

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



Site details	Site Code	Site AS586 – Land East of Witherley, Witherley			
	Area	3.16 hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Existing drainage features	An unnamed tributary of Witherley Brook flows from south to north along the eastern boundary of the site.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		18%	23%	32%	68%
	Flood risk to the site is associated with the unnamed tributary of the Witherley Brook along the eastern boundary of the site. All Flood Zones (FZ3b, FZ3a and FZ2) are confined to the eastern-most third of the site with FZ2 extending slightly further into the site along its northern boundary. Approximately a third of the site is at flood risk.				
	Surface Water	Proportion of site at risk (RoFfSW)			
		30-year	100-year	1,000-year	
12%		28%	47%		
The surface water flood risk mainly affects the eastern area of the site as water flows from higher ground in the middle of the site towards the unnamed tributary of the Witherley Brook. In the 30-year event, the north-eastern corner of the site is largely affected by surface water.					
Reservoir	The site is not shown to be at risk of reservoir flooding.				
Flood history	There are no records of flooding at the site from the Environment Agency's historic flood map. A flood event was recorded by Leicestershire County Council 173 m away from the north-western corner of the site on Atterton Lane on 27/12/17.				
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 to the north of the site beneath Atterton Lane. Should this culvert become blocked, there is potential for increased flood risk at the site if the water backs up along the watercourse.			
Emergency planning	Flood warning	The north-eastern corner of the site is covered by the River Anker and River Sence Flood Alert Area (033WAF307).			
	Access and egress	Dry access and egress is available to the site via Kennel Lane in all surface water and fluvial events, which is away from the flood risk in the east of the site. In all events Kennel Lane must be accessed via the A5 to the south of the site as access from Atterton Lane and Mythe Lane to the north of the site is at risk of flooding in all fluvial and surface water events. 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.			

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Climate Change	Climate change allowances for '2080s'	River Basin District	Central	Higher Central	Upper End
	Implications for the site	Humber	20%	30%	50%
Requirements for drainage control and impact mitigation	Broad scale assessment of possible SuDS	<p>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. There is a large increase between the 100-year and 1,000-year surface water extents (19% of the whole site) suggesting that the site is sensitive to the impacts of climate change for surface water.</p> <ul style="list-style-type: none"> • Geology at the site consists of: <ul style="list-style-type: none"> ○ Bedrock – Mudstone, siltstone and sandstone ○ Superficial – Clay, silt and sand. This is confined to the south and south eastern area of the site. • 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 due to the site potential groundwater flooding. • 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. 			

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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.</p> <p>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>

	<p>Requirements and guidance for site-specific Flood Risk Assessment</p>	<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. • 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. • 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. • 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. • 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 tributary of the Witherley Brook along the eastern boundary of the site to ensure flows are not exacerbated downstream within the catchment. • The site is at high risk of surface water flooding, particularly in the longer return periods and this should be considered as part of a site-specific FRA or surface water drainage strategy. • 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.
Mapping Information		
Flood Zones	The Flood Zones have been derived from 2D generalised modelling techniques.	

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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.