

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



Site details	Site Code	Site LPR30 – Land east of Groby cemetery, Groby			
	Area	4.41 hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Existing drainage features	An unnamed tributary of Rothley Brook flows eastwards along the northern boundary and then from north to south along the eastern boundary of the site.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		8%	9%	11%	89%
	Flood risk to the site is associated with the unnamed watercourse flowing along the northern and eastern site boundaries and is concentrated in the north-eastern corner of the site. Along the eastern site boundary all Flood Zones are mainly confined to the channel.				
	Surface Water	Proportion of site at risk (RoFfSW)			
		30-year	100-year	1,000-year	
5%		7%	16%		
Surface water flood risk is mainly concentrated around the watercourse along the site boundary with additional ponding away from the channel in the north-eastern corner of the site at all events. Surface water ponding from the 1,000-year event extends further into the site.					
Reservoir	The site is not shown to be at risk of reservoir flooding.				
Flood history	There are no records of historic flooding at the site from Leicestershire County Council or the Environment Agency historic flooding map.				
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition	
		-	-	-	
	This site is not protected by any formal flood defences.				
Residual risk	There is a culvert beneath Sacheverell Way approximately 120m to the south of the site. If this structure was to block, flood extents in the site could increase; 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.				
Emergency planning	Flood warning	The site is not covered by the Environment Agency's Flood Warning Service.			
	Access and egress	<p>Dry access and egress to this site is available via Ratby Road and Sacheverell Way in all fluvial events. In all surface water events, parts of Ratby Road, Groby Road and Sacheverell Way are flooded, potentially limiting access for emergency vehicles, depending on the depth and hazard of flooding.</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>			

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Climate Change	Climate change allowances for '2080s'	River Basin District	Central	Higher Central	Upper End
		Humber	20%	30%	50%
	Implications for the site	Fluvial extents from climate change did not increase significantly when compared with FZ3a. Minor increases can be seen along the eastern boundary of the site. 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.			
Requirements for drainage control and impact mitigation	Broad scale assessment of possible SuDS	<ul style="list-style-type: none"> • Geology at the site consists of: <ul style="list-style-type: none"> ○ Bedrock – Mudstone, siltstone and sandstone ○ Superficial – Diamicton • The site is not located within a Groundwater Source Protection Zone. • 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. • Infiltration may be suitable. Mapping suggests a medium risk of groundwater flooding and underlying soils may be permeable. Further site investigation should be carried out to assess potential for drainage by infiltration. If infiltration is suitable it should be avoided in areas where the depth to the water table is <1m. • Mapping suggests that the site slopes are suitable for all forms of detention. A liner maybe required to prevent the egress of groundwater. • All filtration techniques are likely to be suitable. A liner maybe required to prevent the egress of groundwater. • All forms of conveyance are likely to be suitable. Where the slopes are >5% features should follow contours or utilise check dams to slow flows. A liner maybe required to prevent the egress of groundwater. • The site is not designated by the Environment Agency as previously being a landfill site. • should refer to latest SuDS guidance on Leicestershire County Council's website and Environmental Best Practice notes as well as the Level 1 SFRA, for information on suitable types of SuDS, the management train and opportunities and constraints. 			

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NPPF and planning implications	Exception Test requirements	<p>The Sequential Test will need to be passed before the Exception Test is applied. The Exception Test will need to be applied if:</p> <ul style="list-style-type: none"> • More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. • Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. • More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. • Essential Infrastructure in Flood Zone 3b will require the Exception Test. <p>Residential development is classified as 'More Vulnerable'.</p>

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	Requirements and guidance for site-specific Flood Risk Assessment	<ul style="list-style-type: none"> • Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage. • 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. • 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). • 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. • 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. • 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. • 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. • Onsite attenuation schemes would need to be tested against the unnamed watercourse along the eastern site boundary to ensure flows are not exacerbated downstream within the catchment. • 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. • Water quality requirements for sustainable development should comply with current SuDS guidance. • Assessment for runoff should include allowance for climate change effects. • Safe access and egress will need to be demonstrated. • New development must seek opportunities to reduce overall level of flood risk at the site, for example by: <ul style="list-style-type: none"> ○ Reducing volume and rate of runoff ○ Relocating development to zones with lower flood risk ○ Creating space for flooding.

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Mapping Information		
Flood Zones	The Flood Zones have been derived from 2D generalised modelling techniques.	
Climate change	The climate change allowances for the '2080s' epoch were modelled using 2D generalised modelling techniques.	
Surface Water	The Environment Agency's Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.	
Fluvial depth, velocity and hazard mapping	Depth, velocity and hazard mapping for the 1 in 100-year event (Flood Zone 3a) have been taken from 2D generalised modelling techniques.	
Surface water depth, velocity and hazard mapping	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.	