

## Hinckley and Bosworth Borough Level 2 Strategic Flood Risk Assessment: Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	Site LPR71– Land off Murphy Drive and Chestnut Drive, Bagworth			
	<b>Area</b>	7.34 hectares			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Existing drainage features</b>	An unnamed watercourse runs from east to west along the southern boundary of the site. At the eastern end of the site, an additional unnamed channel flows from the north-east through the site to join the watercourse along the southern boundary.			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		17%	24%	27%	73%
	Flood risk to the site is associated with the watercourse along the southern boundary; however, the Flood Zones extend further than the confines of the channel into the centre of the site and reconnect with other out of bank flow paths, which may be conservative. The 2D generalised modelling extents do not align with the surface water mapping, so site topographic survey may be required and a detailed hydraulic model to confirm flood risk extents.				
	<b>Surface Water</b>	<b>Proportion of site at risk (RoFfSW)</b>			
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>	
0%		<1%	13%		
The site is unaffected by surface water flood risk from the 30-year event, with the 100-year event only encroaching slightly into the site boundary in the south-western corner of the site and along the southern site boundary. In the 1,000-year event, isolated areas of surface water ponding can be seen throughout the site, with a significant flow path present from the existing housing estate north and east of the site, towards the channel at the south-western edge of the site.					
<b>Reservoir</b>	The site is not shown to be at risk of reservoir flooding.				
<b>Flood history</b>	There are no records of historic flooding at the site from the Environment Agency or Leicestershire County Council. An incident was reported by Leicestershire County Council on 09/03/2016 at Howden Close 80m to the north of the site.				
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>	
		-	-	-	
	This site is not protected by any formal flood defences.				
<b>Residual risk</b>	-				
<b>Flood warning</b>	The site is not covered by the Environment Agency's Flood Warning Service.				

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<b>Emergency planning</b>	<b>Access and egress</b>	<p>Dry access and egress to the site is available via Jackson Road, Chestnut Drive and Hawthorne Road at the east end of the site in the 30-year and 100-year surface water events and in all fluvial events. At the northern end of the site dry access and egress is available via Daisy Close in the 30-year and 100-year surface water events and in all fluvial events. In the 1,000-year surface water event, dry access and egress is available via Station Road at the far eastern end of the site only. Surface water ponding along Jackson Road and Daisy in the 1,000-year events prevent dry access at from these roads.</p> <p>The depths, velocities, hazards, durations and speeds of onset of surface water and fluvial flooding along access/ egress routes should be investigated further in a site-specific assessment, to confirm whether access for emergency vehicles could still be obtained.</p>			
<b>Climate Change</b>	<b>Climate change allowances for '2080s'</b>	<b>River Basin District</b>	<b>Central</b>	<b>Higher Central</b>	<b>Upper End</b>
	<b>Implications for the site</b>	Humber	20%	30%	50%
		Fluvial extents from climate change did not increase significantly when compared with FZ3a. As the site is affected by surface water flooding from the 100-year event, climate change may also increase the extent, depth and frequency of surface water flooding. The 1,000-year surface water extent can be used as an indication of surface water climate change extents.			

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<b>Requirements for drainage control and impact mitigation</b>	<b>Broad scale assessment of possible SuDS</b>	<ul style="list-style-type: none"> <li>• Geology at the site consists of: <ul style="list-style-type: none"> <li>○ Bedrock – Mudstone, siltstone and sandstone</li> <li>○ Superficial – no superficial deposits in the area</li> </ul> </li> <li>• The site is not located within a Groundwater Source Protection Zone.</li> <li>• All forms of source control are likely to be suitable.</li> <li>• Infiltration likely to be suitable. Mapping suggests a low risk of ground water flooding however, site investigations should be carried out to assess potential for drainage by infiltration.</li> <li>• Mapping suggests that the site slopes are suitable for all forms of detention.</li> <li>• All filtration techniques are likely to be suitable. If the site has contamination issues; a liner will be required.</li> <li>• All forms of conveyance are likely to be suitable. Where the slopes are &gt;5% features should follow contours or utilise check dams to slow flows. If the site has contamination issues; a liner will be required.</li> <li>• The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>• should refer to latest SuDS guidance on Leicestershire County Council's <a href="#">website</a> and <a href="#">Environmental Best Practice notes</a> as well as the Level 1 SFRA, for information on suitable types of SuDS, the management train and opportunities and constraints.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>The Exception Test will need to be applied if:</p> <ul style="list-style-type: none"> <li>• More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2.</li> <li>• Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.</li> <li>• More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.</li> <li>• Essential Infrastructure in Flood Zone 3b will require the Exception Test.</li> </ul> <p>Residential development is classified as 'More Vulnerable'.</p>

	<p style="text-align: center;"><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<ul style="list-style-type: none"> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required if any development is located within Flood Zones 2 or 3 or is greater than one hectare. A Flood Risk Assessment must consider the entire lifetime of the development and consider all sources of flooding.</li> <li>• The site area includes the Flood Zone 2 extents. Most development types are appropriate for this flood risk zone but must take into account the flood risk (1% to 0.1% annual exceedance probability).</li> <li>• The site area includes the Flood Zone 3a extents. Future development must take into account the flood risk in this area (5% to 1% annual exceedance probability). More vulnerable and critical infrastructure development is possible within Flood Zone 3a but is required to pass the Exception Test. Highly vulnerable development is not permitted within Flood Zone 3a.</li> <li>• The site area includes the extents of Flood Zone 3b, also known as the functional floodplain. Only essential infrastructure passing the Exception Test is permitted within Flood Zone 3b. Should there be any development within Flood Zone 3b flood storage lost by the development must be offset.</li> <li>• An ordinary watercourse is within or immediately adjacent to the site area and therefore consultation with Lead Local Flood Authority should be completed. If alterations or discharges are proposed to the watercourse a land drainage consent will be required.</li> <li>• More detailed hydraulic modelling using channel survey may be required as part of a site-specific Flood Risk Assessment, to confirm flood risk shown in the 2D generalised modelling.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area through the centre of the site's boundary. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• Onsite attenuation schemes would need to be tested against the unnamed watercourse along the southern boundary to ensure flows are not exacerbated downstream within the catchment.</li> <li>• New or re-development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff.</li> <li>• Water quality requirements for sustainable development should comply with current SuDS guidance.</li> <li>• Assessment for runoff should include allowance for climate change effects.</li> <li>• Safe access and egress will need to be demonstrated.</li> <li>• New development must seek opportunities to reduce overall level of flood risk at the site, for example by: <ul style="list-style-type: none"> <li>○ Reducing volume and rate of runoff</li> <li>○ Relocating development to zones with lower flood risk</li> <li>○ Creating space for flooding.</li> </ul> </li> </ul>
<b>Mapping Information</b>		
<b>Flood Zones</b>	The Flood Zones have been derived from 2D generalised modelling techniques.	
<b>Climate change</b>	The climate change allowances for the '2080s' epoch were modelled using 2D generalised modelling techniques.	
<b>Surface Water</b>	The Environment Agency's Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.	
<b>Fluvial depth, velocity and hazard mapping</b>	Depth, velocity and hazard mapping for the 1 in 100-year event (Flood Zone 3a) have been taken from 2D generalised modelling techniques.	
<b>Surface water depth, velocity and hazard mapping</b>	The surface water depth, velocity and hazard mapping for the 1 in 100-year event (considered to be medium risk) is taken Environment Agency's Risk of Flooding from Surface Water.	