

Risk Assessment

• The site falls within a postcode area where there are 16 reported flood incidents from sewer flooding.
• The site is assumed to be served by a foul sewer network, given their proximity to the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

• Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
• Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

• The site is classified as having 25-50% susceptibility to groundwater flooding.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

• 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.
• Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

• This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?
• Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

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 Policy S16 and S18 of EEBC's Proposed Submission Local Plan.

C. What is the cumulative impact of the development land use change and will flood risk increase?
• The site is predominnatly covered by impermeable areas. 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?
• Direct development away from eastern areas of the site.
• Safe access routes should be directed to the southwest of the site towards Ewell By-Pass where there is a lower risk of flooding.
• Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S16 in EEBC's Proposed Submission Local Plan.
• By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?
• No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?
• The Exception Test is not required as the site is not located within Flood Zone 3a.

SITE ASSESSMENT - 60 East Street Epsom

Address:	60 East Street Epsom, KT17 1HB
Area:	**0.24 Ha**
Site Reference:	**SA14**

Current Use	Proposed Use
Office	Residential

Current Vulnerability Classification	Proposed Vulnerability Classification
Less Vulnerable	More Vulnerable

Current Risk Summary					
Fluvial / Tidal			**Groundwater**		
FZ2	0	% of Site	<25	0	% of Site
FZ3a	0	% of Site	25-50	100	% of Site
FZ3b	0	% of Site	50-75	0	% of Site
Surface Water			>75	0	% of Site
1 in 30*	10.24	% of Site	**Artificial**		
1 in 100*	37.68	% of Site			
1 in 1000*	62.33	% of Site	Reservoir	NO	At risk?
Sewer Flooding					
No. Incidents within the predominant postcode					20

* return periods for potential flood events

Flood Defences
Site is not in an area benefitting from flood defences.

Flood Warning Area
The EA Flood Warning Service is not available at this site.

FLUVIAL / TIDAL

Risk Assessment (Defended)				
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 Flood Level	N/A	N/A	N/A	m AOD
Max Ground Level	N/A	N/A	N/A	m AOD
Min Ground Level	N/A	N/A	N/A	m AOD
Max Flood Hazard	N/A	N/A	N/A	N/A
Duration of Flood	N/A	N/A	N/A	Hrs

* The +35% Climate Change Allowance event is reviewed

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

Description of Flood Mechanism
N/A - No fluvial / tidal risk is predicted at this site.

Figure 1 - Fluvial Flood Depth Map

Site Access / Egress
N/A - No fluvial / tidal risk is predicted at this site.

Figure 2 - Fluvial Flood Hazard Map

Mitigation / FRA Requirements
N/A - No fluvial / tidal risk is predicted at this site.

SURFACE WATER

Risk Assessment				
Parameter	**1 in 30**	**1 in 100**	**1 in 1000**	**Units**
Min. Depth	N/A	0.00 - 0.15	0.00 - 0.15	m
Max. Depth	N/A	0.60 -0.90	0.60 -0.90	m
Max. Velocity	N/A	1.00 - 2.00	> 2.00	m/s
Max. Hazard	N/A	0.75 - 1.25	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
• The site is at high and medium risk of surface water flooding, particularly the parts of the site that consist of surface car parking or vehicular and pedestrian access points. • Climate change will increase the maximum surface water depth, maximum velocity and maximum hazard of surface water flooding.

Site Access / Egress
Safe access and egress routes should be directed to the north west towards East Street where there is a lower risk of flooding.

Figure 3 - RoFSW Flood Depth Map

Mitigation - Flood Risk Requirements
• Development should be directed away from the southern areas of the site that currently consist of surface car parking where there is higher risk of surface water flooding. • See also SFRA - Level 2 Report Section 4 mitigation requirement number 4.4 for further development stipulations.

Figure 4 - RoFSW Flood Hazard Map

Mitigation - Surface Water Drainage
• All planning applications need a flood risk assessment and/or drainage strategy with a completed SuDS/Drainage proforma. • Developments should apply the Sustainable Drainage Hierarchy set out in the 'Flood Risk and Coastal Change' section of the Planning Practice Guidance (PPG). • Ground investigations are required to confirm whether infiltration SuDS are suitable.

SITE ASSESSMENT - 60 East Street Epsom

SEWER

Risk Assessment

• The site falls within a postcode area where there are 20 reported flood incidents from sewer flooding.
• The site is assumed to be served by a foul sewer network, given their proximity to the site.

Figure 5 - Thames Water Sewer Flood Map

Mitigation Requirements

• Applicant must consult with TWUL to confirm if the development site has historically flooded. TWUL must agree to any proposed sewer connections.
• Where historic flooding has occurred, the applicant must show how this risk will be managed for the lifetime of the development.

GROUNDWATER

Risk Assessment

• The site is classified as having 25-50% susceptibility to groundwater flooding.

Figure 6 - Areas Susceptible to Groundwater Flooding Map

Mitigation Requirements

• 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.
• Must be prepared by a chartered professional or specialist.

ARTIFICIAL

Risk Assessment

• This site is not at risk of flooding from reservoirs.

Figure 7 - Outline Reservoir Flood Map

Mitigation Requirements

N/A - No reservoir risk is predicted at this site.

PLANNING CONSIDERATIONS

Safety of Development

A. Can the development be future proofed for climate change considerations?
• Yes. See SFRA - Level 2 Report mitigation requirement numbers 4.4 and 4.9 for the flood resistant / resilient building stipulations and required finished floor levels.

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 Policy S16 and S18 of EEBC's Proposed Submission Local Plan.

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 the 'More vulnerable' classification, as residential uses have been proposed.
• The site is covered by impermeable areas. This offers an opportunity to improve flood attenuation through the new development.

D. How can the development reduce risk overall?
• Direct development away from sourthern areas of the site.
• Ensure that there is no net increase in surface water runoff and include SuDS or an alternative sustainable approach to manage surface water to comply with Policy S16 in EEBC's Proposed Submission Local Plan.
• By complying with SFRA - Level 2 Report mitigation requirement numbers 4.3, 4.4, 4.5 and 4.9.

E. Will development require a flood risk permit/watercourse consent?
• No. The site is not located near a Main River or Ordinary Watercourse.

F. Can the site pass the Exception Test?
• The Exception Test is not required as the site is not located within Flood Zone 3a.