

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



<b>Site details</b>	<b>Site Code</b>	Site AS53 – Land off Bosworth Road and Cunnergy Close, Barlestone			
	<b>Area</b>	7.59 hectares			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Mixed Use			
<b>Sources of flood risk</b>	<b>Existing drainage features</b>	An unnamed watercourse follows the southern site boundary from west to east.			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		7%	8%	9%	91%
	Flood risk to the site is associated with the unnamed watercourse that flows along the southern boundary of the site. The extents of Flood Zones 3a, 3b and 2 are fairly similar and extend away from the channel into the southern area of the site. The flood extents are slightly misaligned with the watercourse in areas where the 2D generalised modelling follows local topography.				
	<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>	
5%		8%	21%		
The surface water flood risk affecting the site mainly concentrates around the watercourse in the southern area of the site. There are some areas of ponding encroaching onto the northwest of the site in the 1,000-year event. Additionally, an area of surface water ponding occurs near the east boundary where the site begins to narrow in the 100-year and 1,000-year events.					
<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. However, a historic incident was recorded at Manor Road, 200m north of the site, by Leicestershire County Council in 2012.				
<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>	A culvert crosses from west to east across Bosworth Road immediately adjacent to the eastern boundary of the site. If this structure became blocked there is potential for increased surface water and fluvial flooding in the southern area of the site if water backs up along the watercourse; there is already an area of ponding here in the Flood Zones and surface water mapping extent. The potential for blockage may need to be considered in a site-specific assessment.			
	<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 Bosworth Road from the north and east in all fluvial events and in 30-year and 100-year surface water events. The Glebe to the north of the site can be used for dry access and egress in all fluvial events and in the 30-year surface water event.</p> <p>If flood waters during an event are contained within the culvert passing from west to east beneath Bosworth Road, dry access and egress to the site can also be gained via Bosworth Road from the south. Access to the site is limited in the 1,000-year surface water flooding event due to water ponding on Manor Road, Bosworth Road, Cunnery Close and The Glebe. The depth of surface water flooding in the 1,000-year event is a maximum of 0.3m along Cunnery Close, The Glebe and Bosworth Road north of the site, therefore access for emergency vehicles may still be possible. However, 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 – Sand and gravel</li> </ul> </li> <li>The site is not located within a Groundwater Source Protection Zone.</li> <li>Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non-infiltrating systems given the possible risk from groundwater.</li> <li>Mapping suggests that there is a high risk of groundwater flooding at this location, therefore it is likely infiltration techniques will not be suitable. This should be confirmed via site investigations to assess the potential for infiltration.</li> <li>Detention may be feasible provided site slopes are &lt; 5% at the location of the detention feature. A liner maybe required to prevent the egress of groundwater.</li> <li>Filtration is probably suitable provided site slopes are &lt;5% and the depth to the water table is &gt;1m. A liner maybe required to prevent the egress of groundwater.</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. A liner maybe required to prevent the egress of groundwater.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>Developers 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 in site master-planning.</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', employment development is classified as 'Less Vulnerable'.</p>

	<p><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>• The site extents include the modelled 100-year + 50% climate change flood outline. Any development should consider the future flood risk impacts onsite and the impacts the development may have upon future flood flows.</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 and refine 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 of the site 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.	

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<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.