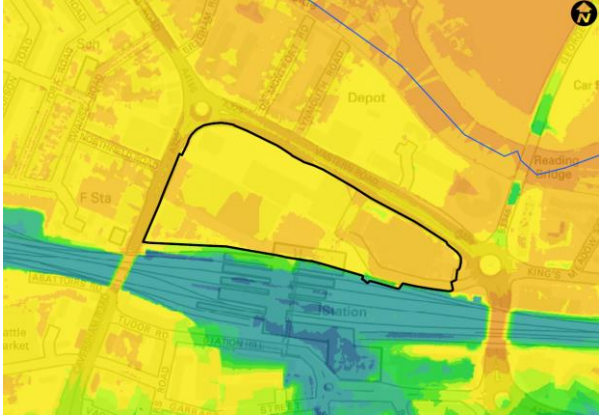
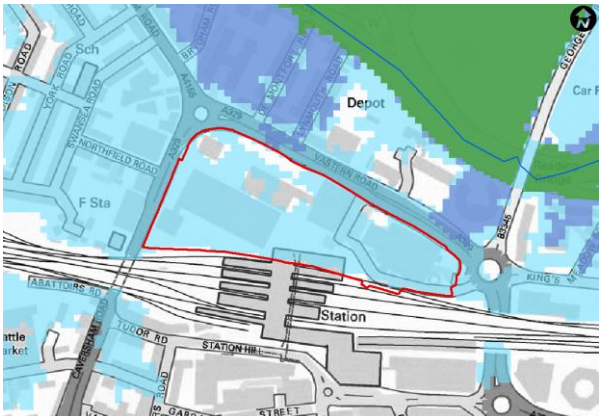
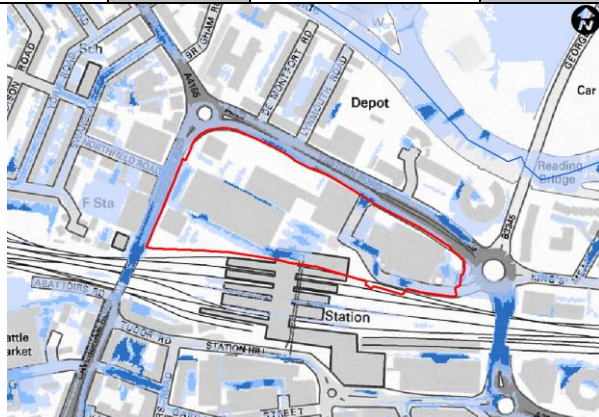


Reading Borough Council

Level 2 Strategic Flood Risk Assessment

AB004 - North of the Station (Local Plan ref: CR11e)

Grid Reference	SU 71490 471490	Post Code	RG1 8AL																								
Topography			<p>Elevation</p> <table style="font-size: small;"> <tr> <td style="color: red;">■</td><td>< 35 mAOD</td> <td style="color: green;">■</td><td>40 - 41 mAOD</td> </tr> <tr> <td style="color: orange;">■</td><td>35 - 36 mAOD</td> <td style="color: lightgreen;">■</td><td>41 - 42 mAOD</td> </tr> <tr> <td style="color: yellow;">■</td><td>36 - 37 mAOD</td> <td style="color: teal;">■</td><td>42 - 43 mAOD</td> </tr> <tr> <td style="color: gold;">■</td><td>37 - 38 mAOD</td> <td style="color: blue;">■</td><td>43 - 44 mAOD</td> </tr> <tr> <td style="color: lightyellow;">■</td><td>38 - 39 mAOD</td> <td style="color: darkblue;">■</td><td>44 - 45 mAOD</td> </tr> <tr> <td style="color: yellowgreen;">■</td><td>39 - 40 mAOD</td> <td style="color: navy;">■</td><td>> 45 mAOD</td> </tr> </table> <p>The topography of the site is largely flat, ranging between approximately 37.5m AOD and 39.4m AOD.</p>	■	< 35 mAOD	■	40 - 41 mAOD	■	35 - 36 mAOD	■	41 - 42 mAOD	■	36 - 37 mAOD	■	42 - 43 mAOD	■	37 - 38 mAOD	■	43 - 44 mAOD	■	38 - 39 mAOD	■	44 - 45 mAOD	■	39 - 40 mAOD	■	> 45 mAOD
■	< 35 mAOD	■	40 - 41 mAOD																								
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■	38 - 39 mAOD	■	44 - 45 mAOD																								
■	39 - 40 mAOD	■	> 45 mAOD																								
Flood Zone Map			<p>Legend</p> <ul style="list-style-type: none"> — River Site Boundary Flood Zone 2 Flood Zone 3 Flood Zone 3b 																								
Flood Zone 1	10%	Flood Zone 2	90%																								
Flood Zone 3a	0%	Flood Zone 3b	0%																								
Surface Water			<p>Risk of Surface Water Flooding</p> <ul style="list-style-type: none"> — River Site Boundary High - 1 in 30 annual probability Medium - 1 in 100 annual probability Low - 1 in 1000 annual Probability Very Low - > 1 in 1000 annual probability 																								



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Development Proposal	640-960 dwellings, 50,000m ² of offices, 3,000 - 6,000m ² net gain of retail, leisure, potential hotel.	Vulnerability Classification	Less Vulnerable (offices/retail), More Vulnerable (residential)
Applicable Climate Change Allowances	The +25% and +35% peak river flow climate change allowances should therefore be used to assess a range of climate change scenarios. The +25% allowance should be used to provide a benchmark flood level against which mitigation measures should be set, and the +35% allowance used to assess residual risk to the development.		
Climate Change Extents			Legend — River Site Boundary 1 in 100 annual probability +25% Climate Change 1 in 100 annual probability +35% Climate Change
1 in 100 annual probability +25%	60%	1 in 100 annual probability +35%	70%
1 in 100 annual probability +70%			N/A
Description of Flood Risk	<p>Flood Depth No flooding occurs in the present day 1 in 100 annual probability event. In the 1 in 1000 annual probability flood event, the site experiences maximum flood depths of typically 400mm.</p> <p>Flood depths in the climate change scenarios are typically 100mm in the +25% scenario, and 200mm in the +35% scenario.</p>		
	<p>Flood Warning and Period of Inundation The River Thames is a large catchment with flooding typically the result of sustained regional-scale rainfall events. The response time – i.e. the period between the rainfall over the catchment and the rising river levels downstream – can be significant, and this ensures there is typically a significant period of advance warning (i.e. a period of days) before flooding occurs in the area.</p> <p>The EA issue flood warnings for the area via their 'Flood Information Service' and considerable advance warning of a flood event can typically be provided to allow the Council, emergency services residents and businesses to take appropriate action.</p>		
	<p>Velocity of Flood Waters The site is occupied by buildings in an urbanised area, a relatively significant distance from the main river, and is impacted in the climate change allowance scenarios. When flooding does occur, the rate of rise and fall in water level is slow and velocities will correspondingly be slow, with the direction of flow from west to east (subject to further interrogation of the EA modelling).</p>		



Reading Borough Council

Level 2 Strategic Flood Risk Assessment

Description of Flood Risk	<p>Flood Defences While not a 'formal' flood defence, the EA asset register does identify that the River Thames, located approximately 0.2km north of the site, includes bank protection on its right bank with a design standard of 1 in 5 years. The condition is currently at 4 (poor), on a scale of 1 (very good) to 5 (very poor).</p> <hr/> <p>Other Sources of Flooding The Level 1 SFRA indicates that the site has not been subject to historic river flooding, and is not noted to have been impacted by flood events from other sources. Vastern Road, located north of the site, has previously been impacted by flooding. External areas are noted to be impacted by surface water flooding, which, if surface water drainage strategy is not sufficiently incorporated into proposed development design, could result in ponding of water following heavy rainfall events. Site drainage must therefore be considered with respect to future development, and must be assessed in accordance with Sections 13.4 and 13.5 of the Level 1 SFRA.</p> <p>The susceptibility to groundwater flooding varies between '25% to 50%' and '>75%'. The Thames Water DG5 information indicates that the site is within a postcode (RG1 8) that has 21-50 recorded sewer flood incidents, both internal and external.</p> <p>The site is not located within a maximum modelled breach extent of reservoir flooding and is therefore at negligible risk of flooding in the event of a reservoir breach.</p> <hr/> <p>Overview of Flood Risk A summary of the flood risk to the site is provided below:</p> <ul style="list-style-type: none"> The site is classified as Flood Zone 2 'Medium Probability' (between 1 in 100 and 1 in 1000 annual probability of river flooding); The maximum flood depth during the 1 in 1000 annual probability event is typically 400mm; Approximately half of the site is impacted by the 1 in 100 annual probability +25% allowance for climate change flood event with general depths of 100mm, rising to 200mm in the 1 in 100 annual probability +35% climate change allowance scenario; The site is largely classified as at Very Low risk of surface water flooding, with localised areas between Low and High risk; The site is at negligible risk of flooding in the event of a reservoir breach; The pedestrian access route via Vastern Road is impacted by the 1 in 100 annual probability +35% climate change allowance flood event. Further analysis of flood depths/flood hazard is required and development may be reliant on advance warning measures and provision of a Flood Risk Management/Evacuation Plan. For the commercial elements an evacuation plan should be sufficient and the building could be vacated and secured in advance of flooding. <p>The site is shown to be at 'Medium' probability of fluvial flooding, at a range of very low to high risk of surface water flooding and may be susceptible to groundwater and sewer flooding. The site is therefore potentially at risk of flooding from a number of sources but it is considered feasible that the site can be developed safely and in accordance with the requirements of the NPPF, to mitigate the potential risks of these sources of flooding.</p> <p>It is important that the design process considers the risk of flooding at the earliest conceptual stage, encompassing measures that will ensure the safety of future tenants/residents during a flood event.</p> <p>A number of important design recommendations are set out below.</p>
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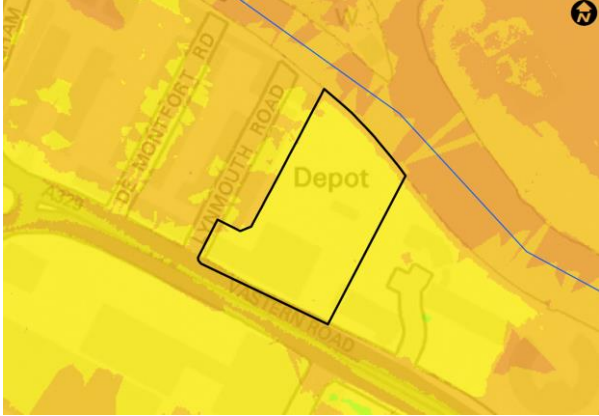
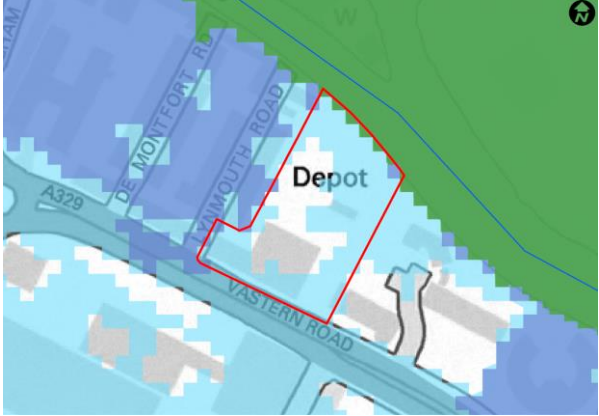
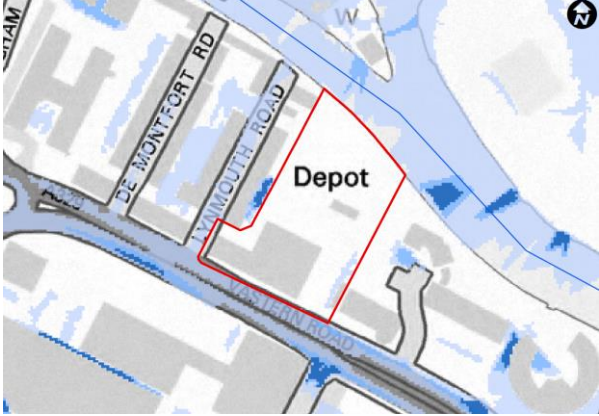
Reading Borough Council Level 2 Strategic Flood Risk Assessment

Planning Recommendations	<p>Spatial Planning</p> <p>The site lies within Flood Zone 2 'Medium Probability', affected by flooding from the River Thames in the 1 in 1000 annual probability flood event. The majority of the site is shown to be impacted by the 1 in 100 annual probability +25% and +35% allowances for climate change flood events.</p> <p>A review of flood risk within the site has been carried out, and it is considered feasible to design the site in such a way that it remains safe throughout the lifetime of the development.</p> <p>It is essential that the following design recommendations are incorporated into the design process from the conceptual stage. A detailed site-based Flood Risk Assessment will be required as an integral part of the planning application stage, which should be carried out in accordance with Section 10.4 of the Level 1 SFRA.</p>
	<p>Design Recommendations</p> <ol style="list-style-type: none">1. Floor levels within the site should be situated a minimum of 300mm above the 1 in 100 annual probability plus allowance for climate change, in this instance +25%, assuming a 100 year lifetime for residential development;2. Flood storage should be analysed to show that the proposed building footprint of the development will not cause a detriment to the available storage during the 1 in 100 annual probability +25% climate change allowance flood event. The presence of a significant existing building footprint suggest that floodplain storage capacity could be improved through effective design measures;3. Where appropriate, buildings should adopt resilient design techniques to minimise the damage and disruption sustained by businesses and/or residents following a flooding event. Further guidance can be found in BRE Digest DG523 'Flood Resilient Building', the Department for Communities and Local Government document 'Improving the Flood Performance of New Buildings – Flood Resilient Construction', and Section 12.4 of the Level 1 SFRA';4. Sustainable Drainage Systems (SuDS) should be incorporated into the site design, aiming to achieve greenfield runoff rates, if feasible, in accordance with Section 13.4 of the Level 1 SFRA. It is important that SUDS are designed with due consideration to soil and groundwater conditions. Infiltration techniques should be sought wherever possible, however are likely to be unsuitable in areas of shallow groundwater and/or impermeable soils. Further guidance on designing for groundwater is provided in Section 6.5 of the Level 1 SFRA. Buildings and landscaping should be designed within the site to avoid locking overland flow routes;5. Safe access is available in the current 1 in 100 annual probability flood event and would therefore meet the requirements of Section 3.4 of the L2 SFRA provided a 'Flood Management and Evacuation Plan' is prepared to consider the impacts in the climate change scenarios. Future tenants/residents within the site should be made aware of the potential risks of flooding, and should be actively encouraged to sign up to the Environment Agency's Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event;6. It is essential to ensure that all basement areas within flood affected areas of the site are watertight, and the entrance point is situated above the 1 in 100 annual probability +25% allowance for climate change flood level. Basements should not be used to provide habitable areas in locations classified at Flood Zone 2 'Medium Probability';

Reading Borough Council Level 2 Strategic Flood Risk Assessment

7. Residual risk to the development should be investigated against the 1 in 100 annual probability +35% allowance for climate change flood event.

Reading Borough Council Level 2 Strategic Flood Risk Assessment

AB005 - Riverside (Local Plan ref: CR11g)																															
Grid Reference	SU 71550 471550			Post Code	RG1 8DD																										
Topography				<p>Elevation</p> <table style="font-size: small; border: none;"> <tr> <td style="width: 15px; height: 10px; background-color: #e67e22;"></td> <td>< 35 mAOD</td> <td style="width: 15px; height: 10px; background-color: #27ae60;"></td> <td>41 - 42 mAOD</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: #f1c40f;"></td> <td>35 - 36 mAOD</td> <td style="width: 15px; height: 10px; background-color: #27ae60;"></td> <td>42 - 43 mAOD</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: #f1c40f;"></td> <td>36 - 37 mAOD</td> <td style="width: 15px; height: 10px; background-color: #27ae60;"></td> <td>43 - 44 mAOD</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: #f1c40f;"></td> <td>37 - 38 mAOD</td> <td style="width: 15px; height: 10px; background-color: #27ae60;"></td> <td>44 - 45 mAOD</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: #f1c40f;"></td> <td>38 - 39 mAOD</td> <td style="width: 15px; height: 10px; background-color: #27ae60;"></td> <td>> 45 mAOD</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: #27ae60;"></td> <td>39 - 40 mAOD</td> <td colspan="2"></td> </tr> </table> <p>The topography of the site is largely flat, ranging between approximately 38.2m AOD and 38.6m AOD.</p>					< 35 mAOD		41 - 42 mAOD		35 - 36 mAOD		42 - 43 mAOD		36 - 37 mAOD		43 - 44 mAOD		37 - 38 mAOD		44 - 45 mAOD		38 - 39 mAOD		> 45 mAOD		39 - 40 mAOD		
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	38 - 39 mAOD		> 45 mAOD																												
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Flood Zone Map				<p>Legend</p> <ul style="list-style-type: none"> — River Site Boundary Flood Zone 2 Flood Zone 3 Flood Zone 3b 																											
Flood Zone 1	30%	Flood Zone 2	60%	Flood Zone 3a	5%	Flood Zone 3b	5%																								
Surface Water				<p>Risk of Surface Water Flooding</p> <ul style="list-style-type: none"> — River Site Boundary High - 1 in 30 annual probability Medium - 1 in 100 annual probability Low - 1 in 1000 annual Probability Very Low - > 1 in 1000 annual probability 																											



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Development Proposal	250 - 370 dwellings and 1,000 - 2,000m ² of leisure	Vulnerability Classification	Less Vulnerable, More Vulnerable
Applicable Climate Change Allowances	<p>The +25% and +35% peak river flow climate change allowances should be used to assess a range of climate change scenarios, based on More Vulnerable proposed development (i.e. based on the highest vulnerability element proposed).</p> <p>The +25% allowance should be used to provide a benchmark flood level against which mitigation measures should be set, and the +35% allowance used to assess residual risk to the development.</p>		
Climate Change Extents			Legend <ul style="list-style-type: none"> — River Site Boundary 1 in 100 annual probability +25% Climate Change 1 in 100 annual probability +35% Climate Change
1 in 100 annual probability +25%	20%	1 in 100 annual probability +35%	25%
1 in 100 annual probability +70%	N/A		
Description of Flood Risk	<p>Flood Depth The site is unaffected in the present day 1 in 100 annual probability event. In the 1 in 1000 annual probability flood event, parts of the site experience maximum flood depths up to 400mm.</p> <p>In the applicable climate change scenarios, the majority of the site remains unaffected by flooding but maximum flood depths in the northern and western parts of the site are typically 200mm in the +25% scenario, and 300mm in the +35% scenario.</p>		
	<p>Flood Warning and Period of Inundation The River Thames is a large catchment with flooding typically the result of sustained regional-scale rainfall events. The response time – i.e. the period between the rainfall over the catchment and the rising river levels downstream – can be significant, and this ensures there is typically a significant period of advance warning (i.e. a period of days) before flooding occurs in the area.</p> <p>The EA issue flood warnings for the area via their ‘Flood Information Service’ and considerable advance warning of a flood event can typically be provided to allow the Council, emergency services residents and businesses to take appropriate action.</p>		
	<p>Velocity of Flood Waters The site is occupied by buildings in an urbanised area, and is impacted to a limited degree in the climate change allowance scenarios. When flooding does occur, the rate of rise and fall in water level is typically slow and velocities will correspondingly be slow with the direction of flow from west to east</p>		



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Description of Flood Risk	<p>(subject to further interrogation of the EA modelling). However, the northern boundary is adjacent to the River Thames channel and higher velocity flows would be anticipated at this location.</p>
	<p>Flood Defences While not a 'formal' flood defence, the EA asset register does identify that the River Thames, located adjacent to the northern boundary of the site, includes bank protection on its right bank with a design standard of 1 in 5 years. The condition is currently at 4 (poor), on a scale of 1 (very good) to 5 (very poor).</p>
	<p>Historic Records and Other Sources of Flooding The Level 1 SFRA indicates that the northern boundary of the site – due to the proximity of the River Thames – has been subject to historic river flooding in 1977, 2000, 2003, 2012 and 2013/14, and notes that an area east of the site has previously been impacted by fluvial flooding, caused by blockage. The site is not noted to have been impacted by historic flooding from other sources. Vastern Road, located south of the site, has previously been impacted by road flooding. Site drainage must be considered accordingly and must be assessed in accordance with Sections 13.4 and 13.5 of the Level 1 SFRA.</p> <p>The susceptibility to groundwater flooding varies between '25% and 50%'. The Thames Water DG5 information indicates that the site is within a postcode (RG1 8) that has 21-50 recorded sewer flood incidents, both internal and external.</p> <p>The site is not located within a maximum modelled breach extent of reservoir flooding and is therefore at negligible risk of flooding in the event of a reservoir breach.</p>
	<p>Overview of Flood Risk A summary of the flood risk to the site is provided below:</p> <ul style="list-style-type: none"> The majority of the site is classified as Flood Zone 2 'Medium Probability' (between 1 in 100 and 1 in 1000 annual probability of river flooding); The site is unaffected in the present day 1 in 100 annual probability event. Maximum flood depths during the 1 in 1000 annual probability event are up to 400mm; A minor portion of the western and northern boundaries is impacted by the 1 in 100 annual probability +25% allowance for climate change flood event with depths up to 200mm, rising to 300mm in the +35% climate change allowance scenario; The site is largely classified as at Very Low risk of surface water flooding, with a minor area of Low risk on the eastern boundary; The site is at negligible risk of flooding in the event of a reservoir breach; The pedestrian access route via Vastern Road would be available in the present day 1 in 100 annual probability event but would be impacted in climate change scenarios. Further analysis of flood depths/flood hazard is required and development would be reliant on provision of a Flood Management and Evacuation Plan. <p>The site is shown to be at 'Medium' probability of fluvial flooding, at very low/low risk of surface water flooding and may be susceptible to groundwater and sewer flooding. The site is therefore potentially at risk of flooding from a number of sources but it is considered feasible that the site can be developed safely and in accordance with the requirements of the NPPF, to mitigate the potential risks of these sources of flooding.</p> <p>It is important that the design process considers the risk of flooding at the earliest conceptual stage, encompassing measures that will ensure the safety of future tenants/residents during a flood event.</p> <p>A number of important design recommendations are set out below.</p>

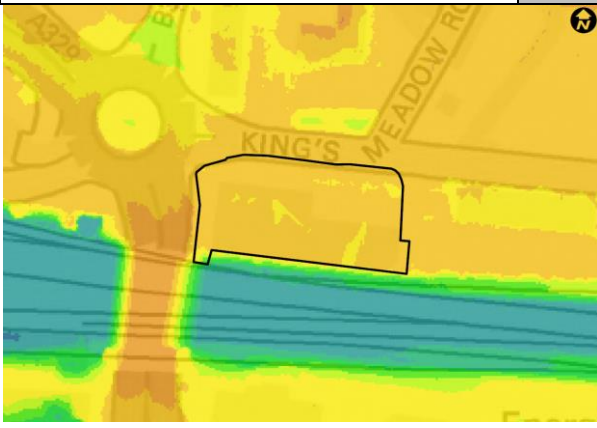
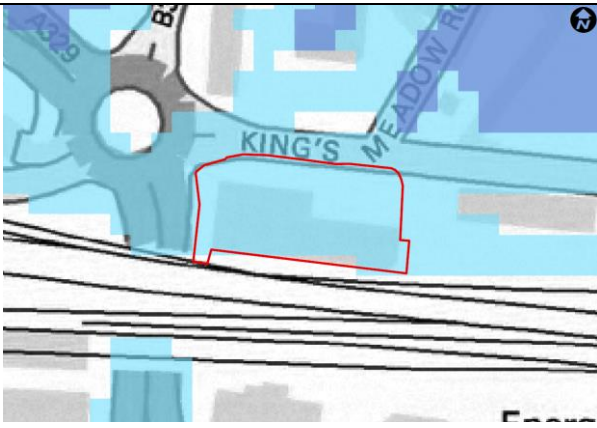
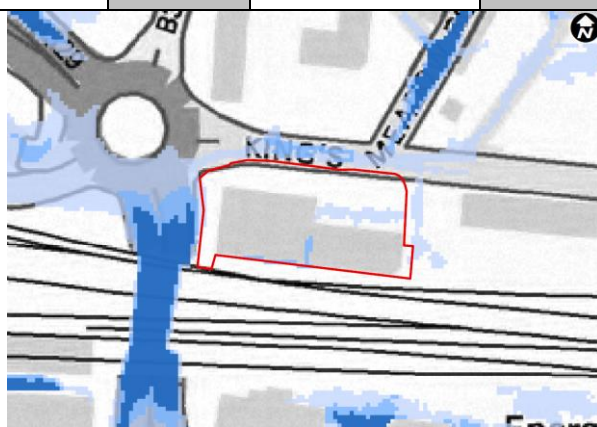


Reading Borough Council Level 2 Strategic Flood Risk Assessment

Planning Recommendations	<p>Spatial Planning</p> <p>The site lies within Flood Zone 2 'Medium Probability', affected by flooding from the River Thames in the 1 in 1000 annual probability flood event. Small areas of the site are shown to be impacted by the 1 in 100 annual probability +25% and +35% allowances for climate change flood events.</p> <p>A review of flood risk within the site has been carried out, and it is considered feasible to design the site in such a way that it remains safe throughout the lifetime of the development.</p> <p>It is essential that the following design recommendations are incorporated into the design process from the conceptual stage. A detailed site-based Flood Risk Assessment will be required as an integral part of the planning application stage, which should be carried out in accordance with Section 10.4 of the Level 1 SFRA.</p>
	<p>Design Recommendations</p> <ol style="list-style-type: none">1. Floor levels within the site should be situated a minimum of 300mm above the 1 in 100 annual probability plus allowance for climate change, in this instance +25%, assuming a 100 year lifetime for residential development;2. Flood storage should be analysed to show that the proposed building footprint of the development will not cause a detriment to the available storage during the 1 in 100 annual probability +25% climate change allowance flood event;3. Where appropriate, buildings should adopt resilient design techniques to minimise the damage and disruption sustained by businesses and/or residents following a flooding event. Further guidance can be found in BRE Digest DG523 'Flood Resilient Building', the Department for Communities and Local Government document 'Improving the Flood Performance of New Buildings – Flood Resilient Construction', and Section 12.4 of the Level 1 SFRA';4. Sustainable Drainage Systems (SuDS) should be incorporated into the site design, aiming to achieve greenfield runoff rates, if feasible, in accordance with Section 13.4 of the Level 1 SFRA. It is important that SUDS are designed with due consideration to soil and groundwater conditions. Infiltration techniques should be sought wherever possible, however are likely to be unsuitable in areas of shallow groundwater and/or impermeable soils. Further guidance on designing for groundwater is provided in Section 6.5 of the Level 1 SFRA. Buildings and landscaping should be designed within the site to avoid locking overland flow routes;5. Safe access is available in the current 1 in 100 annual probability flood event and would therefore meet the requirements of Section 3.4 of the L2 SFRA provided a 'Flood Management and Evacuation Plan' is prepared to consider the impacts in the climate change scenarios. Future tenants/residents within the site should be made aware of the potential risks of flooding, and should be actively encouraged to sign up to the Environment Agency's Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event;6. It is essential to ensure that all basement areas within flood affected areas of the site are watertight, and the entrance point is situated above the 1 in 100 annual probability +25% allowance for climate change flood level. Basements should not be used to provide habitable areas in locations classified at Flood Zone 2 'Medium Probability';7. Residual risk to the development should be investigated against the 1 in 100 annual probability +35% allowance for climate change flood event.



Reading Borough Council Level 2 Strategic Flood Risk Assessment

AB006 - Napier Road Junction (Local Plan ref: CR11h)																					
Grid Reference	SU 71830 73870			Post Code	RG1 8BN																
Topography				<p>Elevation</p> <table style="font-size: small; border: none;"> <tr> <td style="width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black;"></td> <td>40 - 41 mAOD</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: #3CB371; border: 1px solid black;"></td> <td>41 - 42 mAOD</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: #3CB371; border: 1px solid black;"></td> <td>42 - 43 mAOD</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: #3CB371; border: 1px solid black;"></td> <td>43 - 44 mAOD</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: #3CB371; border: 1px solid black;"></td> <td>44 - 45 mAOD</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: #3CB371; border: 1px solid black;"></td> <td>> 45 mAOD</td> </tr> <tr> <td style="width: 15px; height: 10px; background-color: #90EE90; border: 1px solid black;"></td> <td>39 - 40mAOD</td> </tr> </table> <p>The topography of the site is largely flat, ranging between approximately 37.5m AOD and 38.0m AOD.</p>					40 - 41 mAOD		41 - 42 mAOD		42 - 43 mAOD		43 - 44 mAOD		44 - 45 mAOD		> 45 mAOD		39 - 40mAOD
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	> 45 mAOD																				
	39 - 40mAOD																				
Flood Zone Map				<p>Legend</p> <ul style="list-style-type: none"> Site Boundary Flood Zone 2 Flood Zone 3 																	
Flood Zone 1	0%	Flood Zone 2	100%	Flood Zone 3a	0%	Flood Zone 3b	0%														
Surface Water				<p>Risk of Surface Water Flooding</p> <ul style="list-style-type: none"> — River Site Boundary High - 1 in 30 annual probability Medium - 1 in 100 annual probability Low - 1 in 1000 annual Probability Very Low - > 1 in 1000 annual probability 																	



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Development Proposal	200 - 300 dwellings and 2,000 - 3,000m ² retail or commercial use	Vulnerability Classification	Less Vulnerable, More Vulnerable
Applicable Climate Change Allowances	<p>The +25% and +35% peak river flow climate change allowances should therefore be used to assess a range of climate change scenarios, based on More Vulnerable proposed development (i.e. based on the highest vulnerability element proposed).</p> <p>The +25% allowance should be used to provide a benchmark flood level against which mitigation measures should be set, and the +35% allowance used to assess residual risk to the development.</p>		
Climate Change Extents			<p>Legend</p> <ul style="list-style-type: none"> — River Site Boundary 1 in 100 annual probability +25% Climate Change 1 in 100 annual probability +35% Climate Change
1 in 100 annual probability +25%	65%	1 in 100 annual probability +35%	80%
1 in 100 annual probability +70%	N/A		
Description of Flood Risk	<p>Flood Depth The site is unaffected in the present day 1 in 100 annual probability event. In the 1 in 1000 annual probability flood event, parts of the site experience maximum flood depths between 100mm and 400mm.</p> <p>Flood depths in the climate change scenarios are typically 100mm in the +25% scenario, and 200mm in the +35% scenario.</p>		
	<p>Flood Warning and Period of Inundation The River Thames is a large catchment with flooding typically the result of sustained regional-scale rainfall events. The response time – i.e. the period between the rainfall over the catchment and the rising river levels downstream – can be significant, and this ensures there is typically a significant period of advance warning (i.e. a period of days) before flooding occurs in the area.</p> <p>The EA issue flood warnings for the area via their 'Flood Information Service' and considerable advance warning of a flood event can typically be provided to allow the Council, emergency services residents and businesses to take appropriate action.</p>		
	<p>Velocity of Flood Waters The site is occupied by buildings in an urbanised area, a significant distance from the main river, and is impacted in the climate change allowance scenarios. When flooding does occur, the rate of rise and fall in water level is slow and velocities will correspondingly be slow, with the direction of flow from west to east (subject to further interrogation of the EA modelling).</p>		



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Description of Flood Risk	<p>Flood Defences While not a 'formal' flood defence, the EA asset register does identify that the River Thames, located approximately 0.14km north of the site, includes bank protection on its right bank with a design standard of 1 in 2 years. The condition is currently at a combination of 2 (good) and 4 (poor), on a scale of 1 (very good) to 5 (very poor).</p> <p>Historic Records and Other Sources of Flooding The Level 1 SFRA shows that the site is not noted to have been impacted by historic river flooding, or by flooding from other sources. Flood information has been provided for Forbury Road, located west of the site, and is shown to have previously been impacted by flooding. Site drainage must be considered accordingly and must be assessed in accordance with Sections 13.4 and 13.5 of the Level 1 SFRA.</p> <p>The susceptibility to groundwater flooding is '>75%'. The Thames Water DG5 information indicates that the site is within a postcode (RG1 8) that has 21-50 recorded sewer flood incidents, both internal and external.</p> <p>The site is not located within a maximum modelled breach extent of reservoir flooding and is therefore at negligible risk of flooding in the event of a reservoir breach.</p> <p>Overview of Flood Risk A summary of the flood risk to the site is provided below:</p> <ul style="list-style-type: none"> The site is classified as Flood Zone 2 'Medium Probability' (between 1 in 100 and 1 in 1000 annual probability of river flooding) and is not noted to have been impacted by historic flooding; The site is unaffected in the present day 1 in 100 annual probability event. The maximum flood depth during the 1 in 1000 annual probability event is typically between 100mm and 400mm; The majority of the site is impacted by the 1 in 100 annual probability +25% allowance for climate change flood event with general depths between 100mm and 200mm; Maximum flood depths for the 1 in 100 annual probability +35% climate change allowance typically vary between 200mm and 300mm; The site is largely classified as at Very Low risk of surface water flooding, with minor, localised areas between Low and Medium risk; The site is at negligible risk of flooding in the event of a reservoir breach; The pedestrian access route via Napier Road is impacted by the 1 in 100 annual probability +25% climate change scenario. Further analysis of flood depths/flood hazard is required and development may be reliant on advance warning measures and provision of a Flood Risk Management/Evacuation Plan. <p>The site is shown to be at medium risk of fluvial flooding, at a range of very low to medium risk of surface water flooding and may be susceptible to groundwater and sewer flooding. The site is therefore potentially at risk of flooding from a number of sources but it is considered feasible that the site can be developed safely and in accordance with the requirements of the NPPF, to mitigate the potential risks of these sources of flooding.</p> <p>It is important that the design process considers the risk of flooding at the earliest conceptual stage, encompassing measures that will ensure the safety of future tenants/residents during a flood event.</p> <p>A number of important design recommendations are set out below.</p>
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Reading Borough Council Level 2 Strategic Flood Risk Assessment

Planning Recommendations	<p>Spatial Planning</p> <p>The site lies within Flood Zone 2 'Medium Probability', affected by flooding from the River Thames in the 1 in 1000 annual probability flood event. The majority of the site is shown to be impacted by the 1 in 100 annual probability +25% and +35% allowances for climate change flood events.</p> <p>A review of flood risk within the site has been carried out, and it is considered feasible to design the site in such a way that it remains safe throughout the lifetime of the development.</p> <p>It is essential that the following design recommendations are incorporated into the design process from the conceptual stage. A detailed site-based Flood Risk Assessment will be required as an integral part of the planning application stage, which should be carried out in accordance with Section 10.4 of the Level 1 SFRA.</p>
	<p>Design Recommendations</p> <ol style="list-style-type: none">1. Floor levels within the site should be situated a minimum of 300mm above the 1 in 100 annual probability plus allowance for climate change, in this instance +25%, assuming a 100 year lifetime for residential development;2. Flood storage should be analysed to show that the proposed building footprint of the development will not cause a detriment to the available storage during the 1 in 100 annual probability +25% climate change allowance flood event. The existing site contains a significant existing building footprint – however, a significant proportion of this is currently a floodable undercroft parking area;3. Where appropriate, buildings should adopt resilient design techniques to minimise the damage and disruption sustained by businesses and/or residents following a flooding event. Further guidance can be found in BRE Digest DG523 'Flood Resilient Building', the Department for Communities and Local Government document 'Improving the Flood Performance of New Buildings – Flood Resilient Construction', and Section 12.4 of the Level 1 SFRA';4. Sustainable Drainage Systems (SuDS) should be incorporated into the site design, aiming to achieve greenfield runoff rates, if feasible, in accordance with Section 13.4 of the Level 1 SFRA. It is important that SUDS are designed with due consideration to soil and groundwater conditions. Infiltration techniques should be sought wherever possible, however are likely to be unsuitable in areas of shallow groundwater and/or impermeable soils. Further guidance on designing for groundwater is provided in Section 6.5 of the Level 1 SFRA. Buildings and landscaping should be designed within the site to avoid locking overland flow routes;5. Safe access is available in the current 1 in 100 annual probability flood event and would therefore meet the requirements of Section 3.4 of the L2 SFRA provided a 'Flood Management and Evacuation Plan' is prepared to consider the impacts in the climate change scenarios. Future tenants/residents within the site should be made aware of the potential risks of flooding, and should be actively encouraged to sign up to the Environment Agency's Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event;6. It is essential to ensure that all basement areas within flood affected areas of the site are watertight, and the entrance point is situated above the 1 in 100 annual probability +25% allowance for climate change flood level. Basements should not be used to provide habitable areas in locations classified at Flood Zone 2 'Medium Probability';

Reading Borough Council Level 2 Strategic Flood Risk Assessment

7. Residual risk to the development should be investigated against the 1 in 100 annual probability +35% allowance for climate change flood event.

Reading Borough Council Level 2 Strategic Flood Risk Assessment

AB007 - Napier Court (Local Plan ref: CR11i)

Grid Reference	SU 72030 73860		Post Code	RG1 8BW																										
Topography				<p>Elevation</p> <table style="font-size: small;"> <tr> <td style="color: red;">■</td><td>< 35 mAOD</td> <td style="color: green;">■</td><td>41 - 42 mAOD</td> </tr> <tr> <td style="color: orange;">■</td><td>35 - 36 mAOD</td> <td style="color: teal;">■</td><td>42 - 43 mAOD</td> </tr> <tr> <td style="color: yellow;">■</td><td>36 - 37 mAOD</td> <td style="color: blue;">■</td><td>43 - 44 mAOD</td> </tr> <tr> <td style="color: lightgreen;">■</td><td>37 - 38 mAOD</td> <td style="color: darkblue;">■</td><td>44 - 45 mAOD</td> </tr> <tr> <td style="color: limegreen;">■</td><td>38 - 39 mAOD</td> <td style="color: navy;">■</td><td>> 45 mAOD</td> </tr> <tr> <td style="color: yellowgreen;">■</td><td>39 - 40 mAOD</td> <td></td><td></td> </tr> </table> <p>The topography of the site is largely flat, ranging between approximately 37.5m AOD and 38.0m AOD.</p>			■	< 35 mAOD	■	41 - 42 mAOD	■	35 - 36 mAOD	■	42 - 43 mAOD	■	36 - 37 mAOD	■	43 - 44 mAOD	■	37 - 38 mAOD	■	44 - 45 mAOD	■	38 - 39 mAOD	■	> 45 mAOD	■	39 - 40 mAOD		
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■	39 - 40 mAOD																													
Flood Zone Map				<p>Legend</p> <ul style="list-style-type: none"> — River Site Boundary Flood Zone 2 Flood Zone 3 Flood Zone 3b 																										
Flood Zone 1	30%	Flood Zone 2	70%	Flood Zone 3a	0%	Flood Zone 3b	0%																							
Surface Water				<p>Risk of Surface Water Flooding</p> <ul style="list-style-type: none"> — River Site Boundary High - 1 in 30 annual probability Medium - 1 in 100 annual probability Low - 1 in 1000 annual Probability Very Low - > 1 in 1000 annual probability 																										



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Development Proposal	180 - 260 dwellings	Vulnerability Classification	More Vulnerable
Applicable Climate Change Allowances	<p>The site is located within Flood Zone 2 'Medium Probability', and the proposed development is classified as More Vulnerable (the extent of Flood Zone 1 'Low Probability' is largely limited to the existing building footprint).</p> <p>The +25% and +35% peak river flow climate change allowances should therefore be used to assess a range of climate change scenarios. The +25% allowance should be used to provide a benchmark flood level against which mitigation measures should be set, and the +35% allowance used to assess residual risk to the development.</p>		
Climate Change Extents			<p>Legend</p> <ul style="list-style-type: none"> — River Site Boundary 1 in 100 annual probability +25% Climate Change 1 in 100 annual probability +35% Climate Change
1 in 100 annual probability +25%	10%	1 in 100 annual probability +35%	30%
1 in 100 annual probability +70%	N/A		
Description of Flood Risk	<p>Flood Depth</p> <p>The site is unaffected in the present day 1 in 100 annual probability event. The flood depths in the 1 in 1000 annual probability flood event typically vary between 100mm and 300mm over the site.</p> <p>Flood depths in the climate change scenarios are typically 100mm in the +25% scenario, and 200mm in the +35% scenario.</p>		
	<p>Flood Warning and Period of Inundation</p> <p>The River Thames is a large catchment with flooding typically the result of sustained regional-scale rainfall events. The response time – i.e. the period between the rainfall over the catchment and the rising river levels downstream – can be significant, and this ensures there is typically a significant period of advance warning (i.e. a period of days) before flooding occurs in the area.</p> <p>The EA issue flood warnings for the area via their 'Flood Information Service' and considerable advance warning of a flood event can typically be provided to allow the Council, emergency services residents and businesses to take appropriate action.</p>		
	<p>Velocity of Flood Waters</p> <p>The site is occupied by buildings in an urbanised area, a significant distance from the main river, and is impacted in the climate change allowance scenarios. When flooding does occur, the rate of rise and fall in water level is slow and velocities will correspondingly be slow, with the direction of flow from west to east (subject to further interrogation of the EA modelling).</p>		

Reading Borough Council

Level 2 Strategic Flood Risk Assessment

Description of Flood Risk	<p>Flood Defences While not a 'formal' flood defence, the EA asset register does identify that the River Thames, located approximately 0.14km north of the site, includes bank protection on its right bank with a design standard of 1 in 5 years. The condition is currently at 2 (good), on a scale of 1 (very good) to 5 (very poor).</p> <p>Historic Records and Other Sources of Flooding The Level 1 SFRA indicates that the site has not been subject to historic river flooding, and is not noted to have been impacted by flood events from other sources. Site drainage must be considered accordingly and must be assessed in accordance with Sections 13.4 and 13.5 of the Level 1 SFRA.</p> <p>The susceptibility to groundwater flooding is '>75%'. The Thames Water DG5 information indicates that the site is within a postcode (RG1 8) that has 21-50 recorded sewer flood incidents, both internal and external.</p> <p>The site is not located within a maximum modelled breach extent of reservoir flooding and is therefore at negligible risk of flooding in the event of a reservoir breach.</p> <p>Overview of Flood Risk A summary of the flood risk to the site is provided below:</p> <ul style="list-style-type: none"> The site is classified as Flood Zone 2 'Medium Probability' (between 1 in 100 and 1 in 1000 annual probability of river flooding) and has not been subject to historic river flooding; The maximum flood depth during the 1 in 1000 annual probability event is typically between 100mm and 300mm; A minor portion of the site is impacted by the 1 in 100 annual probability +25% allowance for climate change flood event with general depths between 10mm and 100mm; Maximum flood depths for the 1 in 100 annual probability +35% climate change allowance typically vary between 10mm and 200mm; The site is largely classified as at Very Low risk of surface water flooding, with minor, localised areas at Low risk; The site is at negligible risk of flooding in the event of a reservoir breach; The pedestrian access route via Napier Road is partly impacted by the 1 in 100 annual probability +25% climate change allowance scenario. Further analysis of flood depths/flood hazard is required and development may be reliant on advance warning measures and provision of a Flood Risk Management /Evacuation Plan. <p>The site is shown to be at medium risk of fluvial flooding, at a range of Very Low to Low risk of surface water flooding and may be susceptible to groundwater and sewer flooding. The site is therefore potentially at risk of flooding from a number of sources but it is considered feasible that the site can be developed safely and in accordance with the requirements of the NPPF, to mitigate the potential risks of these sources of flooding.</p> <p>It is important that the design process considers the risk of flooding at the earliest conceptual stage, encompassing measures that will ensure the safety of future tenants/residents during a flood event.</p> <p>A number of important design recommendations are set out below.</p>
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Reading Borough Council Level 2 Strategic Flood Risk Assessment

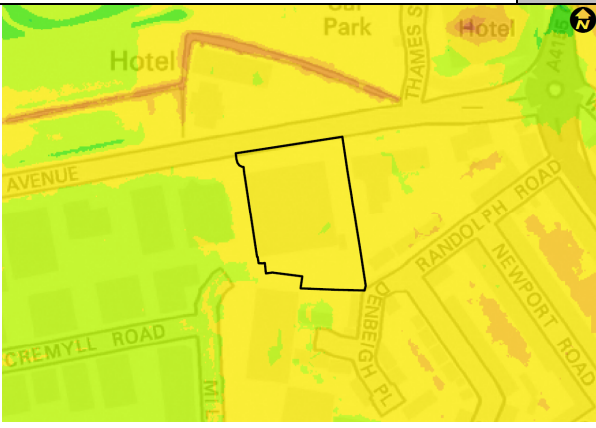
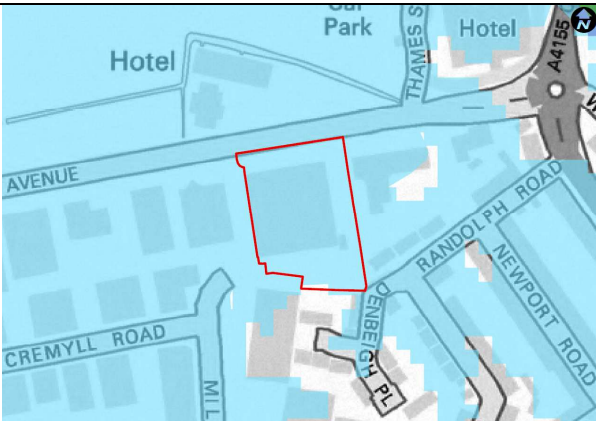

Planning Recommendations	<p>Spatial Planning</p> <p>The site lies within Flood Zone 2 'Medium Probability', affected by flooding from the River Thames in the 1 in 1000 annual probability flood event. A small proportion of the site is shown to be impacted by the 1 in 100 annual probability +25% and +35% allowances for climate change flood events.</p> <p>A review of flood risk within the site has been carried out, and it is considered feasible to design the site in such a way that it remains safe throughout the lifetime of the development.</p> <p>It is essential that the following design recommendations are incorporated into the design process from the conceptual stage. A detailed site-based Flood Risk Assessment will be required as an integral part of the planning application stage, which should be carried out in accordance with Section 10.4 of the Level 1 SFRA.</p>
	<p>Design Recommendations</p> <ol style="list-style-type: none">1. Floor levels within the site should be situated a minimum of 300mm above the 1 in 100 annual probability plus allowance for climate change, in this instance +25%, assuming a 100 year lifetime for the residential development;2. Flood storage should be analysed to show that the proposed building footprint of the development will not cause a detriment to the available storage during the 1 in 100 annual probability +25% climate change allowance flood event. The presence of a significant existing building footprint suggests that floodplain storage capacity could be improved through effective design measures;3. Where appropriate, buildings should adopt resilient design techniques to minimise the damage and disruption sustained by businesses and/or residents following a flooding event. Further guidance can be found in BRE Digest DG523 'Flood Resilient Building', the Department for Communities and Local Government document 'Improving the Flood Performance of New Buildings – Flood Resilient Construction', and Section 12.4 of the Level 1 SFRA';4. Sustainable Drainage Systems (SuDS) should be incorporated into the site design, aiming to achieve greenfield runoff rates, if feasible, in accordance with Section 13.4 of the Level 1 SFRA. It is important that SUDS are designed with due consideration to soil and groundwater conditions. Infiltration techniques should be sought wherever possible, however are likely to be unsuitable in areas of shallow groundwater and/or impermeable soils. Further guidance on designing for groundwater is provided in Section 6.5 of the Level 1 SFRA. Buildings and landscaping should be designed within the site to avoid locking overland flow routes;5. Safe access is available in the current 1 in 100 annual probability flood event and would therefore meet the requirements of Section 3.4 of the L2 SFRA provided a 'Flood Management and Evacuation Plan' is prepared to consider the impacts in the climate change scenarios. Future tenants/residents within the site should be made aware of the potential risks of flooding, and should be actively encouraged to sign up to the Environment Agency's Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event;6. It is essential to ensure that all basement areas within flood affected areas of the site are watertight, and the entrance point is situated above the 1 in 100 annual probability +25% allowance for climate change flood level. Basements should not be used to provide habitable areas in locations classified at Flood Zone 2 'Medium Probability';

Reading Borough Council Level 2 Strategic Flood Risk Assessment

7. Residual risk to the development should be investigated against the 1 in 100 annual probability +35% allowance for climate change flood event.

Reading Borough Council Level 2 Strategic Flood Risk Assessment

AB073 - 28-30 Richfield Avenue (Local Plan ref: WR3c)

Grid Reference	SU 70940 470940	Post Code	RG1 8EQ																								
Topography			<p>Elevation</p> <table style="font-size: small;"> <tr> <td style="color: red;">■</td><td>< 35 mAOD</td> <td style="color: green;">■</td><td>41 - 42 mAOD</td> </tr> <tr> <td style="color: orange;">■</td><td>35 - 36 mAOD</td> <td style="color: teal;">■</td><td>42 - 43 mAOD</td> </tr> <tr> <td style="color: yellow;">■</td><td>36 - 37 mAOD</td> <td style="color: blue;">■</td><td>43 - 44 mAOD</td> </tr> <tr> <td style="color: lightgreen;">■</td><td>37 - 38 mAOD</td> <td style="color: darkblue;">■</td><td>44 - 45 mAOD</td> </tr> <tr> <td style="color: limegreen;">■</td><td>38 - 39 mAOD</td> <td style="color: navy;">■</td><td>> 45 mAOD</td> </tr> <tr> <td style="color: yellowgreen;">■</td><td>39 - 40 mAOD</td> <td></td><td></td> </tr> </table> <p>The topography of the site is largely flat, ranging between approximately 38.5m AOD and 38.8m AOD.</p>	■	< 35 mAOD	■	41 - 42 mAOD	■	35 - 36 mAOD	■	42 - 43 mAOD	■	36 - 37 mAOD	■	43 - 44 mAOD	■	37 - 38 mAOD	■	44 - 45 mAOD	■	38 - 39 mAOD	■	> 45 mAOD	■	39 - 40 mAOD		
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Flood Zone Map			<p>Legend</p> <ul style="list-style-type: none"> — River Site Boundary Flood Zone 2 Flood Zone 3 Flood Zone 3b 																								
Flood Zone 1	0%	Flood Zone 2	100%																								
Flood Zone 3a	0%	Flood Zone 3b	0%																								
Surface Water			<p>Risk of Surface Water Flooding</p> <ul style="list-style-type: none"> — River Site Boundary High - 1 in 30 annual probability Medium - 1 in 100 annual probability Low - 1 in 1000 annual Probability Very Low - > 1 in 1000 annual probability 																								



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Development Proposal	50 - 80 dwellings		Vulnerability Classification	More Vulnerable	
Applicable Climate Change Allowances	The +25% and +35% peak river flow climate change allowances should therefore be used to assess a range of climate change scenarios. The +25% allowance should be used to provide a benchmark flood level against which mitigation measures should be set, and the +35% allowance used to assess residual risk to the development.				
Climate Change Extents				Legend — River Site Boundary 1 in 100 annual probability +25% Climate Change 1 in 100 annual probability +35% Climate Change	
1 in 100 annual probability +25%	0%	1 in 100 annual probability +35%	40%	1 in 100 annual probability +70%	N/A
Description of Flood Risk	Flood Depth The flood depths in the 1 in 1000 annual probability flood event vary from 100mm to 200mm over the extent of the site. Flood depths in the climate change scenarios are typically 100mm in the +35% scenario (the site is unaffected in the +25% scenario).				
	Flood Warning and Period of Inundation The River Thames is a large catchment with flooding typically the result of sustained regional-scale rainfall events. The response time – i.e. the period between the rainfall over the catchment and the rising river levels downstream – can be significant, and this ensures there is typically a significant period of advance warning (i.e. a period of days) before flooding occurs in the area. The EA issue flood warnings for the area via their ‘Flood Information Service’ and considerable advance warning of a flood event can typically be provided to allow the Council, emergency services residents and businesses to take appropriate action.				
	Velocity of Flood Waters The site is occupied by buildings in an urbanised area, a significant distance from the main river, and is impacted in the higher central climate change allowance scenario. When flooding does occur, the rate of rise and fall in water level is slow and velocities will correspondingly be slow, with the direction of flow from west to east (subject to further interrogation of the EA modelling).				

Reading Borough Council

Level 2 Strategic Flood Risk Assessment

Description of Flood Risk	<p>Flood Defences While not a 'formal' flood defence, the EA asset register does identify that the River Thames, located approximately 0.3km east of the site, includes bank protection on its right bank with a design standard of 1 in 5 years. The condition is currently at 4 (poor), on a scale of 1 (very good) to 5 (very poor).</p> <hr/> <p>Historic Records and Other Sources of Flooding</p> <p>The SFRA indicates that the site has been subject to historic river flooding in 1947 and 1977, but is not noted to have been impacted by flood events from other sources.</p> <p>Some external areas are noted to be at low risk of surface water flooding, which, if surface water drainage strategy is not sufficiently incorporated into proposed development design, could result in ponding of water following heavy rainfall events. Site drainage must therefore be considered accordingly and must be assessed in accordance with Sections 13.4 and 13.5 of the Level 1 SFRA.</p> <p>The susceptibility to groundwater flooding varies between '25% to 50%'. The Thames Water DG5 information indicates that the site is within a postcode (RG1 8) that has 21-50 recorded sewer flood incidents, both internal and external.</p> <p>The site is not located within a maximum modelled breach extent of reservoir flooding and is therefore at negligible risk of flooding in the event of a reservoir breach.</p> <hr/> <p>Overview of Flood Risk A summary of the flood risk to the site is provided below:</p> <ul style="list-style-type: none"> The site is classified as Flood Zone 2 'Medium Probability' (between 1 in 100 and 1 in 1000 annual probability of river flooding), and has been subject to historic river flooding in 1947 and 1977; The maximum flood depth during the 1 in 1000 annual probability event is typically between 100mm and 200mm; The site is not impacted by the 1 in 100 annual probability +25% allowance for climate change flood event; Parts of the site are impacted in the 1 in 100 annual probability +35% climate change allowance event with maximum flood depths of approximately 100mm; The site is largely classified as at Very Low risk of surface water flooding, with small areas surrounding the existing building classified as Low risk; The site is at negligible risk of flooding in the event of a reservoir breach; Continuous safe access is currently available during the 1 in 100 annual probability event via Richfield Avenue to the north. The safe route remains available in the 1 in 100 annual probability +25% allowance for climate change flood event and only becomes affected in the +35% scenario. <p>The site is shown to be at medium risk of fluvial flooding, at a range of very low to low risk of surface water flooding and may be susceptible to groundwater and sewer flooding. The site is therefore potentially at risk of flooding from a number of sources; however, it is considered feasible that the site can be developed safely and in accordance with the requirements of the NPPF, to mitigate the potential risks of these sources of flooding.</p> <p>It is important that the design process considers the risk of flooding at the earliest conceptual stage, encompassing measures that will ensure the safety of future tenants/residents during a flood event.</p>
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Reading Borough Council

Level 2 Strategic Flood Risk Assessment

	A number of important design recommendations are set out below.
Planning Recommendations	<p>Spatial Planning</p> <p>The site lies within Flood Zone 2 ‘Medium Probability’, affected by flooding from the River Thames in the 1 in 1000 annual probability flood event. The site is not shown to be impacted by the 1 in 100 annual probability +25% allowance for climate change event, and approximately half of the site is shown to be impacted by the +35% allowance for climate change flood event.</p> <p>A review of flood risk within the site has been carried out, and it is considered feasible to design the site in such a way that it remains safe throughout the lifetime of the development. It is essential that the following design recommendations are incorporated into the design process from the conceptual stage. A detailed site-based Flood Risk Assessment will be required as an integral part of the planning application stage, which should be carried out in accordance with Section 10.4 of the Level 1 SFRA.</p>
	<p>Design Recommendations</p> <ol style="list-style-type: none"> 1. Floor levels within the site should be situated a minimum of 300mm above the 1 in 100 annual probability plus allowance for climate change, in this instance +25%, assuming a 100 year lifetime for residential development. The site is not shown to be impacted by this event, and therefore floor levels should be raised an appropriate freeboard above the external general ground level; 2. The site is not impacted by the 1 in 100 annual probability plus 25% climate change allowance flood event, therefore the flood storage during this design event is not expected to be impacted through development proposals. The presence of a significant existing building footprint also suggests that floodplain storage capacity in more extreme events could be improved through effective design measures; 3. Where appropriate, buildings should adopt resilient design techniques to minimise the damage and disruption sustained by businesses and/or residents following a flooding event. Further guidance can be found in BRE Digest DG523 ‘Flood Resilient Building’, the Department for Communities and Local Government document ‘Improving the Flood Performance of New Buildings – Flood Resilient Construction’, and Section 12.4 of the Level 1 SFRA’; 4. Sustainable Drainage Systems (SuDS) should be incorporated into the site design, aiming to achieve greenfield runoff rates, if feasible, in accordance with Section 13.4 of the Level 1 SFRA. It is important that SUDS are designed with due consideration to soil and groundwater conditions. Infiltration techniques should be sought wherever possible, however are likely to be unsuitable in areas of shallow groundwater and/or impermeable soils. Further guidance on designing for groundwater is provided in Section 6.5 of the Level 1 SFRA. Buildings and landscaping should be designed within the site to avoid locking overland flow routes; 5. Safe access would be available in the 1 in 100 annual probability +25% climate change allowance scenario and is in accordance with the requirements in Section 3.4 of the L2 SFRA. Future tenants/residents within the site should be made aware of the potential risks of flooding, and should be actively encouraged to sign up to the Environment Agency’s Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event; 6. It is essential to ensure that all basement areas within flood affected areas of the site are watertight, and the entrance point is situated an appropriate freeboard above the general

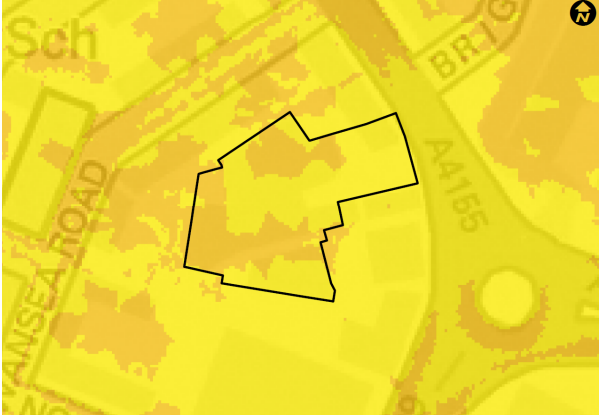

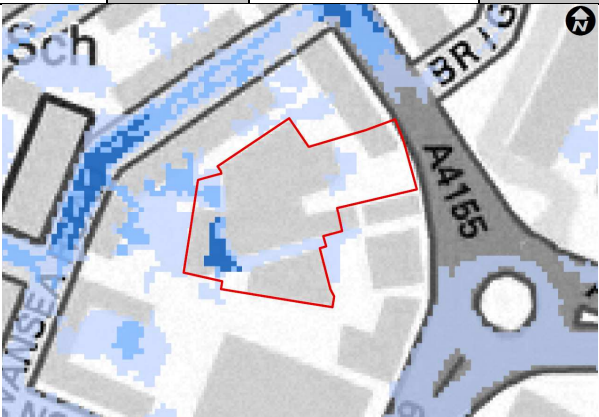


Reading Borough Council Level 2 Strategic Flood Risk Assessment

ground level. Basement dwellings in Flood Zone 2 'Medium Probability' are considered appropriate subject to the Exception Test.

7. Residual risk to the development should be investigated against the 1 in 100 annual probability +35% allowance for climate change flood event.

Reading Borough Council Level 2 Strategic Flood Risk Assessment

AB075 - 115-117 Caversham Road (Local Plan ref: CR11f - part)																															
Grid Reference	SU 71260 74180			Post Code	RG1 8AR																										
Topography				<p>Elevation</p> <table style="font-size: small;"> <tr> <td style="color: red;">■</td><td>< 35 mAOD</td> <td style="color: green;">■</td><td>40 - 41 mAOD</td> </tr> <tr> <td style="color: orange;">■</td><td>35 - 36 mAOD</td> <td style="color: teal;">■</td><td>41 - 42 mAOD</td> </tr> <tr> <td style="color: yellow;">■</td><td>36 - 37 mAOD</td> <td style="color: blue;">■</td><td>42 - 43 mAOD</td> </tr> <tr> <td style="color: lightyellow;">■</td><td>37 - 38 mAOD</td> <td style="color: darkblue;">■</td><td>43 - 44 mAOD</td> </tr> <tr> <td style="color: yellowgreen;">■</td><td>38 - 39 mAOD</td> <td style="color: navy;">■</td><td>44 - 45 mAOD</td> </tr> <tr> <td style="color: limegreen;">■</td><td>39 - 40 mAOD</td> <td></td><td>> 45 mAOD</td> </tr> </table> <p>The topography of the site is largely flat, ranging between approximately 37.8m AOD and 38.5m AOD.</p>				■	< 35 mAOD	■	40 - 41 mAOD	■	35 - 36 mAOD	■	41 - 42 mAOD	■	36 - 37 mAOD	■	42 - 43 mAOD	■	37 - 38 mAOD	■	43 - 44 mAOD	■	38 - 39 mAOD	■	44 - 45 mAOD	■	39 - 40 mAOD		> 45 mAOD
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■	36 - 37 mAOD	■	42 - 43 mAOD																												
■	37 - 38 mAOD	■	43 - 44 mAOD																												
■	38 - 39 mAOD	■	44 - 45 mAOD																												
■	39 - 40 mAOD		> 45 mAOD																												
Flood Zone Map				<p>Legend</p> <ul style="list-style-type: none"> Site Boundary Flood Zone 2 Flood Zone 3 																											
Flood Zone 1	0%	Flood Zone 2	100%	Flood Zone 3a	0%	Flood Zone 3b	0%																								
Surface Water				<p>Risk of Surface Water Flooding</p> <ul style="list-style-type: none"> — River Site Boundary High - 1 in 30 annual probability Medium - 1 in 100 annual probability Low - 1 in 1000 annual Probability Very Low - > 1 in 1000 annual probability 																											



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Development Proposal	75-115 dwellings (wider site includes AB081)	Vulnerability Classification	More Vulnerable		
Applicable Climate Change Allowances	The +25% and +35% peak river flow climate change allowances should therefore be used to assess a range of climate change scenarios. The +25% allowance should be used to provide a benchmark flood level against which mitigation measures should be set, and the +35% allowance used to assess residual risk to the development.				
Climate Change Extents			Legend — River □ Site Boundary 1 in 100 annual probability +25% Climate Change 1 in 100 annual probability +35% Climate Change		
1 in 100 annual probability +25%	70%	1 in 100 annual probability +35%	85%	1 in 100 annual probability +70%	N/A
Description of Flood Risk	Flood Depth The flood depths in the 1 in 1000 annual probability flood event typically vary from 100mm to 500mm over the site. Flood depths in the climate change scenarios are typically 300mm in the +25% scenario, and 400mm in the +35% scenario.				
	Flood Warning and Period of Inundation The River Thames is a large catchment with flooding typically the result of sustained regional-scale rainfall events. The response time – i.e. the period between the rainfall over the catchment and the rising river levels downstream – can be significant, and this ensures there is typically a significant period of advance warning (i.e. a period of days) before flooding occurs in the area. The EA issue flood warnings for the area via their ‘Flood Information Service’ and considerable advance warning of a flood event can typically be provided to allow the Council, emergency services residents and businesses to take appropriate action.				
	Velocity of Flood Waters The site is occupied by buildings in an urbanised area, a significant distance from the main river, and is impacted in the climate change allowance scenarios. When flooding does occur, the rate of rise and fall in water level is slow and velocities will correspondingly be slow, with the direction of flow from west to east (subject to further interrogation of the EA modelling).				



Reading Borough Council

Level 2 Strategic Flood Risk Assessment

Description of Flood Risk	<p>Flood Defences While not a 'formal' flood defence, the EA asset register does identify that the River Thames, located approximately 0.25km north east of the site, includes bank protection on its right bank with a design standard of 1 in 5 years. The condition is currently at 4 (poor), on a scale of 1 (very good) to 5 (very poor).</p> <p>Historic Records and Other Sources of Flooding The SFRA data indicates that the site has not been subject to historic river flooding, but the site, or an area in the close vicinity of the site, was impacted by groundwater flooding during the 2000-01 and 2002-03 events. It is not noted to have been impacted by flood events from other sources.</p> <p>External areas are noted to be impacted by surface water flooding, which, if surface water drainage strategy is not sufficiently incorporated into proposed development design, could result in ponding of water following heavy rainfall events. Site drainage must therefore be considered accordingly, and must be assessed in accordance with Sections 13.4 and 13.5 of the Level 1 SFRA.</p> <p>The susceptibility to groundwater flooding varies between '25% to 50%'. The Thames Water DG5 information indicates that the site is within a postcode (RG1 8) that has 21-50 recorded sewer flood incidents, both internal and external.</p> <p>The site is not located within a maximum modelled breach extent of reservoir flooding and is therefore at negligible risk of flooding in the event of a reservoir breach.</p> <p>Overview of Flood Risk A summary of the flood risk to the site is provided below:</p> <ul style="list-style-type: none"> The site is classified as Flood Zone 2 'Medium Probability' (between 1 in 100 and 1 in 1000 annual probability of river flooding) and has not been subject to historic river flooding; The maximum flood depth during the 1 in 1000 annual probability event is typically between 100mm and 500mm; The majority of the site is impacted by the 1 in 100 annual probability +25% allowance for climate change flood event with general depths between 100mm and 300mm; Maximum flood depths for the 1 in 100 annual probability +35% climate change allowance typically vary between 100mm and 400mm; The site is mainly classified as at Very Low risk of surface water flooding, with localised areas between Low and High risk; The site is at negligible risk of flooding in the event of a reservoir breach; Continuous safe access is currently available during the 1 in 100 annual probability event via Vastern Road. The access route via Caversham Road/Vastern Road is partly impacted by the 1 in 100 annual probability +25% climate change allowance scenario. Development would be reliant on advance warning measures and the suitability of a Flood Risk Management/Evacuation Plan should be considered. <p>The site is shown to be at medium risk of fluvial flooding, at a range of very low to high risk of surface water flooding and may be susceptible to groundwater and sewer flooding. The site is therefore potentially at risk of flooding from a number of sources. Subject to further analysis of the safe access arrangements, it is considered feasible that the site can be developed safely and in accordance with the requirements of the NPPF, to mitigate the potential risks of these sources of flooding.</p>
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Reading Borough Council

Level 2 Strategic Flood Risk Assessment

	<p>It is important that the design process considers the risk of flooding at the earliest conceptual stage, encompassing measures that will ensure the safety of future tenants/residents during a flood event.</p> <p>A number of important design recommendations are set out below.</p>
Planning Recommendations	<p>Spatial Planning</p> <p>The site lies within Flood Zone 2 ‘Medium Probability’, affected by flooding from the River Thames in the 1 in 1000 annual probability flood event. The majority of the site is shown to be impacted by the 1 in 100 annual probability +25% and +35% allowances for climate change flood events.</p> <p>A review of flood risk within the site has been carried out, and it is considered feasible to design the site in such a way that it remains safe throughout the lifetime of the development. It is essential that the following design recommendations are incorporated into the design process from the conceptual stage. A detailed site-based Flood Risk Assessment will be required as an integral part of the planning application stage, which should be carried out in accordance with Section 10.4 of the Level 1 SFRA.</p>
	<p>Design Recommendations</p> <ol style="list-style-type: none"> 1. Floor levels within the site should be situated a minimum of 300mm above the 1 in 100 annual probability plus allowance for climate change, in this instance +25%, assuming a 100 year lifetime for residential development; 2. Flood storage should be analysed to show that the proposed building footprint of the development will not cause a detriment to the available storage during the 1 in 100 annual probability +25% climate change allowance flood event. The presence of a significant existing building footprint suggests that floodplain storage capacity could be improved through effective design measures; 3. Where appropriate, buildings should adopt resilient design techniques to minimise the damage and disruption sustained by residents following a flooding event. Further guidance can be found in BRE Digest DG523 ‘Flood Resilient Building’, the Department for Communities and Local Government document ‘Improving the Flood Performance of New Buildings – Flood Resilient Construction’, and Section 12.4 of the Level 1 SFRA’; 4. Sustainable Drainage Systems (SuDS) should be incorporated into the site design, aiming to achieve greenfield runoff rates, if feasible, in accordance with Section 13.4 of the Level 1 SFRA. It is important that SUDS are designed with due consideration to soil and groundwater conditions. Infiltration techniques should be sought wherever possible, however are likely to be unsuitable in areas of shallow groundwater and/or impermeable soils. Further guidance on designing for groundwater is provided in Section 6.5 of the Level 1 SFRA. Buildings and landscaping should be designed within the site to avoid locking overland flow routes; 5. Safe access would be available in the current 1 in 100 annual probability flood event. The impacts on the route should be assessed for the 1 in 100 annual probability +25% climate change allowance and a Flood Management and Evacuation Plan’ should be prepared to ensure the development is in accordance with the requirements in Section 3.4 of the L2 SFRA. Future tenants/residents within the site should be made aware of the potential risks of flooding, and should be actively encouraged to sign up to the Environment Agency’s Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event; 6. It is essential to ensure that all basement areas within flood affected areas of the site are watertight, and the entrance point is situated above the 1 in 100 annual probability +25%



Reading Borough Council Level 2 Strategic Flood Risk Assessment

allowance for climate change flood level. Basement dwellings in Flood Zone 2 'Medium Probability' are considered appropriate subject to the Exception Test;

7. Residual risk to the development should be investigated against the 1 in 100 annual probability +35% allowance for climate change flood event.


Reading Borough Council Level 2 Strategic Flood Risk Assessment

AB081 - Shurgard Self Storage, 75-77 Caversham Road (Local Plan ref: CR11f - part)

Grid Reference	SU 71240 74120			Post Code	RG1 8AN																										
Topography					<p>Elevation</p> <table style="font-size: small;"> <tr> <td style="color: red;">■</td><td>< 35 mAOD</td> <td style="color: green;">■</td><td>40 - 41 mAOD</td> </tr> <tr> <td style="color: orange;">■</td><td>35 - 36 mAOD</td> <td style="color: teal;">■</td><td>41 - 42 mAOD</td> </tr> <tr> <td style="color: yellow;">■</td><td>36 - 37 mAOD</td> <td style="color: blue;">■</td><td>42 - 43 mAOD</td> </tr> <tr> <td style="color: lightyellow;">■</td><td>37 - 38 mAOD</td> <td style="color: darkblue;">■</td><td>43 - 44 mAOD</td> </tr> <tr> <td style="color: yellowgreen;">■</td><td>38 - 39 mAOD</td> <td style="color: navy;">■</td><td>44 - 45 mAOD</td> </tr> <tr> <td style="color: limegreen;">■</td><td>39 - 40 mAOD</td> <td style="color: black;">■</td><td>> 45 mAOD</td> </tr> </table> <p>The topography of the site is largely flat, ranging between approximately 37.9m AOD and 38.5m AOD.</p>			■	< 35 mAOD	■	40 - 41 mAOD	■	35 - 36 mAOD	■	41 - 42 mAOD	■	36 - 37 mAOD	■	42 - 43 mAOD	■	37 - 38 mAOD	■	43 - 44 mAOD	■	38 - 39 mAOD	■	44 - 45 mAOD	■	39 - 40 mAOD	■	> 45 mAOD
■	< 35 mAOD	■	40 - 41 mAOD																												
■	35 - 36 mAOD	■	41 - 42 mAOD																												
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Flood Zone Map					<p>Legend</p> <ul style="list-style-type: none"> Site Boundary Flood Zone 2 Flood Zone 3 																										
Flood Zone 1	0%	Flood Zone 2	100%	Flood Zone 3a	0%	Flood Zone 3b	0%																								
Surface Water					<p>Risk of Surface Water Flooding</p> <ul style="list-style-type: none"> — River Site Boundary High - 1 in 30 annual probability Medium - 1 in 100 annual probability Low - 1 in 1000 annual Probability Very Low - > 1 in 1000 annual probability 																										



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Development Proposal	75 - 115 dwellings (wider site including AB075)	Vulnerability Classification	More Vulnerable		
Applicable Climate Change Allowances	The +25% and +35% peak river flow climate change allowances should therefore be used to assess a range of climate change scenarios. The +25% allowance should be used to provide a benchmark flood level against which mitigation measures should be set, and the +35% allowance used to assess residual risk to the development.				
Climate Change Extents			Legend — River Site Boundary 1 in 100 annual probability +25% Climate Change 1 in 100 annual probability +35% Climate Change		
1 in 100 annual probability +25%	50%	1 in 100 annual probability +35%	70%	1 in 100 annual probability +70%	N/A
Description of Flood Risk	Flood Depth The flood depths in the 1 in 1000 annual probability flood event typically vary from 100mm to 400mm over the extent of the site. Flood depths in the climate change scenarios are typically 200mm in the +25% scenario, and 300mm in the +35% scenario.				
	Flood Warning and Period of Inundation The River Thames is a large catchment with flooding typically the result of sustained regional-scale rainfall events. The response time – i.e. the period between the rainfall over the catchment and the rising river levels downstream – can be significant, and this ensures there is typically a significant period of advance warning (i.e. a period of days) before flooding occurs in the area. The EA issue flood warnings for the area via their ‘Flood Information Service’ and considerable advance warning of a flood event can typically be provided to allow the Council, emergency services residents and businesses to take appropriate action.				
	Velocity of Flood Waters The site is occupied by buildings in an urbanised area, a significant distance from the main river, and is impacted in the climate change allowance scenarios. When flooding does occur, the rate of rise and fall in water level is slow and velocities will accordingly be slow, with the direction of flow from west to east (subject to further interrogation of the EA modelling).				

Reading Borough Council

Level 2 Strategic Flood Risk Assessment

Description of Flood Risk	<p>Flood Defences While not a 'formal' flood defence, the EA asset register does identify that the River Thames, located approximately 0.26km north east of the site, includes bank protection on its right bank with a design standard of 1 in 5 years. The condition is currently at 4 (poor), on a scale of 1 (very good) to 5 (very poor).</p> <p>Historic Records and Other Sources of Flooding The Level 1 SFRA indicates that the site has not been subject to historic river flooding, but notes that an area in the close vicinity of the site was impacted by groundwater flooding during the 2000-01 and 2002-03 events. It is not noted to have been impacted by flood events from other sources. Site drainage must be considered accordingly and must be assessed in accordance with Sections 13.4 and 13.5 of the Level 1 SFRA. The susceptibility to groundwater flooding varies between '25%' and 50%. The Thames Water DG5 information indicates that the site is within a postcode (RG1 8) that has 21-50 recorded sewer flood incidents, both internal and external. The site is not located within a maximum modelled breach extent of reservoir flooding and is therefore at negligible risk of flooding in the event of a reservoir breach.</p> <p>Overview of Flood Risk A summary of the flood risk to the site is provided below:</p> <ul style="list-style-type: none"> The site is classified as Flood Zone 2 'Medium Probability' (between 1 in 100 and 1 in 1000 annual probability of river flooding) and has not been subject to historic river flooding; The maximum flood depth during the 1 in 1000 annual probability event is typically between 100mm and 400mm; Approximately half of the site is impacted by the 1 in 100 annual probability +25% allowance for climate change flood event with general depths of 200mm; Maximum flood depths for the 1 in 100 annual probability +35% climate change allowance are typically 300mm; The site is largely classified as at Very Low risk of surface water flooding, with localised areas of Low risk; The site is at negligible risk of flooding in the event of a reservoir breach; Continuous safe access is currently available during the 1 in 100 annual probability event. The access route is impacted by the 1 in 100 annual probability +25% climate change allowance scenario. Development would be reliant on advance warning measures and the suitability of a Flood Risk Management/Evacuation Plan should be considered. <p>The site is shown to be at medium risk of fluvial flooding, at a range of very low to high risk of surface water flooding and may be susceptible to groundwater and sewer flooding. The site is therefore potentially at risk of flooding from a number of sources. Subject to further analysis of safe access arrangements, it is considered feasible that the site can be developed safely and in accordance with the requirements of the NPPF, to mitigate the potential risks of these sources of flooding.</p> <p>It is important that the design process considers the risk of flooding at the earliest conceptual stage, encompassing measures that will ensure the safety of future tenants/residents during a flood event.</p> <p>A number of important design recommendations are set out below.</p>
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Reading Borough Council Level 2 Strategic Flood Risk Assessment

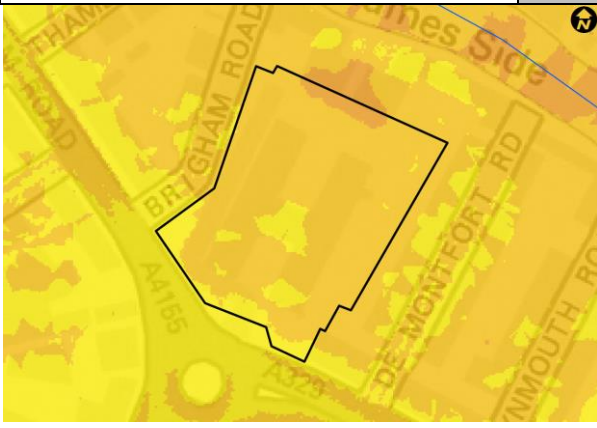


Planning Recommendations	<p>Spatial Planning The site lies within Flood Zone 2 ‘Medium Probability’, affected by flooding from the River Thames in the 1 in 1000 annual probability flood event. The majority of the site is shown to be impacted by the 1 in 100 annual probability +25% and +35% allowances for climate change flood events.</p> <p>A review of flood risk within the site has been carried out, and it is considered feasible to design the site in such a way that it remains safe throughout the lifetime of the development. It is essential that the following design recommendations are incorporated into the design process from the conceptual stage. A detailed site-based Flood Risk Assessment will be required as an integral part of the planning application stage, which should be carried out in accordance with Section 10.4 of the Level 1 SFRA.</p> <p>Design Recommendations</p> <ol style="list-style-type: none"> 1. Floor levels within the site should be situated a minimum of 300mm above the 1 in 100 annual probability plus allowance for climate change, in this instance +25%, assuming a 100 year lifetime for residential development; 2. Flood storage should be analysed to show that the proposed building footprint of the development will not cause a detriment to the available storage during the 1 in 100 annual probability +25% climate change allowance flood event. The presence of a significant existing building footprint suggests that floodplain storage capacity could be improved through effective design measures; 3. Where appropriate, buildings should adopt resilient design techniques to minimise the damage and disruption sustained by residents following a flooding event. Further guidance can be found in BRE Digest DG523 ‘Flood Resilient Building’, the Department for Communities and Local Government document ‘Improving the Flood Performance of New Buildings – Flood Resilient Construction’, and Section 12.4 of the Level 1 SFRA; 4. Sustainable Drainage Systems (SuDS) should be incorporated into the site design, aiming to achieve greenfield runoff rates, if feasible, in accordance with Section 13.4 of the Level 1 SFRA. It is important that SUDS are designed with due consideration to soil and groundwater conditions. Infiltration techniques should be sought wherever possible, however are likely to be unsuitable in areas of shallow groundwater and/or impermeable soils. Further guidance on designing for groundwater is provided in Section 6.5 of the Level 1 SFRA. Buildings and landscaping should be designed within the site to avoid locking overland flow routes; 5. Safe access would be available in the current 1 in 100 annual probability flood event. The impacts on the route should be assessed for the 1 in 100 annual probability +25% climate change allowance and a Flood Management and Evacuation Plan’ should be prepared to ensure the development is in accordance with the requirements in Section 3.4 of the L2 SFRA. Future tenants/residents within the site should be made aware of the potential risks of flooding, and should be actively encouraged to sign up to the Environment Agency’s Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event; 6. It is essential to ensure that all basement areas within flood affected areas of the site are watertight, and the entrance point is situated above the 1 in 100 annual probability +25% allowance for climate change flood level. Basement dwellings in Flood Zone 2 ‘Medium Probability’ are considered appropriate subject to the Exception Test; 7. Residual risk to the development should be investigated against the 1 in 100 annual probability +35% allowance for climate change flood event.
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Reading Borough Council Level 2 Strategic Flood Risk Assessment

AB096 – Great Brigham’s Mead (Local Plan ref: Not Identified)

Grid Reference	SU 71370 74220		Post Code	RG1 8DL																
Topography				<p>Elevation</p> <table style="font-size: small;"> <tr><td style="width: 15px; height: 10px; background-color: #90EE90;"></td><td>40 - 41 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #3CB371;"></td><td>41 - 42 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #3CB371;"></td><td>42 - 43 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #3CB371;"></td><td>43 - 44 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #3CB371;"></td><td>44 - 45 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #3CB371;"></td><td>> 45 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #90EE90;"></td><td>39 - 40mAOD</td></tr> </table> <p>The topography of the site is largely flat, falling from south to north, ranging between approximately 36.5m AOD and 38.3m AOD.</p>				40 - 41 mAOD		41 - 42 mAOD		42 - 43 mAOD		43 - 44 mAOD		44 - 45 mAOD		> 45 mAOD		39 - 40mAOD
	40 - 41 mAOD																			
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	44 - 45 mAOD																			
	> 45 mAOD																			
	39 - 40mAOD																			
Flood Zone Map				<p>Legend</p> <ul style="list-style-type: none"> — River Site Boundary Flood Zone 2 Flood Zone 3 Flood Zone 3b 																
Flood Zone 1	0%	Flood Zone 2	10%	Flood Zone 3a	90%	Flood Zone 3b	0%													
Surface Water				<p>Risk of Surface Water Flooding</p> <ul style="list-style-type: none"> — River Site Boundary High - 1 in 30 annual probability Medium - 1 in 100 annual probability Low - 1 in 1000 annual Probability Very Low - > 1 in 1000 annual probability 																



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Development Proposal	Residential dwellings	Vulnerability Classification	More Vulnerable
Applicable Climate Change Allowances	The +35% and +70% peak river flow climate change allowances should therefore be used to assess a range of climate change scenarios. The +35% allowance should be used to provide a benchmark flood level against which mitigation measures should be set, and the +70% allowance used to assess residual risk to the development.		
Climate Change Extents			Legend
1 in 100 annual probability +25%	N/A	1 in 100 annual probability +35%	98%
		1 in 100 annual probability +70%	100%
Description of Flood Risk	<p>Flood Depth The flood depths in the 1 in 100 annual probability flood event vary from 100mm to 300mm over the site. The flood depths in the 1 in 1000 annual probability flood event vary from 600mm to 800mm.</p> <p>Flood depths in the climate change scenarios are typically 500mm in the +35% scenario, and 800mm in the +70% scenario.</p>		
	<p>Flood Warning and Period of Inundation The River Thames is a large catchment with flooding typically the result of sustained regional-scale rainfall events. The response time – i.e. the period between the rainfall over the catchment and the rising river levels downstream – can be significant, and this ensures there is typically a significant period of advance warning (i.e. a period of days) before flooding occurs in the area.</p> <p>The EA issue flood warnings for the area via their ‘Flood Information Service’ and considerable advance warning of a flood event can typically be provided to allow the Council, emergency services residents and businesses to take appropriate action.</p>		
	<p>Velocity of Flood Waters The site is in an urbanised area, separated from the main river channel by built development, and is impacted in severe flood events (1 in 100 annual probability and greater). When flooding does occur, the rate of rise and fall in water level is slow and velocities will also be slow. Any fluvial flooding in the area would typically be of slow velocity with the direction of flow from west to east, subject to further interrogation of the EA modelling.</p>		



Reading Borough Council

Level 2 Strategic Flood Risk Assessment

Description of Flood Risk	<p>Flood Defences While not a 'formal' flood defence, the EA asset register does identify that the River Thames, located approximately 0.1km north of the site, includes natural high ground of its right bank with a design standard of 1 in 5 years. The condition is currently at 4 (poor), on a scale of 1 (very good) to 5 (very poor).</p> <p>Historic Records and Other Sources of Flooding The SFRA data indicates the site has not been subject to historic fluvial flooding and is not noted to have been impacted by flood events from other sources.</p> <p>There are two records of groundwater flooding located west of the site, specifically for the 2000/01 and 2002/03 events. Vastern Road has previously been impacted by highway flooding. Isolated external areas of the site are noted to be potentially at risk of surface water flooding, which, if a surface water drainage strategy is not appropriately considered in the proposed development design, could result in ponding of water following heavy rainfall events.</p> <p>The susceptibility to groundwater flooding site varies between '25% and 50%'. The Thames Water DG5 information indicates that the site is within a postcode (RG1 8) that has 21-50 recorded sewer flood incidents, both internal and external.</p> <p>The site is not located within a maximum modelled breach extent of reservoir flooding and is therefore at negligible risk of flooding in the event of a reservoir breach.</p> <p>Overview of Flood Risk A summary of the flood risk to the site is provided below:</p> <ul style="list-style-type: none"> The majority of the site is classified as Flood Zone 3a 'High Probability', with a 1 in 100 annual probability of river flooding. Available data indicate no historic records of flooding over the site; The flood depth during the 1 in 100 annual probability event is typically between 100mm and 300mm; The maximum flood depth during the 1 in 1000 annual probability event is typically between 600mm and 800mm; The majority of the site is impacted by the 1 in 100 annual probability +35% climate change flood event, with flood depths typically between 400mm and 600mm; The whole site is impacted in the 1 in 100 annual probability +70% climate change flood event, with maximum flood depths rising to between 700mm and 900mm; The site is largely classified as at Very Low risk of surface water flooding, with localised areas between Low and Medium risk; The site is at negligible risk of flooding in the event of a reservoir breach; Continuous safe access is currently available during the 1 in 100 annual probability event via Vastern Road. At the peak of the 1 in 100 annual probability +35% climate change allowance flood event, flood depths on the access route rise to over 250mm, thereby impacting on pedestrian safe access. Development would be reliant on advance warning measures and the suitability of a Flood Risk Management/Evacuation Plan should be considered. <p>The site is shown to be at high risk of fluvial flooding, and at a range of very low to medium risk of surface water flooding. The site may be susceptible to groundwater and sewer flooding, the extent to which could be determined using site-specific information. The site is therefore potentially at risk of flooding from a number of sources, however, it is considered feasible that the site can be developed</p>
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Reading Borough Council Level 2 Strategic Flood Risk Assessment

	<p>safely and in accordance with the requirements of the NPPF to mitigate the potential risks of these sources of flooding – subject to approval in principle to a management/evacuation plan to address safe access. It is important that the design process considers the risk of flooding at the earliest conceptual stage, encompassing measures that will ensure the safety of future tenants/residents during a flood event. A number of important design recommendations are set out below.</p>
Planning Recommendations	<p>Spatial Planning</p> <p>The site lies within Flood Zone 3a ‘High Probability’, affected by flooding from the River Thames in the 1 in 100 annual probability flood event. The majority of the site is shown to be impacted by the 1 in 100 annual probability +35% and +70% allowances for climate change flood events.</p> <p>A low point is located on the northern boundary, which experiences significant flood depths in the design event. This low point should not be utilised for development due to the large modelled flood depths.</p> <p>A review of flood risk within the site has been carried out, and it is considered feasible to design the site in such a way that it remains safe throughout the lifetime of the development. It is essential that the following design recommendations are incorporated into the design process from the conceptual stage. A detailed site-based Flood Risk Assessment will be required as an integral part of the planning application stage, which should be carried out in accordance with Section 10.4 of the Level 1 SFRA.</p>
	<p>Design Recommendations</p> <ol style="list-style-type: none"> 1. Floor levels within the site should be situated a minimum of 300mm above the 1 in 100 annual probability plus allowance for climate change, in this instance +35%, assuming a 100 year lifetime for residential development; 2. Flood storage should be analysed to show that the proposed building footprint of the development will not cause a detriment to the available storage during the 1 in 100 annual probability +35% climate change allowance flood event. The presence of a significant existing building footprint suggests that floodplain storage capacity could be improved through effective design measures; 3. Where appropriate, buildings should adopt resilient design techniques to minimise the damage and disruption sustained by residents following a flooding event. Further guidance can be found in BRE Digest DG523 ‘Flood Resilient Building’, the Department for Communities and Local Government document ‘Improving the Flood Performance of New Buildings – Flood Resilient Construction’, and Section 12.4 of the Level 1 SFRA; 4. Sustainable Drainage Systems (SuDS) should be incorporated into the site design, aiming to achieve greenfield runoff rates, if feasible, in accordance with Section 13.4 of the Level 1 SFRA. It is important that SUDS are designed with due consideration to soil and groundwater conditions. Infiltration techniques should be sought wherever possible, however are likely to be unsuitable in areas of shallow groundwater and/or impermeable soils. Further guidance on designing for groundwater is provided in Section 6.5 of the Level 1 SFRA. Buildings and landscaping should be designed within the site to avoid locking overland flow routes; 5. Safe access would be available in the current 1 in 100 annual probability flood event from the southern boundary of the site. The impacts on the route should be assessed for the 1 in 100 annual probability +35% climate change allowance and a Flood Management and Evacuation Plan’ should be prepared to ensure the development is in accordance with the requirements in Section 3.4 of the L2 SFRA. Future tenants/residents within the site should be made aware of the potential risks of flooding, and should be actively encouraged to sign up to the



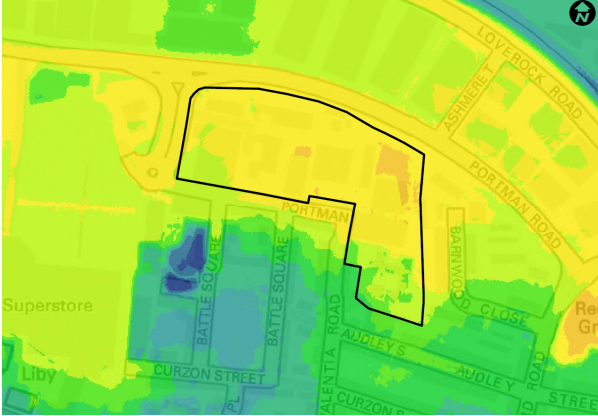

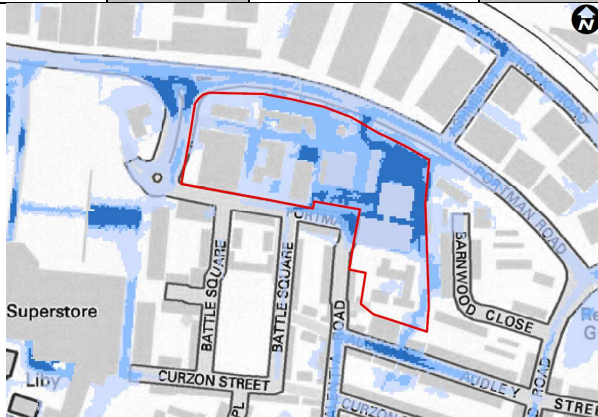
Reading Borough Council Level 2 Strategic Flood Risk Assessment

Environment Agency's Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event;

6. It is essential to ensure that all basement areas within flood affected areas of the site are watertight, and the entrance point is situated above the 1 in 100 annual probability +35% allowance for climate change flood level. Basements should not be used to provide habitable areas in locations classified at Flood Zone 3a 'High Probability';
7. Residual risk to the development should be investigated against the 1 in 100 annual probability +70% allowance for climate change flood event.

Reading Borough Council Level 2 Strategic Flood Risk Assessment

BA003 - Part of Former Battle Hospital, Portman Road (Local Plan ref: WR3i)

Grid Reference	SU 69940 73880		Post Code	RG30 1AN																										
Topography				<p>Elevation</p> <table style="font-size: small;"> <tr><td style="width: 15px; height: 10px; background-color: #90EE90;"></td><td>40 - 41 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #FF6347;"></td><td>< 35 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #3CB371;"></td><td>41 - 42 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #FF8C00;"></td><td>35 - 36 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #3CB371;"></td><td>42 - 43 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #FFD700;"></td><td>36 - 37 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #4682B4;"></td><td>43 - 44 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #FFA500;"></td><td>37 - 38 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #4169E1;"></td><td>44 - 45 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #9ACD32;"></td><td>38 - 39 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #483D8B;"></td><td>> 45 mAOD</td></tr> <tr><td style="width: 15px; height: 10px; background-color: #90EE90;"></td><td>39 - 40mAOD</td></tr> </table> <p>The topography of the site is largely flat, ranging between approximately 37.4m AOD and 40.9m AOD.</p>				40 - 41 mAOD		< 35 mAOD		41 - 42 mAOD		35 - 36 mAOD		42 - 43 mAOD		36 - 37 mAOD		43 - 44 mAOD		37 - 38 mAOD		44 - 45 mAOD		38 - 39 mAOD		> 45 mAOD		39 - 40mAOD
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Flood Zone Map				<p>Legend</p> <ul style="list-style-type: none"> — River Site Boundary Flood Zone 2 																										
Flood Zone 1	5%	Flood Zone 2	95%	Flood Zone 3a	0%	Flood Zone 3b	0%																							
Surface Water				<p>Risk of Surface Water Flooding</p> <ul style="list-style-type: none"> — River Site Boundary High - 1 in 30 annual probability Medium - 1 in 100 annual probability Low - 1 in 1000 annual Probability Very Low - > 1 in 1000 annual probability 																										



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Development Proposal	160 - 240 dwellings	Vulnerability Classification	More Vulnerable		
Applicable Climate Change Allowances	The +25% and +35% peak river flow climate change allowances should therefore be used to assess a range of climate change scenarios. The +25% allowance should be used to provide a benchmark flood level against which mitigation measures should be set, and the +35% allowance used to assess residual risk to the development.				
Climate Change Extents				Legend — River Site Boundary 1 in 100 annual probability +25% Climate Change 1 in 100 annual probability +35% Climate Change	
1 in 100 annual probability +25%	5%	1 in 100 annual probability +35%	75%	1 in 100 annual probability +70%	N/A
Description of Flood Risk	Flood Depth The flood depths in the 1 in 1000 annual probability flood event typically vary between 350mm and 1000mm over the extent of the site. Flood depths in the climate change scenarios are typically 300mm in the +25% scenario where an impact is observed, and 400mm in the +35% scenario.				
	Flood Warning and Period of Inundation The River Thames is a large catchment with flooding typically the result of sustained regional-scale rainfall events. The response time – i.e. the period between the rainfall over the catchment and the rising river levels downstream – can be significant, and this ensures there is typically a significant period of advance warning (i.e. a period of days) before flooding occurs in the area. The EA issue flood warnings for the area via their ‘Flood Information Service’ and considerable advance warning of a flood event can typically be provided to allow the Council, emergency services residents and businesses to take appropriate action.				
	Velocity of Flood Waters The site is occupied by buildings in an urbanised area, a significant distance from the main river, and is impacted in the climate change allowance scenarios. When flooding does occur, the rate of rise and fall in water level is slow and velocities will correspondingly be slow, with the direction of flow from west to east (subject to further interrogation of the EA modelling).				



Reading Borough Council

Level 2 Strategic Flood Risk Assessment

Description of Flood Risk	<p>Flood Defences While not a 'formal' flood defence, the EA asset register does identify that the River Thames, located approximately 1km north of the site, includes bank protection on its right bank with a design standard of 1 in 5 years. The condition is currently at 3 (moderate), on a scale of 1 (very good) to 5 (very poor).</p> <hr/> <p>Historic Records and Other Sources of Flooding The SFRA indicates that the site has been subject to historic river flooding in 1947 and 1977, but is not noted to have been impacted by flood events from other sources.</p> <p>External areas are noted to be severely impacted by surface water flooding, which, if surface water drainage strategy is not sufficiently incorporated into proposed development design, could result in ponding of water following heavy rainfall events. Site drainage must therefore be considered accordingly and must be assessed in accordance with Sections 13.4 and 13.5 of the Level 1 SFRA.</p> <p>The susceptibility to groundwater flooding varies between '50% and 75%' and '>75%'. The Thames Water DG5 information indicates that the site is within a postcode (RG30 1) that has over 101 recorded sewer flood incidents, both internal and external.</p> <p>The site is not located within a maximum modelled breach extent of reservoir flooding and is therefore at negligible risk of flooding in the event of a reservoir breach.</p> <hr/> <p>Overview of Flood Risk A summary of the flood risk to the site is provided below:</p> <ul style="list-style-type: none"> The is classified as Flood Zone 2 'Medium Probability' (between 1 in 100 and 1 in 1000 annual probability of river flooding) and has been subject to historic river flooding in 1947 and 1977; The maximum flood depth during the 1 in 1000 annual probability event is typically between 350mm and 1000mm; A small area of the site is impacted by the 1 in 100 annual probability +25% allowance for climate change flood event with general depths between 100mm and 400mm; Maximum flood depths for the 1 in 100 annual probability +35% climate change allowance typically vary between 100mm and 800mm; The site is largely classified as at Low risk of surface water flooding, with large areas between Medium and High risk, and an area at Very Low risk at the south eastern extent; The site is at negligible risk of flooding in the event of a reservoir breach; Continuous safe access is currently available during the 1 in 100 annual probability event via Portman Road. The access route remains available in the 1 in 100 annual probability +25% climate change allowance scenario. Although the road on the north side of the site is affected in the +35% scenario, alternative safe access to the south-west may be available. <p>The site is shown to be at medium risk of fluvial flooding, at a range of very low to high risk of surface water flooding and may be susceptible to groundwater and sewer flooding. The site is therefore potentially at risk of flooding from a number of sources; however, it is considered feasible that the site can be developed safely and in accordance with the requirements of the NPPF, to mitigate the potential risks of these sources of flooding.</p> <p>It is important that the design process considers the risk of flooding at the earliest conceptual stage, encompassing measures that will ensure the safety of future tenants/residents during a flood event.</p> <p>A number of important design recommendations are set out below.</p>
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Reading Borough Council

Level 2 Strategic Flood Risk Assessment

Planning Recommendations	<p>Spatial Planning</p> <p>The site lies within Flood Zone 2 ‘Medium Probability’, affected by flooding from the River Thames in the 1 in 1000 annual probability flood event. A minor portion of the site is shown to be impacted by the 1 in 100 annual probability +25% allowance for climate change, and the majority of the site by the +35% allowance for climate change flood events.</p> <p>A review of flood risk within the site has been carried out, and it is considered feasible to design the site in such a way that it remains safe throughout the lifetime of the development. It is essential that the following design recommendations are incorporated into the design process from the conceptual stage. A detailed site-based Flood Risk Assessment will be required as an integral part of the planning application stage, which should be carried out in accordance with Section 10.4 of the Level 1 SFRA.</p> <p>Design Recommendations</p> <ol style="list-style-type: none"> 1. Floor levels within the site should be situated a minimum of 300mm above the 1 in 100 annual probability plus allowance for climate change, in this instance +25%, assuming a 100 year lifetime for residential development; 2. Flood storage should be analysed to show that the proposed building footprint of the development will not cause a detriment to the available storage during the 1 in 100 annual probability +25% climate change allowance flood event. The presence of a significant existing building footprint suggest that floodplain storage capacity could be improved through effective design measures; 3. Where appropriate, buildings should adopt resilient design techniques to minimise the damage and disruption sustained by businesses and/or residents following a flooding event. Further guidance can be found in BRE Digest DG523 ‘Flood Resilient Building’, the Department for Communities and Local Government document ‘Improving the Flood Performance of New Buildings – Flood Resilient Construction’, and Section 12.4 of the Level 1 SFRA’; 4. Sustainable Drainage Systems (SuDS) should be incorporated into the site design, aiming to achieve greenfield runoff rates, if feasible, in accordance with Section 13.4 of the Level 1 SFRA. It is important that SUDS are designed with due consideration to soil and groundwater conditions. Infiltration techniques should be sought wherever possible, however are likely to be unsuitable in areas of shallow groundwater and/or impermeable soils. Further guidance on designing for groundwater is provided in Section 6.5 of the Level 1 SFRA. Buildings and landscaping should be designed within the site to avoid locking overland flow routes; 5. Safe access would be available in the current 1 in 100 annual probability flood event and the 1 in 100 annual probability +25% climate change allowance and a Flood Management and Evacuation Plan’ should be prepared to ensure the development is in accordance with the requirements in Section 3.4 of the L2 SFRA. Future tenants/residents within the site should be made aware of the potential risks of flooding, and should be actively encouraged to sign up to the Environment Agency’s Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event; 6. It is essential to ensure that all basement areas within flood affected areas of the site are watertight, and the entrance point is situated above the 1 in 100 annual probability +25% allowance for climate change flood level. Basement dwellings in Flood Zone 2 ‘Medium Probability’ are considered appropriate subject to the Exception Test;
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Reading Borough Council Level 2 Strategic Flood Risk Assessment

7. Residual risk to the development should be investigated against the 1 in 100 annual probability +35% allowance for climate change flood event.

Reading Borough Council Level 2 Strategic Flood Risk Assessment

CA002 - 72 George Street (Local Plan ref: Not Identified)

Grid Reference	SU 71900 74440	Post Code	RG4 8DH																								
Topography		<p>Elevation</p> <table style="font-size: small;"> <tr><td style="color: red;">■</td><td>< 35 mAOD</td><td style="color: green;">■</td><td>40 - 41 mAOD</td></tr> <tr><td style="color: orange;">■</td><td>35 - 36 mAOD</td><td style="color: teal;">■</td><td>41 - 42 mAOD</td></tr> <tr><td style="color: yellow;">■</td><td>36 - 37 mAOD</td><td style="color: blue;">■</td><td>42 - 43 mAOD</td></tr> <tr><td style="color: lightyellow;">■</td><td>37 - 38 mAOD</td><td style="color: darkblue;">■</td><td>43 - 44 mAOD</td></tr> <tr><td style="color: yellowgreen;">■</td><td>38 - 39 mAOD</td><td style="color: navy;">■</td><td>44 - 45 mAOD</td></tr> <tr><td style="color: limegreen;">■</td><td>39 - 40 mAOD</td><td style="color: black;">■</td><td>> 45 mAOD</td></tr> </table> <p>The topography of the site is relatively flat, ranging from approximately 36.8m AOD to 38.1m AOD.</p>		■	< 35 mAOD	■	40 - 41 mAOD	■	35 - 36 mAOD	■	41 - 42 mAOD	■	36 - 37 mAOD	■	42 - 43 mAOD	■	37 - 38 mAOD	■	43 - 44 mAOD	■	38 - 39 mAOD	■	44 - 45 mAOD	■	39 - 40 mAOD	■	> 45 mAOD
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Flood Zone Map		<p>Legend</p> <ul style="list-style-type: none"> — River Site Boundary Flood Zone 2 Flood Zone 3 Flood Zone 3b 																									
Flood Zone 1	0%	Flood Zone 2	30%																								
Flood Zone 3a	65%	Flood Zone 3b	5%																								
Surface Water		<p>Risk of Surface Water Flooding</p> <ul style="list-style-type: none"> — River Site Boundary High - 1 in 30 annual probability Medium - 1 in 100 annual probability Low - 1 in 1000 annual Probability Very Low - > 1 in 1000 annual probability 																									



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Development Proposal	Residential dwellings	Vulnerability Classification	More Vulnerable
Applicable Climate Change Allowances	<p>The site is located within Flood Zone 3a 'High Probability', and the proposed development is classified as More Vulnerable (the extent of Flood Zone 2 'Medium Probability' is limited to the existing building footprints).</p> <p>The +35% and +70% peak river flow climate change allowances should be used to assess a range of climate change scenarios. The +35% allowance should be used to provide a benchmark flood level against which mitigation measures should be set, and the +70% allowance used to assess residual risk to the development.</p>		
Climate Change Extents			<p>Legend</p> <ul style="list-style-type: none"> Site Boundary 1 in 100 annual probability +35% Climate Change 1 in 100 annual probability +70% Climate Change
1 in 100 annual probability +25%	N/A	1 in 100 annual probability +35%	100%
1 in 100 annual probability +70%			100%
Description of Flood Risk	<p>Flood Depth</p> <p>The maximum flood depths around the existing buildings in the 1 in 100 annual probability flood event typically vary from 100mm to 600mm over the site.</p> <p>The flood depths in the 1 in 1000 annual probability flood event vary from 300mm to 900mm over the site.</p> <p>Flood depths in the climate change scenarios are typically 500mm in the +35% scenario, and 700mm in the +70% scenario.</p>		
	<p>Flood Warning and Period of Inundation</p> <p>The River Thames is a large catchment with flooding typically the result of sustained regional-scale rainfall events. The response time – i.e. the period between the rainfall over the catchment and the rising river levels downstream – can be significant, and this ensures there is typically a significant period of advance warning (i.e. a period of days) before flooding occurs in the area.</p> <p>The EA issue flood warnings for the area via their 'Flood Information Service' and considerable advance warning of a flood event can typically be provided to allow the Council, emergency services residents and businesses to take appropriate action.</p>		
	<p>Velocity of Flood Waters</p> <p>The site is occupied by buildings in an urbanised area, a significant distance from the main river, and is impacted in the climate change allowance scenarios. When flooding does occur, the rate of rise</p>		



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Description of Flood Risk	<p>and fall in water level is slow and velocities will correspondingly be slow, with the direction of flow from west to east (subject to further interrogation of the EA modelling).</p>
	<p>Flood Defences While not a 'formal' flood defence, the EA asset register does identify that the River Thames, located approximately 0.3km south of the site, includes bank protection on its left bank with a design standard of 1 in 5 years. The condition is currently at 3 (moderate), on a scale of 1 (very good) to 5 (very poor).</p>
	<p>Historic Records and Other Sources of Flooding The Level 1 SFRA indicates the site has been subject to historic river flooding in 1947, 1977 and 2013/14, but is not noted to have been impacted by historic flooding from other sources. Gosbrook Road, located north of the site, has previously been impacted by fluvial flooding due to drainage capacity issues. Site drainage must be considered accordingly and must be assessed in accordance with Sections 13.4 and 13.5 of the Level 1 SFRA.</p> <p>The susceptibility to groundwater flooding site varies between '25% and 50%'. The Thames Water DG5 information indicates that the site is within a postcode (RG4 8) that has over 101 recorded sewer flood incidents, both internal and external.</p> <p>The site is not located within a maximum modelled breach extent of reservoir flooding and is therefore at negligible risk of flooding in the event of a reservoir breach.</p>
	<p>Overview of Flood Risk A summary of the flood risk to the site is provided below:</p> <ul style="list-style-type: none"> The site is classified as Flood Zone 3a 'High Probability' (1 in 100 or greater annual probability of river flooding) and has been subject to historic river flooding in 1947, 1977 and 2013/14; The maximum flood depth during the 1 in 100 annual probability event is typically between 100mm and 600mm; The maximum flood depth during the 1 in 1000 annual probability event is typically between 300mm and 900mm; The whole site is impacted by the 1 in 100 annual probability +35% allowance for climate change flood event, with general depths between 200mm and 1000mm; Maximum flood depths for the 1 in 100 annual probability +70% climate change allowance are between 400mm and 1200mm; The site is classified as at 'Very Low' risk of surface water flooding; The site is at negligible risk of flooding in the event of a reservoir breach; Pedestrian safe access is potentially available to the site, subject to further analysis of the impacts along George Street and provided the development includes raised access arrangements to the south-eastern corner of the site and onto George Street. <p>The site is shown to be at medium to high risk of fluvial flooding, at very low risk of surface water flooding and may be susceptible to groundwater and sewer flooding. The site is therefore potentially at risk of flooding from a number of sources; however, it is considered feasible that the site could be developed safely and in accordance with the requirements of the NPPF to mitigate the potential risks of these sources of flooding.</p> <p>It is important that the design process considers the risk of flooding at the earliest conceptual stage, encompassing measures that will ensure the safety of future tenants/residents during a flood event.</p> <p>A number of important design recommendations are set out in the following section.</p>



Reading Borough Council

Level 2 Strategic Flood Risk Assessment

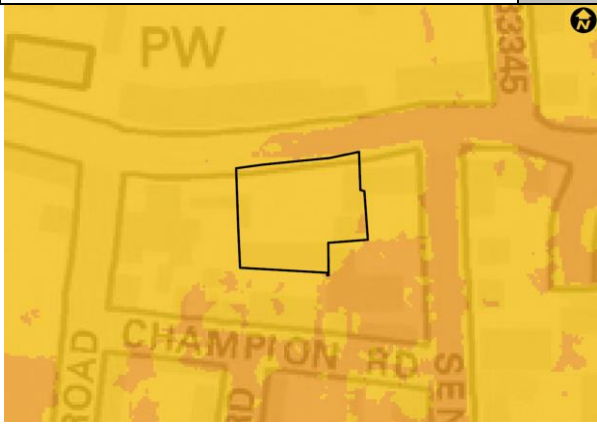

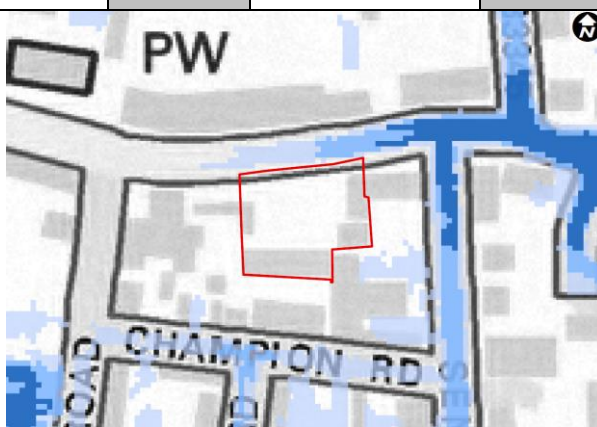
Planning Recommendations	<p>Spatial Planning</p> <p>The site lies within Flood Zone 3a ‘High Probability’ and is affected by flooding from the River Thames in the 1 in 100 and 1 in 1000 annual probability flood events. The whole site is shown to be impacted by the 1 in 100 annual probability +35% and +70% allowance for climate change flood events.</p> <p>A review of flood risk within the site has been carried out. The feasibility of designing the site in such a way that it remains safe throughout the lifetime of the development is dependent on a number of factors, and is specifically subject to further assessment of the safe access route. It is essential that the following design recommendations are incorporated into the design process from the conceptual stage. A detailed site-based Flood Risk Assessment will be required as an integral part of the planning application stage, which should be carried out in accordance with Section 10.4 of the Level 1 SFRA.</p> <p>Design Recommendations</p> <ol style="list-style-type: none"> 1. Floor levels within the site should be situated a minimum of 300mm above the 1 in 100 annual probability plus allowance for climate change, in this instance +35%, assuming a 100 year lifetime for residential development; 2. Flood storage should be analysed to show that the proposed building footprint of the development will not cause a detriment to the available storage during the 1 in 100 annual probability +35% climate change allowance flood event. The presence of a significant existing building footprint suggests that floodplain storage capacity could be improved through effective design measures; 3. Where appropriate, buildings should adopt resilient design techniques to minimise the damage and disruption sustained by residents following a flooding event. Further guidance can be found in BRE Digest DG523 ‘Flood Resilient Building’, the Department for Communities and Local Government document ‘Improving the Flood Performance of New Buildings – Flood Resilient Construction’, and Section 12.4 of the Level 1 SFRA; 4. Sustainable Drainage Systems (SuDS) should be incorporated into the site design, aiming to achieve greenfield runoff rates, if feasible, in accordance with Section 13.4 of the Level 1 SFRA. It is important that SUDS are designed with due consideration to soil and groundwater conditions. Infiltration techniques should be sought wherever possible, however are likely to be unsuitable in areas of shallow groundwater and/or impermeable soils. Further guidance is provided in Section 6.5 of the Level 1 SFRA. Buildings and landscaping should be designed within the site to avoid locking overland flow routes; 5. Safe access would be available in the current 1 in 100 annual probability flood event from the south-east boundary of the site. The impacts on the route should be assessed for the 1 in 100 annual probability +35% climate change allowance and a Flood Management and Evacuation Plan’ should be prepared to ensure the development is in accordance with the requirements in Section 3.4 of the L2 SFRA. It is essential that future tenants/residents within the site are made aware of the potential risks of flooding, and are actively encouraged to sign up to the Environment Agency’s Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event; 6. It is essential to ensure that all basement areas within flood affected areas of the site are watertight, and the entrance point is situated above the 1 in 100 annual probability +35% allowance for climate change flood level. Basements should not be used to provide habitable areas in locations classified as Flood Zone 2 ‘Medium Probability’ or Flood Zone 3a ‘High Probability’;
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Reading Borough Council Level 2 Strategic Flood Risk Assessment

7. Residual risk to the development should be considered against the 1 in 100 annual probability +70% allowance for climate change flood event.

Reading Borough Council Level 2 Strategic Flood Risk Assessment

CA004 - 383 Gosbrook Road (Local Plan ref: Not Identified)																														
Grid Reference	SU 72310 74530		Post Code	RG4 8ED																										
Topography			<p>Elevation</p> <table style="font-size: small; border: none;"> <tr> <td style="color: red;">■</td><td>< 35 mAOD</td> <td style="color: green;">■</td><td>41 - 42 mAOD</td> </tr> <tr> <td style="color: orange;">■</td><td>35 - 36 mAOD</td> <td style="color: teal;">■</td><td>42 - 43 mAOD</td> </tr> <tr> <td style="color: yellow;">■</td><td>36 - 37 mAOD</td> <td style="color: blue;">■</td><td>43 - 44 mAOD</td> </tr> <tr> <td style="color: lightyellow;">■</td><td>37 - 38 mAOD</td> <td style="color: darkblue;">■</td><td>44 - 45 mAOD</td> </tr> <tr> <td style="color: limegreen;">■</td><td>38 - 39 mAOD</td> <td style="color: navy;">■</td><td>> 45 mAOD</td> </tr> <tr> <td style="color: yellowgreen;">■</td><td>39 - 40 mAOD</td> <td></td><td></td> </tr> </table> <p>The topography of the site is largely flat, ranging between approximately 36.9m AOD and 37.7m AOD.</p>				■	< 35 mAOD	■	41 - 42 mAOD	■	35 - 36 mAOD	■	42 - 43 mAOD	■	36 - 37 mAOD	■	43 - 44 mAOD	■	37 - 38 mAOD	■	44 - 45 mAOD	■	38 - 39 mAOD	■	> 45 mAOD	■	39 - 40 mAOD		
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Flood Zone Map			<p>Legend</p> <ul style="list-style-type: none"> — River Site Boundary Flood Zone 2 Flood Zone 3 Flood Zone 3b 																											
Flood Zone 1	0%	Flood Zone 2	2%	Flood Zone 3a	93%	Flood Zone 3b	5%																							
Surface Water			<p>Risk of Surface Water Flooding</p> <ul style="list-style-type: none"> — River Site Boundary High - 1 in 30 annual probability Medium - 1 in 100 annual probability Low - 1 in 1000 annual Probability Very Low - > 1 in 1000 annual probability 																											



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Development Proposal	Residential dwellings	Vulnerability Classification	More Vulnerable
Applicable Climate Change Allowances	<p>The site is largely located within Flood Zone 3a 'High Probability', and the proposed development is classified as More Vulnerable.</p> <p>The +35% and +70% peak river flow climate change allowances should therefore be used to assess a range of climate change scenarios. The +35% allowance should be used to provide a benchmark flood level against which mitigation measures should be set, and the +70% allowance used to assess residual risk to the development.</p>		
Climate Change Extents			<p>Legend</p> <ul style="list-style-type: none"> Site Boundary 1 in 100 annual probability +35% Climate Change 1 in 100 annual probability +70% Climate Change
1 in 100 annual probability +25%	N/A	1 in 100 annual probability +35%	100%
1 in 100 annual probability +70%			100%
Description of Flood Risk	<p>Flood Depth The maximum flood depths around the existing buildings in the 1 in 100 annual probability flood event typically vary from 100mm to 400mm over the site.</p> <p>The flood depths in the 1 in 1000 annual probability flood event typically vary from 500mm to 800mm over the site.</p> <p>Flood depths in the climate change scenarios are typically 500mm in the +35% scenario, and 700mm in the +70% scenario.</p> <p>Flood Warning and Period of Inundation The River Thames is a large catchment with flooding typically the result of sustained regional-scale rainfall events. The response time – i.e. the period between the rainfall over the catchment and the rising river levels downstream – can be significant, and this ensures there is typically a significant period of advance warning (i.e. a period of days) before flooding occurs in the area.</p> <p>The EA issue flood warnings for the area via their 'Flood Information Service' and considerable advance warning of a flood event can typically be provided to allow the Council, emergency services residents and businesses to take appropriate action.</p> <p>Velocity of Flood Waters The site is occupied by buildings in an urbanised area, a significant distance from the main river, and is impacted in the climate change allowance scenarios. When flooding does occur, the rate of rise and</p>		

Reading Borough Council Level 2 Strategic Flood Risk Assessment

Description of Flood Risk	<p>fall in water level is slow and velocities will correspondingly be slow with the direction of flow from west to east (subject to further interrogation of the EA modelling).</p>
	<p>Flood Defences While not a 'formal' flood defence, the EA asset register does identify that the River Thames, located approximately 0.2km south of the site, includes high ground on its left bank with a design standard of 1 in 2 years. The condition is currently at 3 (moderate), on a scale of 1 (very good) to 5 (very poor).</p>
	<p>Historic Records and Other Sources of Flooding The Level 1 SFRA indicates that the site has been subject to historic river flooding in 1947 and 1977, but is not noted to have been impacted by flood events from other sources. Site drainage must be considered accordingly and must be assessed in accordance with Sections 13.4 and 13.5 of the Level 1 SFRA.</p> <p>The susceptibility to groundwater flooding varies between '50% and 75%'. The Thames Water DG5 information indicates that the site is within a postcode (RG4 8) that has over 101 recorded sewer flood incidents, both internal and external.</p> <p>The site is not located within a maximum modelled breach extent of reservoir flooding and is therefore at negligible risk of flooding in the event of a reservoir breach.</p>
	<p>Overview of Flood Risk A summary of the flood risk to the site is provided below:</p> <ul style="list-style-type: none"> The site is classified as Flood Zone 3a 'High Probability' (1 in 100 or greater annual probability of river flooding) and has been subject to historic river flooding in 1947 and 1977; The maximum flood depth during the 1 in 100 annual probability event is typically between 100mm and 400mm; The maximum flood depth during the 1 in 1000 annual probability event is typically between 500mm and 800mm; The whole site is impacted by the 1 in 100 annual probability +35% climate change allowance event with general depths between 400mm and 700mm; Maximum flood depths for the 1 in 100 annual probability +70% climate change allowance event typically vary between 600mm and 900mm; The site is classified as at Very Low risk of surface water flooding; The site is at negligible risk of flooding in the event of a reservoir breach; The pedestrian access route via Gosbrook Road is impacted by the 1 in 100 annual probability flood event, thereby impacting on pedestrian safe access. <p>The site is shown to be at high risk of fluvial flooding, at very low risk of surface water flooding, and may be susceptible to groundwater and sewer flooding. The site is therefore potentially at risk of flooding from a number of sources.</p> <p>Safe access is impacted in a flood event of 1 in 100 annual probability or greater, and the feasibility of new residential development is therefore subject to further assessment of the mitigation strategy based on the approach detailed in the L2 SFRA.</p> <p>It is important that the design process considers the risk of flooding at the earliest conceptual stage, encompassing measures that will ensure the safety of future tenants/residents during a flood event.</p> <p>A number of important design recommendations are set out below.</p>



Reading Borough Council

Level 2 Strategic Flood Risk Assessment

<b style="writing-mode: vertical-rl; transform: rotate(180deg);">Planning Recommendations	<p>Spatial Planning</p> <p>The site lies within Flood Zone 3a ‘High Probability’, affected by flooding from the River Thames in the 1 in 100 annual probability flood event. The entirety of the site is shown to be impacted by the 1 in 100 annual probability +35% and +70% allowances for climate change flood events.</p> <p>A review of flood risk within the site has been carried out. The feasibility of designing the site in such a way that it remains safe throughout the lifetime of the development is dependent on a number of factors, and is specifically subject to further assessment of the safe access route.</p> <p>It is essential that the following design recommendations are incorporated into the design process from the conceptual stage. A detailed site-based Flood Risk Assessment will be required as an integral part of the planning application stage, which should be carried out in accordance with Section 10.4 of the Level 1 SFRA.</p> <hr/> <p>Design Recommendations</p> <ol style="list-style-type: none"> 1. Floor levels within the site should be situated a minimum of 300mm above the 1 in 100 annual probability plus allowance for climate change, in this instance +35%, assuming a 100 year lifetime for residential development; 2. Flood storage should be analysed to show that the proposed building footprint of the development will not cause a detriment to the available storage during the 1 in 100 annual probability +35% climate change allowance flood event. The presence of existing building footprint suggests that floodplain storage capacity could be improved through effective design measures; 3. Where appropriate, buildings should adopt resilient design techniques to minimise the damage and disruption sustained by businesses and/or residents following a flooding event. Further guidance can be found in BRE Digest DG523 ‘Flood Resilient Building’, the Department for Communities and Local Government document ‘Improving the Flood Performance of New Buildings – Flood Resilient Construction’, and Section 12.4 of the Level 1 SFRA’; 4. Sustainable Drainage Systems (SuDS) should be incorporated into the site design, aiming to achieve greenfield runoff rates, if feasible, in accordance with Section 13.4 of the Level 1 SFRA. It is important that SUDS are designed with due consideration to soil and groundwater conditions. Infiltration techniques should be sought wherever possible, however are likely to be unsuitable in areas of shallow groundwater and/or impermeable soils. Further guidance on designing for groundwater is provided in Section 6.5 of the Level 1 SFRA. Buildings and landscaping should be designed within the site to avoid locking overland flow routes; 5. Safe access is impacted in the current 1 in 100 annual probability flood event. Further analysis is required to assess if a safe route is available in accordance with the requirements in Section 3.4 of the L2 SFRA and, if so, a Flood Management and Evacuation Plan’ should be prepared. Future tenants/residents within the site should be made aware of the potential risks of flooding, and should be actively encouraged to sign up to the Environment Agency’s Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event; 6. It is essential to ensure that all basement areas within flood affected areas of the site are watertight, and the entrance point is situated above the 1 in 100 annual probability +35% allowance for climate change flood level. Basements should not be used to provide habitable areas in locations classified at Flood Zone 3a ‘Medium Probability’;
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Reading Borough Council Level 2 Strategic Flood Risk Assessment

7. Residual risk to the development should be investigated against the 1 in 100 annual probability +70% allowance for climate change flood event.

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Level 2 Strategic Flood Risk Assessment

CA006 - Reading University Boat Club, Thames Promenade (Local Plan ref: CA1a)

Grid Reference	SU 71320 74620			Post Code	RG4 8BD		
Topography					<p>Elevation</p> <ul style="list-style-type: none"> ■ 40 - 41 mAOD ■ < 35 mAOD ■ 41 - 42 mAOD ■ 35 - 36 mAOD ■ 42 - 43 mAOD ■ 36 - 37 mAOD ■ 43 - 44 mAOD ■ 37 - 38 mAOD ■ 44 - 45 mAOD ■ 38 - 39 mAOD ■ > 45 mAOD ■ 39 - 40mAOD <p>The topography of the site is largely flat, ranging between approximately 37.3m AOD and 38.6m AOD.</p>		
Flood Zone Map					<p>Legend</p> <ul style="list-style-type: none"> — River Site Boundary Flood Zone 2 Flood Zone 3 Flood Zone 3b 		
Flood Zone 1	0%	Flood Zone 2	25%	Flood Zone 3a	60%	Flood Zone 3b	15%
Surface Water					<p>Risk of Surface Water Flooding</p> <ul style="list-style-type: none"> — River Site Boundary High - 1 in 30 annual probability Medium - 1 in 100 annual probability Low - 1 in 1000 annual Probability Very Low - > 1 in 1000 annual probability 		



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Development Proposal	16 – 25 residential dwellings	Vulnerability Classification	More Vulnerable
Applicable Climate Change Allowances	<p>The site is located within Flood Zone 2 ‘Medium Probability’, and Flood Zone 3a ‘High Probability’, and the proposed development is classified as More Vulnerable. A small portion of the site lies within Flood Zone 3b ‘functional floodplain’. This area should not be utilised for residential dwellings and development should be avoided.</p> <p>The areas classified as Flood Zone 2 and Flood Zone 3a will both be treated as Flood Zone 3a ‘High Probability’, the worst case flood zone on site that could be considered developable, subject to a number of conditions.</p> <p>The +35% and +70% peak river flow climate change allowances should therefore be used to assess a range of climate change scenarios. The +35% allowance should be used to provide a benchmark flood level against which mitigation measures should be set, and the +70% allowance used to assess residual risk to the development.</p>		
Climate Change Extents			<p>Legend</p> <ul style="list-style-type: none"> — River Site Boundary 1 in 100 annual probability +35% Climate Change 1 in 100 annual probability +70% Climate Change
1 in 100 annual probability +25%	90%	1 in 100 annual probability +35%	95%
		1 in 100 annual probability +70%	100%
Description of Flood Risk	<p>Flood Depth</p> <p>The maximum flood depths around the existing buildings in the 1 in 100 annual probability flood event typically vary from 50mm to 150mm over the site.</p> <p>The flood depths in the 1 in 1000 annual probability flood event typically vary from 400mm to 600mm over the site.</p> <p>Flood depths in the climate change scenarios are typically 400mm in the +35% scenario, and 600mm in the +70% scenario.</p>		
	<p>Flood Warning and Period of Inundation</p> <p>The River Thames is a large catchment with flooding typically the result of sustained regional-scale rainfall events. The response time – i.e. the period between the rainfall over the catchment and the rising river levels downstream – can be significant, and this ensures there is typically a significant period of advance warning (i.e. a period of days) before flooding occurs in the area.</p>		



Reading Borough Council

Level 2 Strategic Flood Risk Assessment

	<p>The EA issue flood warnings for the area via their 'Flood Information Service' and considerable advance warning of a flood event can typically be provided to allow the Council, emergency services residents and businesses to take appropriate action.</p>
	<p>Velocity of Flood Waters</p> <p>The site is occupied by buildings in an urbanised area, and is impacted in the climate change allowance scenarios. When flooding does occur, the rate of rise and fall in water level is slow and velocities will correspondingly be slow, with the direction of flow from west to east (subject to further interrogation of the EA modelling).</p>
Description of Flood Risk	<p>Flood Defences</p> <p>While not a 'formal' flood defence, the EA asset register does identify that the River Thames, located approximately 0.05km south of the site, includes bank protection on its left bank with a design standard of 1 in 5 years. The condition is currently at 3 (moderate), on a scale of 1 (very good) to 5 (very poor).</p>
	<p>Historic Records and Other Sources of Flooding</p> <p>The Level 1 SFRA indicates the site has been subject to historic river flooding in 1947, 1977, 2003 and 2013/14, but is not noted to have been impacted by flood events from other sources. External areas are noted to be impacted by surface water flooding, which, if surface water drainage strategy is not sufficiently incorporated into proposed development design, could result in ponding of water following heavy rainfall events. Site drainage must therefore be considered accordingly and must be assessed in accordance with Sections 13.4 and 13.5 of the Level 1 SFRA.</p> <p>According to the Level 1 SFRA, the susceptibility to groundwater flooding varies between '25%' and 50%'. The Thames Water DG5 information indicates that the site is within a postcode (RG4 8) that has over 101 recorded sewer flood incidents, both internal and external.</p> <p>The site is not located within a maximum modelled breach extent of reservoir flooding and is therefore at negligible risk of flooding in the event of a reservoir breach.</p>
	<p>Overview of Flood Risk</p> <p>A summary of the flood risk to the site is provided below:</p> <ul style="list-style-type: none"> • The southern part of the site is classified as Flood Zone 3a 'High Probability', with a 1 in 100 annual probability of river flooding; • The maximum flood depth during the 1 in 100 annual probability event is approximately 750mm; • The maximum flood depth during the 1 in 1000 annual probability event is approximately 1200mm, with the remainder of the site experiencing depths typically between 400mm and 600mm; • The majority of the site is impacted by the 1 in 100 annual probability +35% climate change allowance event, with maximum flood depths of 1100 mm, and general depths between 300mm and 500mm; • Maximum flood depths for the 1 in 100 annual probability +70% climate change allowance increase to 1300mm, with general depths between 500mm and 700mm; • The site is largely classified as at 'Very Low' risk of surface water flooding, with localised areas between Low and Medium risk; • The site is at negligible risk of flooding in the event of a reservoir breach;



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Level 2 Strategic Flood Risk Assessment

	<ul style="list-style-type: none"> Pedestrian safe access is potentially available to the site, subject to further analysis of the impacts along Abbotsmead Place, north of the site, provided the development includes raised access arrangements to the north western corner of the site <p>The site is shown to be at high/medium risk of fluvial flooding, is mainly 'very low' risk of surface water flooding and may be susceptible to groundwater and sewer flooding. The site is therefore potentially at risk of flooding from a number of sources; however, it is considered feasible that the site can be developed safely and in accordance with the requirements of the NPPF, to mitigate the potential risks of these sources of flooding.</p> <p>It is important that the design process considers the risk of flooding at the earliest conceptual stage, encompassing measures that will ensure the safety of future tenants/residents during a flood event.</p> <p>A number of important design recommendations are set out below.</p>
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Planning Recommendations	<p>Spatial Planning</p> <p>The site lies partly within Flood Zone 3a 'Medium Probability', affected by flooding from the River Thames in the 1 in 100 annual probability flood event. The majority of the site is shown to be impacted by the 1 in 100 annual probability +35% and +70% allowances for climate change flood events.</p> <p>A review of flood risk within the site has been carried out, and it is considered feasible to design the site in such a way that it remains safe throughout the lifetime of the development. It is essential that the following design recommendations are incorporated into the design process from the conceptual stage. A detailed site-based Flood Risk Assessment will be required as an integral part of the planning application stage, which should be carried out in accordance with Section 10.4 of the Level 1 SFRA.</p> <p>Design Recommendations</p> <ol style="list-style-type: none"> 1. All 'More Vulnerable' uses should be steered towards areas within the site that are at lowest risk. If at all possible, residential uses should be restricted to those areas within the site that fall within Flood Zone 2 'Medium Probability'; 2. No development, excepting water compatible or essential infrastructure, should be proposed for the area of the site classified as Flood Zone 3b 'functional floodplain'. The Exception Test must be passed for essential infrastructure; 3. Floor levels within the site should be situated a minimum of 300mm above the 1 in 100 annual probability plus allowance for climate change, in this instance +35%, assuming a 100 year lifetime for residential development; 4. Flood storage should be analysed to show that the proposed building footprint of the development will not cause a detriment to the available storage during the 1 in 100 annual probability +35% climate change allowance flood event; 5. Where appropriate, buildings should adopt resilient design techniques to minimise the damage and disruption sustained by businesses and/or residents following a flooding event. Further guidance can be found in BRE Digest DG523 'Flood Resilient Building', the Department for Communities and Local Government document 'Improving the Flood
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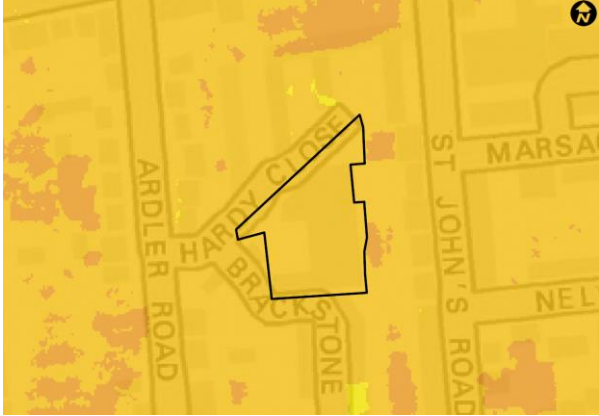
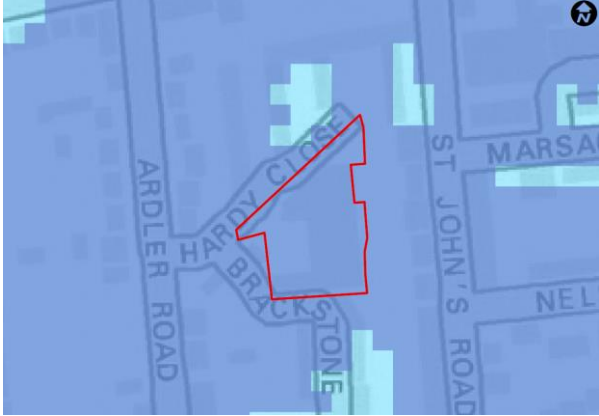
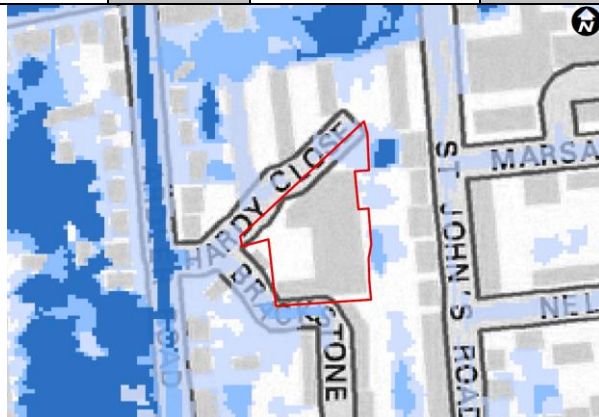


Reading Borough Council Level 2 Strategic Flood Risk Assessment

Performance of New Buildings – Flood Resilient Construction’, and Section 12.4 of the Level 1 SFRA’;

6. Sustainable Drainage Systems (SuDS) should be incorporated into the site design, aiming to achieve greenfield runoff rates, if feasible, in accordance with Section 13.4 of the Level 1 SFRA. It is important that SUDS are designed with due consideration to soil and groundwater conditions. Infiltration techniques should be sought wherever possible, however are likely to be unsuitable in areas of shallow groundwater and/or impermeable soils. Further guidance on designing for groundwater is provided in Section 6.5 of the Level 1 SFRA. Buildings and landscaping should be designed within the site to avoid locking overland flow routes;
7. Safe access would be available in the current 1 in 100 annual probability flood event from the northern boundary of the site. The impacts on the route should be assessed for the 1 in 100 annual probability +35% climate change allowance and a Flood Management and Evacuation Plan’ should be prepared to ensure the development is in accordance with the requirements in Section 3.4 of the L2 SFRA. Future tenants/residents within the site should be made aware of the potential risks of flooding, and be actively encouraged to sign up to the Environment Agency’s Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event;
8. It is essential to ensure that all basement areas within flood affected areas of the site are watertight, and the entrance point is situated above the 1 in 100 annual probability +35% allowance for climate change flood level. Basements should not be used to provide habitable areas in locations classified at Flood Zone 2 ‘Medium Probability’ or Flood Zone 3a ‘High Probability’;
9. Residual risk to the development should be considered against the 1 in 100 annual probability +70% allowance for climate change flood event.

Reading Borough Council Level 2 Strategic Flood Risk Assessment

CA007 - Cantay House, Ardler Road (Local Plan ref: Not Identified)																															
Grid Reference	SU 72120 74750			Post Code	RG4 5AH																										
Topography				<p>Elevation</p> <table style="font-size: small; border: none;"> <tr> <td style="color: red;">■</td><td>< 35 mAOD</td> <td style="color: green;">■</td><td>40 - 41 mAOD</td> </tr> <tr> <td style="color: orange;">■</td><td>35 - 36 mAOD</td> <td style="color: lightgreen;">■</td><td>41 - 42 mAOD</td> </tr> <tr> <td style="color: yellow;">■</td><td>36 - 37 mAOD</td> <td style="color: teal;">■</td><td>42 - 43 mAOD</td> </tr> <tr> <td style="color: lightyellow;">■</td><td>37 - 38 mAOD</td> <td style="color: blue;">■</td><td>43 - 44 mAOD</td> </tr> <tr> <td style="color: yellowgreen;">■</td><td>38 - 39 mAOD</td> <td style="color: darkblue;">■</td><td>44 - 45 mAOD</td> </tr> <tr> <td style="color: limegreen;">■</td><td>39 - 40 mAOD</td> <td style="color: navy;">■</td><td>> 45 mAOD</td> </tr> </table> <p>The topography of the site is largely flat, ranging between approximately 37.2m AOD and 37.8m AOD.</p>				■	< 35 mAOD	■	40 - 41 mAOD	■	35 - 36 mAOD	■	41 - 42 mAOD	■	36 - 37 mAOD	■	42 - 43 mAOD	■	37 - 38 mAOD	■	43 - 44 mAOD	■	38 - 39 mAOD	■	44 - 45 mAOD	■	39 - 40 mAOD	■	> 45 mAOD
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Flood Zone Map				<p>Legend</p> <ul style="list-style-type: none"> — River □ Site Boundary ■ Flood Zone 2 ■ Flood Zone 3 																											
Flood Zone 1	0%	Flood Zone 2	0%	Flood Zone 3a	100%	Flood Zone 3b	0%																								
Surface Water				<p>Risk of Surface Water Flooding</p> <ul style="list-style-type: none"> — River □ Site Boundary ■ High - 1 in 30 annual probability ■ Medium - 1 in 100 annual probability ■ Low - 1 in 1000 annual Probability □ Very Low - > 1 in 1000 annual probability 																											



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Development Proposal	Residential dwellings	Vulnerability Classification	More Vulnerable
Applicable Climate Change Allowances	The +35% and +70% peak river flow climate change allowances should be used to assess a range of climate change scenarios. The +35% allowance should be used to provide a benchmark flood level against which mitigation measures should be set, and the +70% allowance used to assess residual risk to the development.		
Climate Change Extents			Legend
1 in 100 annual probability +25%	N/A	1 in 100 annual probability +35%	100%
1 in 100 annual probability +70%			100%
Description of Flood Risk	<p>Flood Depth The maximum flood depths around the existing buildings in the 1 in 100 annual probability flood event typically vary from 50mm to 200mm over the site.</p> <p>The flood depths in the 1 in 1000 annual probability flood event typically vary from 400mm to 600mm over the site.</p> <p>Flood depths in the climate change scenarios are typically 400mm in the +35% scenario, and 600mm in the +70% scenario.</p>		
	<p>Flood Warning and Period of Inundation The River Thames is a large catchment with flooding typically the result of sustained regional-scale rainfall events. The response time – i.e. the period between the rainfall over the catchment and the rising river levels downstream – can be significant, and this ensures there is typically a significant period of advance warning (i.e. a period of days) before flooding occurs in the area.</p> <p>The EA issue flood warnings for the area via their ‘Flood Information Service’ and considerable advance warning of a flood event can typically be provided to allow the Council, emergency services residents and businesses to take appropriate action.</p>		
	<p>Velocity of Flood Waters The site is occupied by buildings in an urbanised area, a significant distance from the main river, and is impacted by the climate change allowance scenarios. When flooding does occur, the rate of rise and fall in water level is slow and velocities will correspondingly be slow, with the direction of flow from west to east (subject to further interrogation of the EA modelling).</p>		



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Level 2 Strategic Flood Risk Assessment

Description of Flood Risk	<p>Flood Defences While not a 'formal' flood defence, the EA asset register does identify that the River Thames, located approximately 0.5km south of the site, includes high natural banks on its left bank with a design standard of 1 in 2 years. The condition is currently at 3 (moderate), on a scale of 1 (very good) to 5 (very poor).</p> <p>Historic Records and Other Sources of Flooding The Level 1 SFRA indicates that the site has been subject to historic river flooding in 1947 and 1977, but is not noted to have been impacted by flood events from other sources. Ardler Road, located west of the site, has records of highways flooding (RBC Highways) and a recorded flood incident (Reading Borough Fire and Rescue Service - RBFRS). A record of groundwater flooding (2000/01) exists north west of the site. Site drainage must be considered accordingly, and must be assessed in accordance with Sections 13.4 and 13.5 of the Level 1 SFRA.</p> <p>According to the Level 1 SFRA, the susceptibility to groundwater flooding varies between '50% and 75%'. The Thames Water DG5 information indicates that the site is within a postcode (RG4 5) that has 51-100 recorded sewer flood incidents.</p> <p>The site is not located within a maximum modelled breach extent of reservoir flooding and is therefore at negligible risk of flooding in the event of a reservoir breach.</p> <p>Overview of Flood Risk A summary of the flood risk to the site is provided below:</p> <ul style="list-style-type: none"> The site is classified as Flood Zone 3a 'High Probability', with a 1 in 100 annual probability of river flooding; The maximum flood depths during the 1 in 100 annual probability event are typically between 50mm and 200mm; The maximum flood depths during the 1 in 1000 annual probability event are typically between 600mm and 800mm; The site is impacted by the 1 in 100 annual probability +35% climate change allowance event, with maximum flood depths typically between 200mm and 400mm; Maximum flood depths for the 1 in 100 annual probability +70% climate change allowance scenario are typically between 400mm and 600mm; The site is largely classified as at Very Low risk of surface water flooding, and is at negligible risk of flooding in the event of a reservoir breach; The surrounding area is impacted at the peak of the 1 in 100 annual probability flood event, thereby impacting on pedestrian safe access. <p>The site is shown to be at high risk of fluvial flooding, at a very low/low risk of surface water flooding and may be susceptible to groundwater and sewer flooding. The site is therefore potentially at risk of flooding from a number of sources.</p> <p>Safe access is impacted in a flood event of 1 in 100 annual probability or greater, and the feasibility of new residential development is subject to further assessment of the mitigation strategy based on the approach detailed in the L2 SFRA.</p> <p>It is important that the design process considers the risk of flooding at the earliest conceptual stage, encompassing measures that will ensure the safety of future tenants/residents during a flood event.</p> <p>A number of important design recommendations are set out below.</p>
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Reading Borough Council Level 2 Strategic Flood Risk Assessment

Planning Recommendations	<p>Spatial Planning</p> <p>The site lies within Flood Zone 3a ‘High Probability’, affected by flooding from the River Thames in the 1 in 100 annual probability flood event. The entirety of the site is shown to be impacted by the 1 in 100 annual probability +35% and +70% allowances for climate change flood events.</p> <p>A review of flood risk within the site has been carried out. The feasibility of designing the site in such a way that it remains safe throughout the lifetime of the development is dependent on a number of factors, and is specifically subject to further assessment of the safe access route.</p> <p>It is essential that the following design recommendations are incorporated into the design process from the conceptual stage. A detailed site-based Flood Risk Assessment will be required as an integral part of the planning application stage, which should be carried out in accordance with Section 10.4 of the Level 1 SFRA.</p>
	<p>Design Recommendations</p> <ol style="list-style-type: none"> 1. Floor levels within the site should be situated a minimum of 300mm above the 1 in 100 annual probability plus allowance for climate change, in this instance +35%, assuming a 100 year lifetime for residential development; 2. Flood storage should be analysed to show that the proposed building footprint of the development will not cause a detriment to the available storage during the 1 in 100 annual probability +35% climate change allowance flood event. The presence of a significant existing building footprint suggests that floodplain storage capacity could be improved through effective design measures; 3. Where appropriate, buildings within the site should adopt resilient design techniques to minimise the damage and disruption sustained by businesses and/or residents following a flooding event. Further guidance can be found in BRE Digest DG523 ‘Flood Resilient Building’, the Department for Communities and Local Government document ‘Improving the Flood Performance of New Buildings – Flood Resilient Construction’, and Section 12.4 of the Level 1 SFRA; 4. Sustainable Drainage Systems (SuDS) should be incorporated into the site design, aiming to achieve greenfield runoff rates, if feasible, in accordance with Section 13.4 of the Level 1 SFRA. It is important that SUDS are designed with due consideration to soil and groundwater conditions. Infiltration techniques should be sought wherever possible, however are likely to be unsuitable in areas of shallow groundwater and/or impermeable soils. Further guidance on designing for groundwater is provided in Section 6.5 of the Level 1 SFRA. Buildings and landscaping should be designed within the site to avoid locking overland flow routes; 5. Safe access is impacted in the current 1 in 100 annual probability flood event. Further analysis is required to assess if a safe route is available in accordance with the requirements in Section 3.4 of the L2 SFRA and, if so, a Flood Management and Evacuation Plan’ should be prepared. Future tenants/residents within the site should be made aware of the potential risks of flooding, and should be actively encouraged to sign up to the Environment Agency’s Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event; 6. It is essential to ensure that all basement areas within flood affected areas of the site are watertight, and the entrance point is situated above the 1 in 100 annual probability +35%

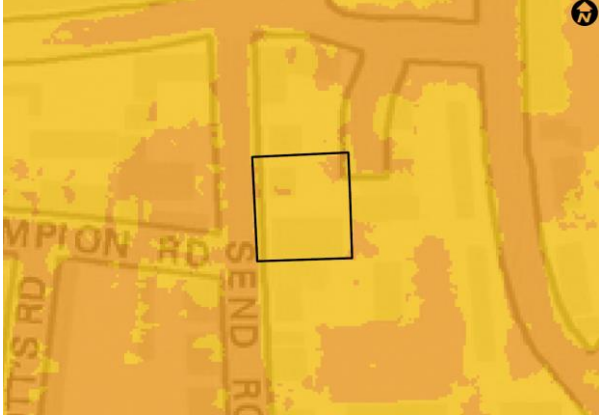




Reading Borough Council Level 2 Strategic Flood Risk Assessment

allowance for climate change flood level. Basements should not be used to provide habitable areas in locations classified at Flood Zone 3a 'High Probability';

7. Residual risk to the development should be investigated against the 1 in 100 annual probability +70% allowance for climate change flood event.

Reading Borough Council Level 2 Strategic Flood Risk Assessment

CA009 - 4-6 Send Road (Local Plan ref: Not Identified)																															
Grid Reference	SU 72390 74480			Post Code	RG4 8EH																										
Topography				<p>Elevation</p> <table style="font-size: small;"> <tr> <td style="color: red;">■</td><td>< 35 mAOD</td> <td style="color: green;">■</td><td>41 - 42 mAOD</td> </tr> <tr> <td style="color: orange;">■</td><td>35 - 36 mAOD</td> <td style="color: teal;">■</td><td>42 - 43 mAOD</td> </tr> <tr> <td style="color: yellow;">■</td><td>36 - 37 mAOD</td> <td style="color: blue;">■</td><td>43 - 44 mAOD</td> </tr> <tr> <td style="color: lightyellow;">■</td><td>37 - 38 mAOD</td> <td style="color: darkblue;">■</td><td>44 - 45 mAOD</td> </tr> <tr> <td style="color: limegreen;">■</td><td>38 - 39 mAOD</td> <td style="color: navy;">■</td><td>> 45 mAOD</td> </tr> <tr> <td style="color: yellowgreen;">■</td><td>39 - 40 mAOD</td> <td></td><td></td> </tr> </table> <p>The topography of the site is largely flat, ranging between approximately 37.0m AOD and 37.5m AOD.</p>				■	< 35 mAOD	■	41 - 42 mAOD	■	35 - 36 mAOD	■	42 - 43 mAOD	■	36 - 37 mAOD	■	43 - 44 mAOD	■	37 - 38 mAOD	■	44 - 45 mAOD	■	38 - 39 mAOD	■	> 45 mAOD	■	39 - 40 mAOD		
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Flood Zone Map				<p>Legend</p> <ul style="list-style-type: none"> — River Site Boundary Flood Zone 2 Flood Zone 3 Flood Zone 3b 																											
Flood Zone 1	0%	Flood Zone 2	0%	Flood Zone 3a	95%	Flood Zone 3b	5%																								
Surface Water				<p>Risk of Surface Water Flooding</p> <ul style="list-style-type: none"> — River Site Boundary High - 1 in 30 annual probability Medium - 1 in 100 annual probability Low - 1 in 1000 annual Probability Very Low - > 1 in 1000 annual probability 																											



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Development Proposal	Residential dwellings	Vulnerability Classification	More Vulnerable
Applicable Climate Change Allowances	<p>The site is located within Flood Zone 3a 'High Probability', and the proposed development is classified as More Vulnerable.</p> <p>The +35% and +70% peak river flow climate change allowances should therefore be used to assess a range of climate change scenarios. The +35% allowance should be used to provide a benchmark flood level against which mitigation measures should be set, and the +70% allowance used to assess residual risk to the development.</p>		
Climate Change Extents			<p>Legend</p> <ul style="list-style-type: none"> Site Boundary 1 in 100 annual probability +35% Climate Change 1 in 100 annual probability +70% Climate Change
1 in 100 annual probability +25%	N/A	1 in 100 annual probability +35%	100%
1 in 100 annual probability +70%			100%
Description of Flood Risk	<p>Flood Depth</p> <p>The maximum flood depths around the existing buildings in the 1 in 100 annual probability flood event typically vary from 10mm to 300mm over the site.</p> <p>The flood depths in the 1 in 1000 annual probability flood event typically vary from 500mm to 800mm over the extent of the site.</p> <p>Flood depths in the climate change scenarios are typically 500mm in the +35% scenario, and 800mm in the +70% scenario.</p>		
	<p>Flood Warning and Period of Inundation</p> <p>The River Thames is a large catchment with flooding typically the result of sustained regional-scale rainfall events. The response time – i.e. the period between the rainfall over the catchment and the rising river levels downstream – can be significant, and this ensures there is typically a significant period of advance warning (i.e. a period of days) before flooding occurs in the area.</p> <p>The EA issue flood warnings for the area via their 'Flood Information Service' and considerable advance warning of a flood event can typically be provided to allow the Council, emergency services residents and businesses to take appropriate action.</p>		
	<p>Velocity of Flood Waters</p> <p>The site is occupied by existing buildings in an urbanised area, a significant distance from the main river, and is impacted in the climate change allowance scenarios. When flooding does occur, the rate</p>		

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Level 2 Strategic Flood Risk Assessment

Description of Flood Risk	<p>of rise and fall in water level is slow and velocities will correspondingly be slow with the direction of flow from west to east (subject to further interrogation of the EA modelling).</p>
	<p>Flood Defences While not a 'formal' flood defence, the EA asset register does identify that the River Thames, located approximately 0.2km south of the site, includes bank protection on its left bank with a design standard of 1 in 5 years. The condition is currently at 3 (moderate), on a scale of 1 (very good) to 5 (very poor).</p>
	<p>Historic Records and Other Sources of Flooding The Level 1 SFRA indicates the site was impacted by 1947 and 1977 river flood events, and Send Road, adjacent to the site, was impacted by the 2003 river flood event. It is not noted to have been impacted by flood events from other sources.</p> <p>There are a number of records of flooding provided by RBC in the close vicinity of the site, including the southern extent of Send Road, and on Gosbrook Road, located north of the site. Site drainage must be considered accordingly with respect to future development, and must be assessed in accordance with Sections 13.4 and 13.5 of the Level 1 SFRA.</p> <p>The susceptibility to groundwater flooding varies between '50% and 75%'. The Thames Water DG5 information indicates that the site is within a postcode (RG4 8) that has over 101 recorded sewer flood incidents, both internal and external.</p> <p>The site is not located within a maximum modelled breach extent of reservoir flooding and is therefore at negligible risk of flooding in the event of a reservoir breach.</p>
	<p>Overview of Flood Risk A summary of the flood risk to the site is provided below:</p> <ul style="list-style-type: none"> • The site is classified as Flood Zone 3a 'High Probability' (1 in 100 or greater annual probability of river flooding) and has been subject to historic river flooding in 1947 and 1977; • The maximum flood depth during the 1 in 100 annual probability event typically between 10mm and 300mm; • The maximum flood depth during the 1 in 1000 annual probability event is typically between 500mm and 800mm; • The entirety of the site is impacted by the 1 in 100 annual probability +35% climate change allowance flood event, with general depths between 300mm and 600mm; • Maximum flood depths for the 1 in 100 annual probability +70% climate change allowance typically vary between 600mm and 900mm; • The site is largely classified as at Very Low risk of surface water flooding; • The site is at negligible risk of flooding in the event of a reservoir breach; • The pedestrian access route via Send Road is impacted by the 1 in 20 annual probability floodplain, although a lower hazard route may be available to the north-east, although this is within the current 1 in 100 annual probability floodplain. <p>The site is shown to be at high risk of fluvial flooding, at very low risk of surface water flooding and may be susceptible to groundwater and sewer flooding. The site is therefore potentially at risk of flooding from a number of sources.</p> <p>Further analysis is required to assess if a safe route is available in accordance with the requirements in Section 3.4 of the L2 SFRA and, if so, a Flood Management and Evacuation Plan' should be</p>



Reading Borough Council Level 2 Strategic Flood Risk Assessment

prepared. Future tenants/residents within the site should be made aware of the potential risks of flooding, and should be actively encouraged to sign up to the Environment Agency’s Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event;

Subject to further analysis of the safe access arrangements, it is considered feasible that the site can be developed safely and in accordance with the requirements of the NPPF, to mitigate the potential risks of these sources of flooding.

It is important that the design process considers the risk of flooding at the earliest conceptual stage, encompassing measures that will ensure the safety of future tenants/residents during a flood event.

A number of important design recommendations are set out below.

Planning Recommendations	<p>Spatial Planning</p> <p>The site lies within Flood Zone 3a ‘High Probability’, affected by flooding from the River Thames in the 1 in 100 annual probability flood event. The entirety of the site is shown to be impacted by the 1 in 100 annual probability +35% and +70% allowances for climate change flood events. A small portion of the site lies within Flood Zone 3b ‘functional floodplain’. This area should not be utilised for residential dwellings and development should be avoided.</p> <p>A review of flood risk within the site has been carried out. The feasibility of designing the site in such a way that it remains safe throughout the lifetime of the development is dependent on a number of factors. It is essential that the following design recommendations are incorporated into the design process from the conceptual stage. A detailed site-based Flood Risk Assessment will be required as an integral part of the planning application stage, which should be carried out in accordance with Section 10.4 of the Level 1 SFRA.</p> <p>Design Recommendations</p> <ol style="list-style-type: none"> 1. Development should be avoided within the area defined as Flood Zone 3b ‘functional floodplain’; 2. Floor levels within the site should be situated a minimum of 300mm above the 1 in 100 annual probability plus allowance for climate change, in this instance +35%, assuming a 100 year lifetime for residential development; 3. Flood storage should be analysed to show that the proposed building footprint of the development will not cause a detriment to the available storage during the 1 in 100 annual probability +35% climate change allowance flood event. The presence of a significant existing building footprint suggests that floodplain storage capacity could be improved through effective design measures; 4. Where appropriate, buildings should adopt resilient design techniques to minimise the damage and disruption sustained by businesses and/or residents following a flooding event. Further guidance can be found in BRE Digest DG523 ‘Flood Resilient Building’, the Department for Communities and Local Government document ‘Improving the Flood Performance of New Buildings – Flood Resilient Construction’, and Section 12.4 of the Level 1 SFRA’; 5. Sustainable Drainage Systems (SuDS) should be incorporated into the site design, aiming to achieve greenfield runoff rates, if feasible, in accordance with Section 13.4 of the Level 1
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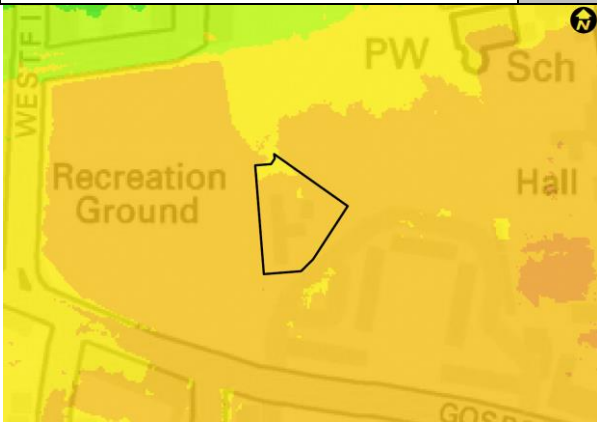
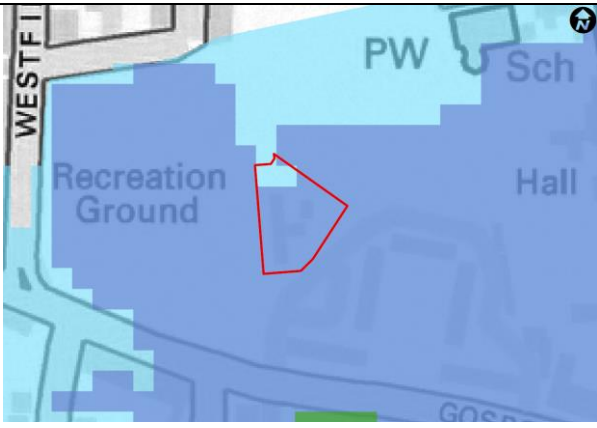
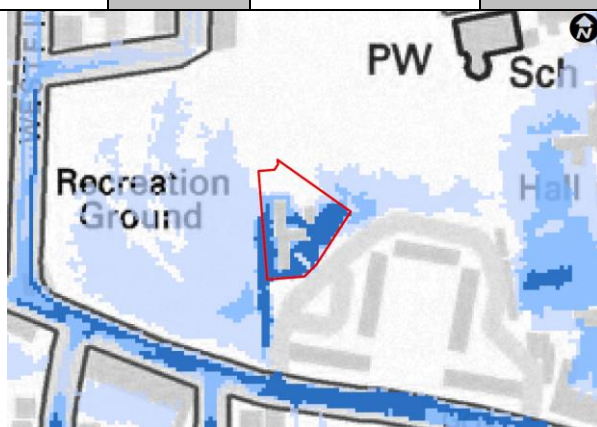


Reading Borough Council Level 2 Strategic Flood Risk Assessment

SFRA. It is important that SUDS are designed with due consideration to soil and groundwater conditions. Infiltration techniques should be sought wherever possible, however are likely to be unsuitable in areas of shallow groundwater and/or impermeable soils. Further guidance on designing for groundwater is provided in Section 6.5 of the Level 1 SFRA. Buildings and landscaping should be designed within the site to avoid locking overland flow routes;

6. Safe access is impacted in the current 1 in 100 annual probability flood event. Further analysis is required to assess if a safe route is available in accordance with the requirements in Section 3.4 of the L2 SFRA and, if so, a Flood Management and Evacuation Plan' should be prepared. Future tenants/residents within the site should be made aware of the potential risks of flooding, and should be actively encouraged to sign up to the Environment Agency's Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event;
7. It is essential to ensure that all basement areas within flood affected areas of the site are watertight, and the entrance point is situated above the 1 in 100 annual probability +35% allowance for climate change flood level. Basements should not be used to provide habitable areas in locations classified at Flood Zone 3a 'High Probability';
8. Residual risk to the development should be investigated against the 1 in 100 annual probability +70% allowance for climate change flood event.

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CA011 - Former Caversham Nursery (Local Plan ref: Not Identified)																															
Grid Reference	SU 71770 74730			Post Code	RG4 8BH																										
Topography				<p>Elevation</p> <table style="font-size: small; border: none;"> <tr> <td style="color: red;">■</td><td>< 35 mAOD</td> <td style="color: green;">■</td><td>41 - 42 mAOD</td> </tr> <tr> <td style="color: orange;">■</td><td>35 - 36 mAOD</td> <td style="color: teal;">■</td><td>42 - 43 mAOD</td> </tr> <tr> <td style="color: yellow;">■</td><td>36 - 37 mAOD</td> <td style="color: blue;">■</td><td>43 - 44 mAOD</td> </tr> <tr> <td style="color: lightyellow;">■</td><td>37 - 38 mAOD</td> <td style="color: darkblue;">■</td><td>44 - 45 mAOD</td> </tr> <tr> <td style="color: limegreen;">■</td><td>38 - 39 mAOD</td> <td style="color: navy;">■</td><td>> 45 mAOD</td> </tr> <tr> <td style="color: yellowgreen;">■</td><td>39 - 40 mAOD</td> <td></td><td></td> </tr> </table> <p>The site exists on a gradient, rising from south to north from approximately 37.2m AOD to 38.3m AOD.</p>				■	< 35 mAOD	■	41 - 42 mAOD	■	35 - 36 mAOD	■	42 - 43 mAOD	■	36 - 37 mAOD	■	43 - 44 mAOD	■	37 - 38 mAOD	■	44 - 45 mAOD	■	38 - 39 mAOD	■	> 45 mAOD	■	39 - 40 mAOD		
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Flood Zone Map				<p>Legend</p> <ul style="list-style-type: none"> — River □ Site Boundary ■ Flood Zone 2 ■ Flood Zone 3 ■ Flood Zone 3b 																											
Flood Zone 1	0%	Flood Zone 2	10%	Flood Zone 3a	90%	Flood Zone 3b	0%																								
Surface Water				<p>Risk of Surface Water Flooding</p> <ul style="list-style-type: none"> — River □ Site Boundary ■ High - 1 in 30 annual probability ■ Medium - 1 in 100 annual probability ■ Low - 1 in 1000 annual Probability □ Very Low - > 1 in 1000 annual probability 																											



Reading Borough Council Level 2 Strategic Flood Risk Assessment

Development Proposal	Residential dwellings	Vulnerability Classification	More Vulnerable
Applicable Climate Change Allowances	<p>The site is located within Flood Zone 2 'Medium Probability', and Flood Zone 3a 'High Probability', and the proposed development is classified as More Vulnerable.</p> <p>The +35% and +70% peak river flow climate change allowances should therefore be used to assess a range of climate change scenarios. The +35% allowance should be used to provide a benchmark flood level against which mitigation measures should be set, and the +70% allowance used to assess residual risk to the development.</p>		
Climate Change Extents			<p>Legend</p> <ul style="list-style-type: none"> Site Boundary 1 in 100 annual probability +35% Climate Change 1 in 100 annual probability +70% Climate Change
1 in 100 annual probability +25%	N/A	1 in 100 annual probability +35%	100%
1 in 100 annual probability +70%			100%
Description of Flood Risk	<p>Flood Depth The maximum flood depths around the existing buildings in the 1 in 100 annual probability flood event typically vary from 10mm to 400 mm over the site.</p> <p>The flood depths in the 1 in 1000 annual probability flood event typically vary from 500mm to 900mm over the site.</p> <p>Flood depths in the climate change scenarios are typically 500mm in the +35% scenario, and 800mm in the +70% scenario.</p> <p>Flood Warning and Period of Inundation The River Thames is a large catchment with flooding typically the result of sustained regional-scale rainfall events. The response time – i.e. the period between the rainfall over the catchment and the rising river levels downstream – can be significant, and this ensures there is typically a significant period of advance warning (i.e. a period of days) before flooding occurs in the area.</p> <p>The EA issue flood warnings for the area via their 'Flood Information Service' and considerable advance warning of a flood event can typically be provided to allow the Council, emergency services residents and businesses to take appropriate action.</p> <p>Velocity of Flood Waters The site is occupied by buildings in an urbanised area, a significant distance from the main river, and is impacted in the climate change allowance scenarios. When flooding does occur, the rate of rise and</p>		



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Description of Flood Risk	<p>fall in water level is slow and velocities will correspondingly be slow, with the direction of flow from west to east (subject to further interrogation of the EA modelling).</p>
	<p>Flood Defences While not a 'formal' flood defence, the EA asset register does identify that the River Thames, located approximately 0.3km south of the site, includes natural high ground on its left bank with a design standard of 1 in 2 years. The condition is currently at 3 (moderate), on a scale of 1 (very good) to 5 (very poor).</p>
	<p>Historic Records and Other Sources of Flooding The Level 1 SFRA indicates that the site has been subject to river flooding in 1947 and 1977, but is not noted to have been impacted by flood events from other sources. Gosbrook Road, located south of the site, has previously been impacted by fluvial flooding.</p> <p>External areas are noted to be at risk of surface water flooding, which emphasises the importance of an effective surface water drainage strategy as part of any proposed development, to prevent ponding of water following heavy rainfall events, in accordance with Sections 13.4 and 13.5 of the Level 1 SFRA.</p> <p>The susceptibility to groundwater flooding varies between '25% and 50%'. The Thames Water DG5 information indicates that the site is within a postcode (RG4 8) that has over 101 recorded sewer flood incidents, both internal and external.</p> <p>The site is not located within a maximum modelled breach extent of reservoir flooding and is therefore at negligible risk of flooding in the event of a reservoir breach.</p>
	<p>Overview of Flood Risk A summary of the flood risk to the site is provided below:</p> <ul style="list-style-type: none"> The majority of the site is classified as Flood Zone 3a 'Medium Probability', with a 1 in 100 annual probability of river flooding; The maximum flood depth during the 1 in 100 annual probability event typically between 10mm and 400mm; The maximum flood depth during the 1 in 1000 annual probability event is typically between 500mm and 900mm; The whole site is impacted by the 1 in 100 annual probability +35% climate change allowance flood event, with general depths between 300mm and 700mm; Maximum flood depths for the 1 in 100 annual probability +70% climate change allowance typically vary between 600mm and 1000mm; The site is largely classified as at High risk of surface water flooding, with areas to the north at Very Low risk; The site is at negligible risk of flooding in the event of a reservoir breach; The access route via the adjacent road and Gosbrook Road to the south is impacted in the 1 in 100 annual probability flood event. <p>The site is shown to be at high risk of fluvial flooding, at a range of very low to high risk of surface water flooding and may be susceptible to groundwater and sewer flooding. The site is therefore potentially at risk of flooding from a number of sources.</p> <p>Safe access via the access road/Gosbrook Road is impacted in a flood event of 1 in 100 annual probability or greater, although a pedestrian route at lower probability of flooding (outside the current 1 in 100 annual probability floodplain) may be available to the north-west via the adjacent recreation</p>



Reading Borough Council Level 2 Strategic Flood Risk Assessment

ground. The feasibility of new residential development is subject to further assessment of the mitigation strategy based on the approach detailed in the L2 SFRA.

It is important that the design process considers the risk of flooding at the earliest conceptual stage, encompassing measures that will ensure the safety of future tenants/residents during a flood event.

A number of important design recommendations are set out below.

Spatial Planning

The site largely lies within Flood Zone 3a 'High Probability', affected by flooding from the River Thames in the 1 in 100 annual probability flood event. The entirety of the site is shown to be impacted by the 1 in 100 annual probability +35% and +70% allowances for climate change flood events.

A review of flood risk within the site has been carried out. The feasibility of designing the site in such a way that it remains safe throughout the lifetime of the development is dependent on a number of factors, and is specifically subject to further assessment of the safe access route.

It is essential that the following design recommendations are incorporated into the design process from the conceptual stage. A detailed site-based Flood Risk Assessment will be required as an integral part of the planning application stage, which should be carried out in accordance with Section 10.4 of the Level 1 SFRA.

Design Recommendations

1. Floor levels within the site should be situated a minimum of 300mm above the 1 in 100 annual probability plus allowance for climate change, in this instance +35%, assuming a 100 year lifetime for residential development;
2. Flood storage should be analysed to show that the proposed building footprint of the development will not cause a detriment to the available storage during the 1 in 100 annual probability +35% climate change allowance flood event. The presence of a significant existing building footprint suggests that floodplain storage capacity could be improved through effective design measures;
3. Where appropriate, buildings within the site should adopt resilient design techniques to minimise the damage and disruption sustained by businesses and/or residents following a flooding event. Further guidance can be found in BRE Digest DG523 'Flood Resilient Building', the Department for Communities and Local Government document 'Improving the Flood Performance of New Buildings – Flood Resilient Construction', and Section 12.4 of the Level 1 SFRA;
4. Sustainable Drainage Systems (SuDS) should be incorporated into the site design, aiming to achieve greenfield runoff rates, if feasible, in accordance with Section 13.4 of the Level 1 SFRA. It is important that SUDS are designed with due consideration to soil and groundwater conditions. Infiltration techniques should be sought wherever possible, however are likely to be unsuitable in areas of shallow groundwater and/or impermeable soils. Further guidance on designing for groundwater is provided in Section 6.5 of the Level 1 SFRA. Buildings and landscaping should be designed within the site to avoid locking overland flow routes;

Planning Recommendations

Reading Borough Council Level 2 Strategic Flood Risk Assessment

5. Safe access via the access road is impacted in the current 1 in 100 annual probability flood event. Further analysis is required to assess if a safe route is available in accordance with the requirements in Section 3.4 of the L2 SFRA and, if so, a Flood Management and Evacuation Plan' should be prepared. Future tenants/residents within the site should be made aware of the potential risks of flooding, and should be actively encouraged to sign up to the Environment Agency's Flood Information Service to receive flood alerts, flood warnings and severe flood warnings well in advance of an event;
6. It is essential to ensure that all basement areas within flood affected areas of the site are watertight, and the entrance point is situated above the 1 in 100 annual probability +35% allowance for climate change flood level. Basements should not be used to provide habitable areas in locations classified at Flood Zone 2 'Medium Probability';
7. Residual risk to the development should be investigated against the 1 in 100 annual probability +70% allowance for climate change flood event.