

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



Site details	Site Code	Site LPR44 – Hinckley Sewage Treatment Works, Burbage			
	Area	26.9 hectares			
	Current land use	Brownfield			
	Proposed land use	Mixed Use			
Sources of flood risk	Existing drainage features	The Sketchley Brook flows from north-east to south-west along the northern boundary of the site, leaving the site via a culvert under Logix Road at the western edge of the site. There are a number of small, unnamed and unmodelled drains in the south of the site.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		3%	3%	18%	82%
	Flood Zones 3b and 3a are concentrated along the course of the Sketchley Brook on the northern site boundary. Flood Zone 2 extends further into the centre of the site, and forms flow paths away from the watercourse.				
	Surface Water	Proportion of site at risk (RoFfSW)			
		30-year	100-year	1,000-year	
4%		8%	33%		
Surface water flood risk for 30-year and 100-year events occurs in small, isolated areas across the site, along the Sketchley Brook and in concentrated flow paths along existing roads and pathways through the site. Large areas of ponding and significant flow paths are present in the throughout the site in the 1,000-year event.					
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. Approximately 100m east of the site, there was a historic flood event identified by Leicestershire County Council on Cardinal Drive.				
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition	
		-	-	-	
	This site is not protected by any formal flood defences.				
Residual risk	The Sketchley Brook joins the Ashby de la Zouch Canal immediately southwest of the site boundary after passing through a culvert running east to west beneath Logix Road. A blockage in the culvert or flooding events in the canal have the potential to cause a backup of water, increasing flood risk within the site.				
Flood warning	Areas in the northwest of the site are covered under the Environment Agency's River Anker and River Sence Flood Alert Area (033WAF307).				

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Emergency planning	Access and egress	<p>Dry access and egress to the site is possible via Sketchley Meadows in the 30-year surface water flood event, providing access is via Sketchley Old Village. This is due to surface water ponding at key access points from the A5. Dry access and egress via Sketchley Meadows is not possible in 100-year or 1,000-year surface water flood events. Access is not possible from Logix Road or Brookfield Road to the north of the site due to surface water ponding on key access routes.</p> <p>In all fluvial flood events dry access and egress is possible from the southern end of the site from Logix Road or Sketchley Meadows provided access is via Sketchley Old Village due to fluvial flooding on parts of the A5 to the northwest and southeast of the site.</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>			
Climate Change	Climate change allowances for '2080s'	River Basin District	Central	Higher Central	Upper End
		Humber	20%	30%	50%
	Implications for the site	<p>Fluvial extents from climate change did not increase significantly when compared with FZ3a. Minor increases can be seen near the western site boundary at the corner of Logix Road, but climate change extents do not increase enough to reach the extents of Flood Zone 2. 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 (25% of the whole site) suggesting that the site is sensitive to the impacts of climate change for surface water.</p>			

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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 – Sand and gravel 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. Mapping also suggests that slopes may be unsuitable for selective source control techniques. Mapping suggests that there is a medium 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. Detention is unlikely to be feasible as mapping suggests mean site slopes are > 5%. Feasibility of such options should be assessed as part of a site-specific assessment. If this feature is feasible a liner maybe required to prevent the egress of groundwater. Filtration is unlikely to be feasible as mapping suggests mean site slopes are > 5%. Feasibility of such options should be assessed as part of a site-specific assessment. If this feature is feasible 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. An area directly adjacent to the north of the site, near Brookfield Road and Logix Road, is identified by the Environment Agency as a previous landfill site (Nelson Burgess 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.
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', employment development is classified as 'Less 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 either include or borders with a main river, where an easement of 8m is required from the bank. Any future development will require a flood risk permit for any activity within 8m of a main river. • 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 Sketchley Brook to the north of the site to ensure flows are not exacerbated downstream within the catchment. • The site is at fairly high surface water flood risk in the 1,000-year event and this should be considered as part of a site-specific FRA or surface water drainage strategy. • There are a number of small, unnamed and unmodelled drains in the south of the site which are not included in the Flood Zones, these should be considered for modelling as part of a site-specific FRA. • 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	Flood Zones 2 and 3a have been taken from the Environment Agency's Flood Map for Planning Flood Zones and Flood Zone 3b has been derived from the 2013 Sketchley Brook 1D-2D ISIS-TUFLOW hydraulic model.	
Climate change	The climate change allowances for the '2080s' epoch were modelled using the 2013 Sketchley Brook 1D-2D ISIS-TUFLOW hydraulic model.	
Surface Water	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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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 the 2013 Sketchley Brook 1D-2D ISIS-TUFLOW hydraulic model.
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.