

# **Blaby District Council Level 2 Strategic Flood Risk Assessment – Site Summary Tables**

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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>BLA031</b>			
	<b>Address</b>	Land North of Hospital Lane, Blaby			
	<b>Area</b>	23.09 hectares			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	The site is located east of Blaby and south of the city of Leicester. The site is located south of the River Sence and in relative proximity to the River Sence floodplain. The River Sence flows from east to west, north of the site. The topography of the site is relatively level, the southern boundary at 69m AOD and the northern boundary at 67m AOD, with higher ground to the east at Highfields Farm. The Grand Union Canal is located 600 metres north of the site, north of the River Sence.			
	<b>Existing drainage features</b>	The Environment Agency's Detailed River Network shows drainage features are associated with the River Sence flowing in westerly direction, just north of the site. The River Sence is located 258 metres from the most northerly point of the site.			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		0%	0%	<1%	99%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		High			
		<i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %.</i>			
		<i>FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>			

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	BLA031		
	Address	Land North of Hospital Lane, Blaby		
	Area	23.09 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><b>Available data:</b> The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment, which includes the downstream end of the River Sence. The site lies on the River Sence part of the Soar model. The EA's Flood Map for Planning has been used to inform Flood Zones 2 and 3a and Flood Zone 3b has been derived from the hydraulic model.</p> <p><b>Flood characteristics:</b> The modelled Flood Zone data for this site indicated that flood risk for this site is restricted to the river valley of the Sence. The river flows north of Mill Lane and the floodplain is wide; however, only the very outer edge of the flood extent reaches the site. Fluvial Flood Zone 2 is the only Flood Zone present within this site. Fluvial Flood Zone 2 covers a small portion of the north eastern boundary of the site, ingress in the site by 25 metres from Mill Lane. Fluvial Flood Zone's 3a and 3b are not present within this site. The modelled defended 100-year event has no modelled data reaching this site. The 100 year +20% climate change event covers a small area of the north-eastern area of the site, it has a recorded depth of 0.13m with no maximum velocity recorded at this site. There is no hazard rating for this event. The 100-year +30% event similarly covers a similar area of the site, with recorded maximum depth of 0.236m and a maximum velocity of 0.059m/s. During the 100-year +30% event, the hazard is projected at a maximum threshold of 0.75-1.25, which presents a moderate risk, described as 'Dangerous for some'. This is located at the northern border of the site, along Mill Lane. The 100-year +50% event covers a greater area of the site, but this again is within the north-eastern area of the site with a maximum depth of 0.281m and a maximum velocity of 0.056m/s. There is no combined hazard data for this event</p>		
	Surface Water	<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		4%	10%	22%
		Max depths (m)		
		0.3-0.9m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		

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Site details	Site Code	BLA031		
	Address	Land North of Hospital Lane, Blaby		
	Area	23.09 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		>0.25m/s	>0.25m/s	>0.25m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		
		<b>Description of surface water flow paths:</b> The site is affected by surface water flooding in all 3 events, bisecting the site from the south east to the centre of the western portion of the site. The large flow path originates from Countesthorpe, following the alignment of an ordinary watercourse flowing north towards the site, before it then turns west in the site towards Welford Road, Sycamore Street and up to the Sence floodplain at the A426. The 30-year event identifies localised areas of ponding along the southern boundary of the site as well as flowing through from the south-east of the site to the middle of the western boundary of the site. The surface water follows a public bridle way that acts as an ingress route for surface water. An area of ponding is located at the north eastern border of the site, which ingresses 17metres into the site from Mill Lane. The 100-year event follows a similar flow paths as the 30-year event, spreading wider in this same area. An area of localised ponding is located just north of the education facility on the western boundary of the site. The north-western boundary of the site identifies a small area of surface water ponding, which extends 13 metres south into the site. Within the north eastern corner of the site, a surface water branch exits the site to Mill Lane. The 1,000-year event follows the same flow paths as the previous events and spreads much wider again. The surface water pond located at the north-western boundary of the site has now extended in length to 32 metres from 17 metres, additionally, a new surface water pond is located adjacent to this pond. Further areas of surface water ponding are located at the northern, eastern, southern, and north eastern boundaries of the site. Overall, there is little variation in both the depth of surface water (300-900mm) and velocity of surface water (>0.25m/s).		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



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	<b>Address</b>	Land North of Hospital Lane, Blaby		
	<b>Area</b>	23.09 hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
	<b>Flood history</b>	<p>The site is not located within the Environment Agency's Historic Flood Map. The Historic Flood Map identifies previous flooding events within the River Sence valley but does not overlay onto the site.</p> <p>The Lead Local Flood Authority should be contacted to obtain further details.</p>		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not protected by formal flood defences		
	<b>Residual risk</b>	There is no anticipated residual risk presented at this site; however, a site-specific FRA should be carried out to confirm this.		
<b>Emergency planning</b>	<b>Flood warning</b>	The northern boundary of the site is located within both the Environment Agency's Flood Warning Service (River Sence at Blaby and Glen Parva) as well as the Environment Agency's Flood Alert Service (River Sence in Leicestershire).		
	<b>Access and egress</b>	<p>The site can be accessed by both Mill Lane on the northern border of the site, Church Street to the north west of the site and both Welford Road and Hospital Lane on the southern boundary of the site.</p> <p>Flood Zones 2 and 3a bisect Mill Lane directly north of the site as well as completely inundating Welford Road due north of the site. Church Street, Mill Lane and Welford Road are all impacted by all surface water events. The site is not at risk of Flood Zone 3b flooding.</p> <p>In the 30-year and 100-year surface water events, the site is bisected by surface water flooding, with areas of ponding and new flow paths, putting access and egress at risk to the south-eastern portion of the site. The 1,000-year event cuts off the south-eastern portion of the site from access and egress as the adjacent road (Hospital Lane) is bisected at the junction of Welford Road and Hospital Lane, preventing safe access and egress. This should be considered in more detail at site-specific stage considering there is both fluvial and surface water risk along numerous surrounding roads.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



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	<b>Area</b>	23.09 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the site from the Soar and Sence model, for the 100 year +20% +30% +50% climate change scenarios. These all cover an area similar to Fluvial Flood Zone 2; all located within the norther eastern area of the site. The modelled climate change data identifies no new flood path characteristics.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



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	<b>Proposed land use</b>	Residential
<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 – Charmouth Mudstone Formation - Mudstone.</li> <li>Superficial – Head - Clay, silt, Sand and Gravel</li> </ul> </li> <li>The majority of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>In small northern and eastern part of the site groundwater levels are indicated to be between 0.5 and 5m below ground level and there is a risk of flooding to subsurface assets and below ground development such as basements. Groundwater monitoring is recommended to determine the seasonal variability of groundwater levels, as this may affect the design of the surface water drainage system.</li> <li>This site is not located in an area with historic landfill site/s</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'</p> <p>It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site.</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> </ul>



	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes along the southern and south-western boundaries, preserving these spaces as green infrastructure. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse 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> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>BLA031</b>
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	<b>Area</b>	23.09 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<p>Assessment for runoff should include allowance for climate change effects.</p> <ul style="list-style-type: none"> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



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	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to 99% of the site located within Flood Zone 1. Development should be directed towards the north of the site where areas of surface water ponding flow and ponding is lower, though away from the very northern boundary where the outer Sence floodplain extents reach the site.</li> <li>• Development should be steered away from the southern portion of the site due to the surface water ponding and flow across the 30, 100, 1,000-year events.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Safe access and egress need detailed consideration due to surface water flow paths bisecting both Hospital Lane and Church Street and numerous other local roads available.</li> <li>• Space for green infrastructure should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and Tributaries model. The 20-year flood extent was used to derive Flood Zone 3b. Modelled data was used for the depth, velocity and hazard data derived from the Soar and Sence Baseline model.
<b>Climate change</b>		Climate change was based on the 2012 River Soar and Tributaries model, where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch.

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	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Fluvial depth, velocity and hazard mapping</b>		There is Fluvial Depth, Velocity and Hazard data available from the Scene and Soar model (2021 River Soar and Tributaries modelling). The 100-year and 100-year + climate change have been assessed.
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>BLA034</b>
	<b>Address</b>	Land at Hospital Lane, Blaby
	<b>Area</b>	98.78 hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Residential
<b>Site location</b>	<b>Map</b>	<p><b>Site BLA034 Location</b></p> <ul style="list-style-type: none"> <li>Site BLA034</li> <li>Detailed River Network</li> <li>Blaby District Boundary</li> </ul> <p>Contains OS data © Crown copyright and database right (2021)</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	BLA034			
	Address	Land at Hospital Lane, Blaby			
	Area	98.78 hectares			
	Current land use	Greenfield/Brownfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The proposed site is located to the south of Leicester, due south to South Wigston, to the east of Blaby, and north of Countesthorpe which are developed residential areas. The site is split into several land parcels, divided by the disused railway line and by Hospital Lane. Parcel A is located to the west of the old railway and bound to the north by Mill Lane, due north of Hospital Lane. Parcel B is to the south of Hospital Lane. Parcel C is to the east of the railway and is bound to the north and east by the River Sence. The River Sence is located to the flows through the north eastern part Parcel C, bisecting an area of land. The Grand Union Canal is further north of the site and the River Sence. The site is located in the lower reaches of the River Sence in the Upper Soar catchment. There is an unnamed tributary that runs from the centre of the site northwards and converges with the River Sence after flowing through a culvert, under Mill Lane, at the northern boundary.			
	Existing drainage features	The Environment Agency's Detailed River Network shows drainage features along this site are associated with the River Sence which runs in a westerly direction to the north of the proposed site and through the north eastern area of the site, separating an area of land to the east of Countesthorpe Road. There is an unnamed tributary of the River Sence that runs from the centre of the most north-westerly parcel of land flowing in a northerly direction to meet the Sence.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		<1%	17%	18%	82%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		High			
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)			

		<p><b>Available data:</b></p> <p>The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment. The section of the River Sence to the north of the site is included in the Soar-Sence model, up to Countesthorpe Road. For this section, the EA's Flood Map for Planning has been used to inform Flood Zones 2 and 3a (as this incorporates latest modelling) and Flood Zone 3b has been derived from the hydraulic model. The section of the river upstream of Countesthorpe Road, to the north and surrounding part of the eastern parcel of the site, is covered by an older 1D-only model of the River Sence, which is currently being updated by the EA, and therefore this model has not been included in the assessment, instead using the EA's Flood Map for Planning.</p> <p><b>Flood characteristics:</b></p> <p>The modelled Flood Zone data for this site indicates that flood risk to this site is restricted through the river valley of the River Sence which runs to the north of the site boundary and has an unnamed tributary which runs through the northern boundary and through the centre of Parcel C in a southerly direction. Flooding is widespread in the Sence floodplain in all Flood Zones, but for the majority of the land parcels (west of Countesthorpe Road), the outer flood extent only marginally encroaches into the northern edges of the sites.</p> <p>The Fluvial Flood Zones that are present cover approximately less than 20% of the proposed site overall; however, some land parcels are at more significant risk than others.</p> <p>Fluvial Flood Zones 2, 3a and 3b are all present in the north eastern area of the site boundary for Parcel A, west of Countesthorpe Road and the railway line. Flood Zones 2 and 3a cover a similar extent of the site, Flood Zone 3b extends only slightly into the north eastern area of the site. Flood Zone 2 is also present in the north west (Parcel C) covering a small area of land which is near to the tributary of the River Sence.</p> <p>Land Parcel C, to the east of Countesthorpe Road lies outside of Blaby District, and is more significantly impacted, with two-thirds of the site in Flood Zone 3, and a small land parcel wholly covered. These parcels straddle the river itself and development would be challenging here, excepting in the southern portion which is not shown to be at flood risk.</p> <p>The modelled defended 100-year extent from the 1D-2D Soar-Sence model downstream of the railway line affects the site in the north eastern area with a maximum depth recorded at 3.37m and maximum velocities of 1.71m/s. The 100 year +30% climate change event covers a greater extent in the north east portion of the site, as well as extending over the northern boundary where the watercourse is located. The 100-year +30% scenario projects maximum depths of 3.91m and maximum velocities of 1.82m/s. These are high due to the proximity of the floodplain and widespread flooding across lower lying land.</p> <p>During the 100-year modelled defended event, hazard is projected at a maximum threshold of 0.75-1.25, which presents a moderate risk, described as 'danger for some' – a Flood Zone with deep or fast flowing water. The risk is situated in the north east area of the site and covers a minimal area. The 100-year +30% extent covers a greater area within the north east of the with a maximum hazard threshold of 1.25-2 which is a significant hazard and dangerous for most people – a Flood Zone with deep and fast flowing water.</p> <p>There is no depth, velocity or hazard data for the land parcels east of the railway line, where risk is highest. This should be investigated in a site-specific assessment. It is anticipated that these metrics would also be high given the spread of flooding and parcels straddling the watercourse itself.</p>
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	<b>Area</b>	98.78 hectares		
	<b>Current land use</b>	Greenfield/Brownfield		
	<b>Proposed land use</b>	Residential		
	<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>
		3%	8%	19%
		Max depths (mm)		
		0.3-0.9m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		>0.25m/s	>0.25m/s	>0.25m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		
		<b>Description of surface water flow paths:</b>		
		<p>The whole site is affected by surface water flooding in all 3 events. The 30-year and 100-year events are focussed within close proximity to the unnamed watercourse which runs in a northerly direction through the site, where topography is lowest. This flow path originates in Countesthorpe and follows the lower topography of ordinary watercourses to meet the Sence.</p> <p>Surface water also gravitates towards the Sence floodplain, though affects the eastern parcels more in the 100-year and 1,000-year events.</p> <p>The 1,000-year surface water extent is concentrated within areas of low topography in the southern region of the proposed site. This event is much wider in extent along the Sence floodplain, affecting approximately half of the eastern land parcel. Where the unnamed watercourse meanders to alter its flow from the west to north there is a significant increase in risk of surface water flooding which bisects the site into three areas.</p> <p>Overall, there is a change to depths from 300-900mm to &gt;900mm between the events; the deepest areas will be in the lowest topography of the site within close proximity to the watercourse. Velocity remains high throughout the 3 scenarios (&gt;0.25m/s).</p>		
	<b>Reservoir</b>	The site is not shown to be at risk of reservoir flooding from the available online maps.		



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>BLA034</b>		
	<b>Address</b>	Land at Hospital Lane, Blaby		
	<b>Area</b>	98.78 hectares		
	<b>Current land use</b>	Greenfield/Brownfield		
	<b>Proposed land use</b>	Residential		
	<b>Flood history</b>	<p>The northern land parcels are shown to be within the reaches of the Environment Agency's Historic Flood Mapping. This area covers small areas in the north east and north west, with a similar extent to Flood Zone 2.</p> <p>There has been one reported incident within the proposed site on Countesthorpe Road, in November 2012 which was a reported rescue or evacuation from water.</p> <p>The Level 1 SFRA states there has been one reported incident on Hospital Road on 06/04/2018 which involved highway flooding resulting in prevented access and one traffic collision.</p> <p>On 09/03/2016 Mill Lane which runs to the north of the site boundary was reported to have flooded, causing concerns over the condition of ditches.</p> <p>The Lead Local Flood Authority should be contacted to obtain further details.</p>		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not protected by any formal flood defences.		
	<b>Residual risk</b>	<p>There is a residual risk presented at the northern boundary in Parcel A where the unnamed watercourse flows north under Mill Lane, and also where the Sence flows under Countesthorpe Road. Given the topography of the site, the culvert on the unnamed watercourse has the potential to affect the northern area of the site if it became blocked as flows would accumulate within the site boundary. It is likely that the Sence structure is larger, but there is a topographic impoundment from the railway embankment, so again if blockage was to occur, more water could back up into the eastern land parcels.</p> <p>A site-specific flood risk assessment is recommended to investigate these potential risks from culvert blockages further.</p>		
<b>Emergency planning</b>	<b>Flood warning</b>	<p>Areas along the northern boundary of the proposed site are included within the Environment Agency's Flood Warning and Flood Alert systems.</p> <p>Flood Warning Area – River Sence at Blaby and Glen Parva including New Bridge and Welford Roads and riverside mills and works (034WAF401).</p> <p>Flood Alert Area – River Sence and tributaries from Billesdon to the River Soar at Glen Parva (034WAF401).</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>BLA034</b>
	<b>Address</b>	Land at Hospital Lane, Blaby
	<b>Area</b>	98.78 hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Residential
	<b>Access and egress</b>	<p>Access in general should be steered south, away from the River Sence floodplain which is at high flood risk.</p> <p>Parcel A and B can be accessed via Hospital Lane in all fluvial events. Access and egress need to be considered during surface water events as Parcel A is bisected into 2 areas during the 30-year and 100-year events, and 3 areas during the 1,000-year event. Main access to Parcel A can be found via Hospital Lane which is located to the south of the boundary. Access for Parcels A and C should be avoided from the northern boundary as this is where the main flood risk is posed. Access to Parcel C could be created from Countesthorpe Road along the eastern boundary. Access is not possible for Parcel C from the north or east due to the existing watercourse. Surface water velocity during the 3 events is high (<math>&gt;0.25\text{m/s}</math>), and depths are projected to be moderate to high (300-900mm).</p> <p>A site-specific Flood Risk Assessment should be undertaken to evaluate accessibility to pedestrians and vehicles at proposed access points particularly for land Parcels A and C.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>BLA034</b>
	<b>Address</b>	Land at Hospital Lane, Blaby
	<b>Area</b>	98.78 hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the land parcels east of Countesthorpe Road for the River Sence and its tributaries. The modelling is for 100-year events +20%, +30%, +50% climate change scenarios. These all cover an area similar to Fluvial Flood Zone 2. The modelled climate change data identifies no new flood path characteristics. For the parcels east of Countesthorpe Road, Flood Zone 2 has been used as an indication of climate change; this is the same extent as FZ3a, but regardless affects a large proportion of the sites and therefore poses significant development constraints.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

<p><b>Requirements for drainage control and impact mitigation</b></p>	<p><b>Broad scale assessment of possible SuDS</b></p>	<ul style="list-style-type: none"> <li>• Geology at the site consists of: <ul style="list-style-type: none"> <li>◦ Bedrock – North of site: Westbury Formation – Mudstone. South of site: Blue Anchor Formation – Mudstone.</li> <li>◦ Superficial – North of site: Wigstone Member – Sand and Gravel. South of site: Thrussington Member – Diamicton. South East of site and through centre: Glen Parva Member: Clay</li> </ul> </li> <li>• Most of the southern part of the site and a band running horizontally through the northern part of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>• At the rest of the site groundwater levels are indicated to be between 0.5 and 5m below ground level and there is a risk of flooding to subsurface assets and below ground development such as basements. Groundwater monitoring is recommended to determine the seasonal variability of groundwater levels, as this may affect the design of the surface water drainage system.</li> <li>• In smaller areas of the site in the north groundwater levels are indicated to be less than 1m below ground level during a 1% AEP event. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>• This site has areas within its boundary designated by the Environment Agency as being a landfill site. A thorough ground investigation will be required as part of a detailed FRA to determine the extent of the contamination and the impact this may have on SuDS. As such proposed SuDS should be discussed with the relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible constraints.</li> <li>• The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<p><b>NPPF and planning implications</b></p>	<p><b>Exception Test requirements</b></p>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'.</p> <p>It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. For the land parcels east of the railway line, risk is much lower, just along the northern boundary and so development should be steered away from the Sence floodplain, but there is plenty of development area within these parcels. For the parcels east of the railway line, there are significant challenges for development – one small parcel is not suitable for development given it is wholly covered by Flood Zone 3 between 2 branches of the Sence, and the larger eastern parcel is covered by two-thirds of Flood Zone 3, straddling the watercourse, so development here will need to be steered to the far south where there is no risk for residential development</p> <p>The Exception test will need to be applied if:</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>BLA034</b>
	<b>Address</b>	Land at Hospital Lane, Blaby
	<b>Area</b>	98.78 hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Residential
		<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> </ul>

**Requirements  
and guidance  
for site-specific  
Flood Risk  
Assessment**

**Flood Risk Assessment:**

- 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.
- Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.
- All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.
- A more detailed hydraulic model of the River Sence to the east of the railway line may be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents, using channel topographic survey. The EA are currently undertaking detailed modelling of this watercourse so developers should contact the EA to understand the latest situation.
- A blockage assessment may be required using the detailed hydraulic model, given the culvert at the northern site boundary, which could further impact the site should it become blocked during a flood event.
- Any FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance; Blaby District's Council's Local Plan policies, and the LLFA's SuDS guidance.
- Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.
- Flood risk needs to be considered for the lifetime of the development, accounting for climate change.
- The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.
- Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.
- Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.

**Guidance for site design and making development safe:**

- The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).
- Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.
- Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>BLA034</b>
	<b>Address</b>	Land at Hospital Lane, Blaby
	<b>Area</b>	98.78 hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture, and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>BLA034</b>
	<b>Address</b>	Land at Hospital Lane, Blaby
	<b>Area</b>	98.78 hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is mainly focussed in the land parcels west of the railway line, steering away from the northern boundary of the Sence floodplain towards Flood Zone 1.</li> <li>• There is a large surface water flow path which winds through these parcels however, and development should be steered away from this, or else flood water will be displaced elsewhere.</li> <li>• There are significant constraints to development for the 2 far eastern land parcels; one is wholly covered by all Flood Zones and therefore is not deemed suitable for development, particularly residential. The larger parcel is covered two-thirds by the Flood Zones, again posing difficulties for flood mitigation and safe access etc. The most southern portion is free of flood risk, but space is limited here. Residential development should be avoided in these Flood Zone areas.</li> <li>• Safe access and egress need to be considered for all land parcels. There are areas of high surface risk – mainly near to the watercourse. The southern boundary presents the lowest flood risk and joins with Hospital Lane, but there may be constraints accessing roads from different parts of the land parcels.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example if land is raised to permit development in an area, compensatory flood storage will be required in another area).</li> <li>• Space for green areas should be considered in the areas of highest flood risk – i.e. in the north.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
<p>The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.</p>		



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>BLA034</b>
	<b>Address</b>	Land at Hospital Lane, Blaby
	<b>Area</b>	98.78 hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Residential
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and Tributaries model. The 20-year flood extent was used to derive Flood Zone 3b. Upstream of the railway line, the EA's Flood Map for Planning has been used, and Flood Zone 3a is used as the indication of Flood Zone 3b extents.
<b>Climate change</b>		Climate change was based on the 2012 River Soar and Tributaries model, where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch. Upstream of the railway line, Flood Zone 2 has been used as an indication of climate change.
<b>Fluvial depth, velocity and hazard mapping</b>		There is Fluvial Depth, Velocity and Hazard data available from the River Soar and Tributaries model. The 100-year and 100-year +climate change have been assessed. Upstream of the railway line, there is no detailed information available.
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	COS009			
	Address	Land west of Broughton Road, Cosby			
	Area	19.85 hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The proposed site is located to the south west of Leicester, in the south of Cosby on the western side of Broughton Road. The site lies to the south of an existing residential area – Elm tree Road and Kingsfield Road. The site is bound to the east by Broughton Road, and the surrounding land to the south and west is used for agricultural purposes. A small drain flows through the site, converging with the Cosby Brook at the Broughton Road – Shuttleworth Lane junction. The Cosby Brook here is close to its upstream limit and is a tributary of the River Soar in its upper catchment.			
	Existing drainage features	The Environment Agency’s Detailed River Network shows drainage features at this site are associated with a small drain which meets the Cosby Brook, a tributary to the River Soar along the south-eastern boundary of the site.  There is a culvert located to the south west of the site through which Cosby Brook flows northwards and crosses under Broughton road before continuing north east and crossing into the proposed site boundary. The watercourse flows through a second culvert out of the site boundary and under Broughton Road, where it then follows a manmade channel adjacent to Main Street, Cosby. As the channel flows northerly through Cosby it passes through a series of culverts for approximately 1500m. The watercourse then continues to flow in a general northerly direction before converging with the River Soar approximately 2KM downstream.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		0%	1%	2%	98%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		High			
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)			

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COS009</b>		
	<b>Address</b>	Land west of Broughton Road, Cosby		
	<b>Area</b>	19.85 hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
		<p><b>Available data:</b> The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling (Cosby Brook) has been used to inform this assessment. However, this detailed model doesn't commence until just north of Chapel Lane, which is downstream of the Cosby Brook - drain confluence at the eastern side of the site. A small portion of 2D generalised modelling which was available from previous SFRA studies was inserted upstream of here where available, in the absence of any other data. This is the extent, which is shown to affect the site, though again only a small portion, not the full extent of the drain through the site.</p> <p><b>Flood characteristics:</b> The modelled Flood Zone data for this site indicates that flood risk to this site is associated with a small drain which feeds into the Cosby Brook, that runs near to the eastern boundary. Flood Zones 2 and 3a are present within the site boundary, covering a very small area, though this is because only a small portion of 2D generalised modelling was available to display here. This does not mean that there is no risk along the remaining portion of the drain in the site, there is just no data available. Flood Zone 2 covers marginally more area than Flood Zone 3a, both Flood Zones are located in the area of lowest topography within the site. There is no Historic Flood Map data present within the site boundary.</p> <p>Developers should investigate flood risk from this drain using a detailed hydraulic model, connecting to the existing Cosby Brook model, to understand the impacts of flood risk and climate change at the site, as well as the impacts of any culvert blockage or interaction from the confluence with the Cosby Brook.</p> <p>Given the downward slope of the site from north-west to south-east, and the size of the drain, it is anticipated that the flood risk will generally be confined and localised to this very south-eastern floodplain of the drain. It is likely the current extents are conservative, given the topography and that the Cosby Brook model downstream is shown in-bank.</p> <p>The RoFfSW dataset can also offer a good indication of likely risk for small drains.</p>		
		<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		2%	3%	7%
	<b>Surface Water</b>	Max depths (mm)		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	COS009		
	Address	Land west of Broughton Road, Cosby		
	Area	19.85 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		>0.9m	>0.9m	>0.9m
		Max velocity (m/s)		
		>0.25m/s	>0.25m/s	>0.25m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		
		<b>Description of surface water flow paths:</b> Risk of Flooding from Surface Water data for this site shows flow paths in all 30, 100 and 1,000-year extents, largely localised in the vicinity of the floodplain of the drain. Surface water risks present within the 30-year extent follow the channel of the drain through the site. During the 100-year scenario the risk of flooding from surface water is further increased: one additional flow path is shown in the south of the site. During the 1,000-year scenario, the flooding from surface water risk displays wider risks across the south-eastern area of the site and generates an additional flow path from the west into the lower topography towards the drain in the south east of the site. Overall, there is no/ very little change in depths (>900mm) and velocity (>0.25m/s) through the events. The deepest areas will be in the area of 30-year flooding, within close proximity to Cosby Brook, with shallower depths as the extent spreads away from here.		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	The site is not shown to be within the reaches of the Environment Agency's Historic Flood Map.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COS009</b>		
	<b>Address</b>	Land west of Broughton Road, Cosby		
	<b>Area</b>	19.85 hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not protected by any formal flood defences.		
<b>Emergency planning</b>	<b>Residual risk</b>	<p>There is one culvert present at the eastern boundary which runs under Broughton Road, where the drain meets the Cosby Brook. Given the topography of the site the culvert has the potential to affect the eastern area of the site if it became blocked as flows would accumulate within the site boundary. There is also a culvert shortly downstream on the Cosby Brook at Chapel Lane; risk to the site from a blockage here is likely to be low given the confined topography, but road levels look low near the very eastern boundary so this may need to be considered.</p> <p>A site-specific flood risk assessment is recommended to investigate these potential risks from culvert blockages further.</p>		
	<b>Flood warning</b>	The site is not covered by the Environment Agency's Flood Warning or Flood Alert service.		
<b>Emergency planning</b>	<b>Access and egress</b>	<p>Access and egress at this site are possible from Broughton Road along the eastern boundary. However, surface water risk is high in all events from where Broughton Road meets Shuttleworth Lane, leading into Cosby. Both depth and velocity during surface water events are shown to be high throughout all events, with depth projected at &gt;900mm and velocity &gt;0.25m/s. This road which turns into The Nook and Main Street, acts as a surface water conduit and should be avoided for access.</p> <p>For fluvial risk, the Cosby Brook is in-bank towards Cosby, but out of bank flooding is shown to occur all down Main Street again, in all Flood Zones. Access is recommended to the south away from Cosby.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COS009</b>
	<b>Address</b>	Land west of Broughton Road, Cosby
	<b>Area</b>	19.85 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the site from the Cosby Brook in the River Soar and Tributaries model for the 100-year +20%, 30% and 50% climate change scenarios. However, this model is located downstream of the site and therefore there is no detailed information available at the site. In the absence of detailed modelling, Flood Zone 2 can be used as a proxy; this is only mapped for a portion of the site, and therefore climate change will need to be accounted for in detail in a site-specific FRA to understand risk to the site. In general, the floodplain topography is relatively confined, and it would be expected that climate change extents would also follow this floodplain.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events, and for small drains such as this in the absence of detailed information. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>COS009</b>
	<b>Address</b>	Land west of Broughton Road, Cosby
	<b>Area</b>	19.85 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Mercia Mudstone Group.</li> <li>Superficial – Predominantly - Till, Mid Pleistocene – Diamicton. Some areas (near to watercourse) – River Terrace Deposits – Sand and Gravel.</li> </ul> </li> <li>The majority of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>A small semi-circle to the west of the site has groundwater levels that are indicated to be between 0.5 and 5m below ground level and there is a risk of flooding to subsurface assets and below ground development such as basements. Groundwater monitoring is recommended to determine the seasonal variability of groundwater levels, as this may affect the design of the surface water drainage system.</li> <li>To the east of the site, there is an area where groundwater levels are indicated to be at or very near (within 0.025m) ground level and there is a risk of groundwater flooding at the surface during a 1% AEP event, which may flow to and pool within topographic low spots. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COS009</b>
	<b>Address</b>	Land west of Broughton Road, Cosby
	<b>Area</b>	19.85 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'. It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site, away from the eastern site boundary where the floodplain is present. 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> </ul>



	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model may be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the drain, which feeds into the Cosby Brook along the south eastern boundary, using channel topographic survey. The Cosby Brook model could be extended upstream to capture risk at the site.</li> <li>• A blockage assessment may be required using a detailed hydraulic model, given the culvert at the eastern site boundary, which could further impact the site should it become blocked in a flood event.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance; Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes along the southern and south-western boundaries, preserving these spaces as green infrastructure. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COS009</b>
	<b>Address</b>	Land west of Broughton Road, Cosby
	<b>Area</b>	19.85 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<p>above the design event may remove the need for resilience measures.</p> <ul style="list-style-type: none"> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates, and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>COS009</b>
	<b>Address</b>	Land west of Broughton Road, Cosby
	<b>Area</b>	19.85 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to the majority of the area of the site located within Flood Zone 1. This is steering away from the eastern boundary where the floodplain of the drain lies. The rest of the site is higher ground and therefore is not at fluvial or surface water flood risk.</li> <li>• Safe access and egress need to be considered as there is high surface water risk towards Cosby, where the roads themselves form conduits for the flow. Access is recommended to the south away from Cosby.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk – i.e. in the south east.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	<p>The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling (Cosby Brook) has been used to inform this assessment. However, this detailed model starts downstream of the site and a small portion of existing 2D generalised modelling has been used on the absence of any other detailed information.</p> <p>Developers may need to undertake detailed hydraulic modelling at the site to fully understand fluvial flood risk.</p>	
<b>Climate change</b>	<p>Climate change was based on Flood Zone 2 at the site, though this is only present for a small portion of the drain due to the absence of information. The 2012 River Soar and Tributaries model, where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch, is present downstream of the site where the model commences around Chapel Lane.</p> <p>The 1,000-year RoFFSW dataset can also be used to infer risk from climate change for small drainage catchments.</p>	

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COS009</b>
	<b>Address</b>	Land west of Broughton Road, Cosby
	<b>Area</b>	19.85 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Fluvial depth, velocity and hazard mapping</b>		There is Fluvial Depth, Velocity and Hazard data available from the 2021 River Soar and Tributaries modelling downstream of the site where the model commences, but there is no information present at the site itself as the watercourse is not formally modelled.
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COS013</b>			
	<b>Address</b>	Land west of Cosby			
	<b>Area</b>	23.20 hectares			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	The site is located to the south west of Leicester, in the north west of the village of Cosby. The village of Littlethorpe is located approximately 700m north of the site. Croft Road is adjacent to the southern boundary of the site, and Narborough Road bounds the most eastern extent of the site boundary. The site is located at the upstream end of the Cosby Brook in the Upper River Soar catchment which flows in a north easterly direction to the north of the site location. Cosby Brook is a tributary of The River Soar and flows along the eastern boundary of the site.			
	<b>Existing drainage features</b>	The Environment Agency's Detailed River Network shows drainage features are associated with Cosby Brook which flows in a northerly direction, along the eastern boundary of the site. This watercourse confluences with the River Soar approximately 1300m to the north west of the site.			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		<1%	7%	12%	88%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		Medium			
		<i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>			

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COS013</b>		
	<b>Address</b>	Land west of Cosby		
	<b>Area</b>	23.20 hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
		<p><b>Available data:</b> The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment. The site lies on the Cosby Brook model. The EA's Flood Map for Planning has been used to inform Flood Zones 2 and 3a (as this incorporates latest modelling) and Flood Zone 3b has been derived from the hydraulic model's 20-year extent.</p> <p><b>Flood characteristics:</b> The modelled Flood Zone data for the site indicates that flood risk to this site is restricted to the eastern area of the site which is the lowest topographic area. Fluvial Flood Zones 2 and 3a are present within the eastern lower topographic area of the site. Flood Zone 2 covers the greatest area covering 12% of the site. Both Flood Zones 2 and 3a spill out of the left bank at several places near the site and then follow the lower floodplain topography as a parallel flow path to the channel itself (not fully connected in all places). Flood Zone 3b is present in the eastern vicinity of the site where the topography is at its lowest, although covers less than 1% and remains in-bank.</p> <p>The modelled defended 100-year extent affects an area similar to the extent of Flood Zone 3a as the site is not formally defended. Maximum depth of the 100-year extent from the Cosby model is recorded in the site at 0.54m, and maximum velocities of 1.05m/s. The 100-year +30% extent covers a greater extent of the eastern vicinity of the site, similar to Flood Zone 2, with maximum depths of 0.63m and increased velocities of 0.91m/s. During the 100-year modelled defended event, hazard is projected at a maximum threshold of 1.25-2 which is a significant hazard and dangerous for most people – a Flood Zone with deep and fast flowing water. Hazard during the 100-year event covers a very small area within the east of the site, approximately less than 3%. There is very little change to hazard regarding the 100-year +30% scenario, with a very slight increase to coverage of the site although still less than 10%. The maximum threshold is similarly projected as 1.25-2 – a significant hazard and dangerous for most people.</p>		
		<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		<1%	3%	11%
		Max depths (m)		
		<0.3m	0.3-0.9m	0.3-0.9m
	<b>Surface Water</b>			

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	COS013		
	Address	Land west of Cosby		
	Area	23.20 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		Max velocity (m/s)		
		<0.25m/s	>0.25m/s	>0.25m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		
		<b>Description of surface water flow paths:</b> The site is affected by surface water flooding during all 3 events. During the 30-year event, there is localised ponding near to and along the eastern boundary, the risk covers less than 1% of the site area. During the 100-year event a new surface water path is created which bisects the east section from the rest of the site. The 1,000-year event does not generate any new flow paths; however, the extent of surface water flooding is much wider, covering 11% of the site's area, and matching closely with the extent of Flood Zone 2 filling the lower area of the topography on the eastern side of the site. There is a change in depth through the events (<300 – 900mm), and velocity remains the same for the 30-year and 100-year events (>0.25m/s). The deepest areas of surface water will be in 30-year extent in the lower topography of the site along the eastern boundary, with shallower depths as the extent spreads away from here.		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	An area in the east of the proposed site is shown to be within the reaches of the Environment Agency's Historic Flood Map. The area extends over the eastern boundary from Cosby Brook, covering a smaller area of the site than Flood Zone 2. There are no specific recorded incidents. The Lead Local Flood Authority should be contacted to obtain further details.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COS013</b>		
	<b>Address</b>	Land west of Cosby		
	<b>Area</b>	23.20 hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not protected by any formal flood defences.		
	<b>Residual risk</b>	There is a residual risk presented by Cosby Brook which is a tributary to the River Soar and passes along the eastern boundary of the site. Cosby Brook passes under a series of culverts in Cosby to the south of the site. There is potential for the east of the site to be affected by culvert blockages due to the topography; however, a site-specific flood risk assessment is recommended to investigate this potential risk further.		
<b>Emergency planning</b>	<b>Flood warning</b>	The site is not covered by the Environment Agency's Flood Warning Service. The western area of the site is included within the Environment Agency's Flood Alert Service – River Soar in Leicestershire including tributaries from Sharnford to the River Wreake confluence at Syston (034WAF402).		
	<b>Access and egress</b>	The site can be accessed by Narborough Road and Croft Road in all fluvial and surface water events, which runs to the east of the site, between it and Cosby. Due to Cosby Brook which runs along the eastern boundary of the site, access should be steered to the west away from Narborough Road, where there is current road access from Croft Road. In the near vicinity east and west, there are several surface water flow paths which do cross Croft Road in all events, which will need to be considered for emergency vehicles in a detailed assessment.		



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COS013</b>
	<b>Address</b>	Land west of Cosby
	<b>Area</b>	23.20 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the site from Cosby Brook, for the 100-year +20%, +30%, +50% climate change scenarios. These all cover an area similar to Fluvial Flood Zone 2.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>COS013</b>
	<b>Address</b>	Land west of Cosby
	<b>Area</b>	23.20 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Mercia Mudstone Group – Mudstone.</li> <li>Superficial – Alluvium - Clay, Silt, Sand and Gravel.</li> <li>Superficial – River Terrace Deposits – Sand and Gravel.</li> </ul> </li> <li>At the majority of the site groundwater levels are indicated to be at or very near (within 0.025m) ground level and there is a risk of groundwater flooding at the surface during a 1% AEP event, which may flow to and pool within topographic low spots. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>At the southern part of the site groundwater levels are indicated to be less than 1m below ground level during a 1% AEP event. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>A very small band to the mid-east of the site area, and south is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COS013</b>
	<b>Address</b>	Land west of Cosby
	<b>Area</b>	23.20 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'. It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. The Exception test will need to be applied if:</p> <ul style="list-style-type: none"> <li>• More Vulnerable and Essential Infrastructure development is 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse 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</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COS013</b>
	<b>Address</b>	Land west of Cosby
	<b>Area</b>	23.20 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<p>impact flooding due to post-development runoff. Assessment for runoff should include allowance for climate change effects.</p> <ul style="list-style-type: none"> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>COS013</b>
	<b>Address</b>	Land west of Cosby
	<b>Area</b>	23.20 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to the majority of the area of the site located within Flood Zone 1, therefore avoiding the eastern vicinity of the site where both fluvial and surface water flood risks exist.</li> <li>• Safe access and egress need to be considered as the east of the site is inaccessible during surface water and fluvial flood events. Access is achievable to from Croft Road, but there is still risk in the wider vicinity from several other surface water flow paths.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and Tributaries model (Cosby Brook). The 20-year flood extent was used to derive Flood Zone 3b.	
<b>Climate change</b>	Climate change was based on the 2012 River Soar and Tributaries model (Cosby Brook), where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch.	
<b>Fluvial depth, velocity and hazard mapping</b>	There is Fluvial Depth, Velocity and Hazard data available from the Cobsy Brook model (2021 River Soar and Tributaries modelling). The 100-year and 100-year + climate change have been assessed.	
<b>Surface Water</b>	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.	

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COS013</b>
	<b>Address</b>	Land west of Cosby
	<b>Area</b>	23.20 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	COU042			
	Address	Land east of Willoughby Road			
	Area	18.13 Hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The site is located within the south-eastern area of Countesthorpe, along Willoughby Road. The site is located 770 metres east of the Whetstone Brook.			
	Existing drainage features	The site is located 770m east of Whetstone Brook. The Environment Agency’s Detailed River Network shows that there are no other drainage features associated with this site.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		0%	0%	0%	100%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		Low			
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)			
		Available data: The Environment Agency’s Flood Zone mapping has been used in this assessment.			
		Flood characteristics: The modelled Flood Zone data for this site indicates that the site is solely located within Flood Zone 1. This site is not at risk of flooding in the 1000-year event.			
	Surface Water	Proportion of site at risk (RoFfSW)			
		30-year	100-year	1,000-year	
		2%	6%	13%	
		Max depths (m)			
0.3-0.9m		0.3-0.9m	0.3-0.9m		
Max velocity (m/s)					
>0.25 m/s		>0.25 m/s	>0.25 m/s		
The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)					



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	COU042		
	Address	Land east of Willoughby Road		
	Area	18.13 Hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><b>Description of surface water flow paths:</b></p> <p>A surface water flow path bisects the site running from the centre of the southern boundary to the centre of the northern boundary during all modelled events. Therefore, this region is at risk of surface water flooding.</p> <p>The 30-year event identifies a surface water flow path running northward through the site from the southern border towards Penfold Drive. Flow depths are below 0.3m with velocities greater than 0.5m/s.</p> <p>In the 100-year event, the flow path crosses the centre of the site, flowing from south to north through the site and expands greatly. Depths remain below 0.3m with velocities greater than 0.25m/s.</p> <p>In the 1000-year event the flow path again increases in extent significantly, running through the centre of the site. Three additional surface water branches flow west toward the main channel from the area of higher elevation within the western area of the site.</p> <p>Within the southern area of the site, several smaller surface water branches flow east into the main flow path. An additional flow path forms running from Lord Close toward the main flow at the north boundary. Where is also surface water ponding along the northwest boundary.</p> <p>The majority of the flooded area remains below 0.3m in depth, with depths of 0.3-0.9m present in the north of the site where water pools at the boundary. Velocities are over 0.25m/s across the flow path.</p>		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	The site is not shown to be within the reaches of the Environment Agency's Historic Flood Map. Developers should contact the LLFA for more information on historic flooding.		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
		The site is not shown to have any implemented flood risk management infrastructure.		
	Residual risk	The site is not shown to be exposed to any residual risks.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COU042</b>
	<b>Address</b>	Land east of Willoughby Road
	<b>Area</b>	18.13 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Emergency planning</b>	<b>Flood warning</b>	The site is not located within an Environment Agency Flood Warning Area. The site is not located within an Environment Agency Flood Alert Area.
	<b>Access and egress</b>	Access to the western area of the site is from Willoughby Road, located parallel to the western boundary of the site. Access can be obtained to the eastern area of the site through the use of Glebe Drive along the northern perimeter of the site. During all surface water events, the site is bisected by surface water flooding and access routes should be designed to ensure that access and egress is still possible during an event. Raising of access routes should not impeded surface water flows.
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding</li> <li>There is no detailed fluvial modelling available at this site, and therefore, flood zone 2 has been used as a conservative indication of flood risk from climate change. The site is not currently located within Flood zone 2, therefore the site is unlikely to be at risk of fluvial flooding in future. A detailed modelling study should test the latest published climate change allowances, which may refine risk in the centre of the site.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40 % event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. There is a significant difference between the 100 and 1000-year surface water events, suggesting that the site is highly sensitive to increases in runoff as a result of climate change.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COU042</b>
	<b>Address</b>	Land east of Willoughby Road
	<b>Area</b>	18.13 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Lias Group – Mudstone, Siltstone, Limestone and Sandstone</li> <li>Superficial – Till – Diamicton</li> </ul> </li> <li>The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable' It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site.</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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required as the site is greater than one hectare.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of surface water flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COU042</b>
	<b>Address</b>	Land east of Willoughby Road
	<b>Area</b>	18.13 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development. The surface water flow route through the centre of the site should be incorporated into SuDS using blue-green infrastructure and opportunities should be explored for SuDS on site to help alleviate the known surface water flooding risk downslope of the site. This could take the form of attenuation features or oversized SuDS.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>COU042</b>
	<b>Address</b>	Land east of Willoughby Road
	<b>Area</b>	18.13 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is directed towards the western and eastern areas of the site, avoiding the surface water flow route through the central area of the site.</li> <li>• Access routes are designed to ensure that access and egress remains possible during the 100 and 1000-year surface water flooding event where a significant flow path bisects the site from south to north.</li> <li>• The surface water flow route through the site is incorporated into SuDS using blue-green infrastructure.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> <li>• Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 Soar and Tributaries model (Whetstone Brook)2D.
<b>Climate change</b>		Climate change was based on Flood Zone 2 to serve as an indication of possible extents. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.
<b>Fluvial depth, velocity and hazard mapping</b>		Fluvial modelling indicates the site is not at risk of fluvial flooding in the 1000-year event therefore there is no depth velocity and hazard outputs for the site.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>COU042</b>
	<b>Address</b>	Land east of Willoughby Road
	<b>Area</b>	18.13 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>CRO006</b>			
	<b>Address</b>	Land at Poplars Farm			
	<b>Area</b>	8.11 hectares			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	The site is located to the south west of Leicester, in the south of the village of Croft. Immediately to the north of the site there is a developed residential area (Brookes Avenue) and an educational facility (Croft Primary School). The site is bound to the west by Broughton road. Broughton Brook flows in a northerly direction past the eastern boundary of the site and is a tributary to the River Soar. Broughton Brook converges with the River Soar approximately 900m to the north east of the site. The site is in the Upper Soar catchment, in the downstream proportion of the Broughton Brook. The River Soar flows in a northerly direction approximately 700m to the west of the site, then meanders to flow in an easterly direction approximately 500m to the north of the proposed site.			
	<b>Existing drainage features</b>	The Environment Agency's Detailed River Network shows drainage features are associated with Broughton Brook which flows in a northly direction along the eastern boundary of the site. This watercourse conflues with the River Soar approximately 880m to the north east of the site. The River Soar flows in a north easterly direction to the north and west of the site.			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		14%	16%	19%	81%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		High			
		<i>The % Flood Zones quoted show the % of the site at flood risk from that Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>			



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>CRO006</b>		
	<b>Address</b>	Land at Poplars Farm		
	<b>Area</b>	8.11 hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
		<p><b>Available data:</b> The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment. The site lies on the Broughton model. The EA's Flood Map for Planning has been used to inform Flood Zones 2 and 3a (as this incorporates latest modelling) and Flood Zone 3b has been derived from the hydraulic model's 20-year extent.</p> <p><b>Flood characteristics:</b> The modelled Flood Zone data for this site indicates that flood risk to this site is restricted to the river valley of Broughton Brook from the south, up to the site, which then flows along the eastern boundary of the site. Fluvial Flood Zones 2, 3a and 3b are all present within the eastern lower topographic area of the site. Flood Zone 2 covers 19% of the site along the eastern extent of the site, where topography is at its lowest. Flood Zone 3a covers 16% of the site, and Flood Zone 3b covers 14%, covering a similar but slightly reduced area of land to Flood Zone 2.</p> <p>The modelled defended 100-year extent affects the same area as Flood Zone 3a as the site is not defended, approximately 16% of the site within the eastern extent. Maximum depth is identified as 0.65m in the north eastern corner of the proposed site, with maximum velocities of 0.58m/s in the south eastern vicinity of the site, where there is a paleo-channel therefore creating an area of lower topography.</p> <p>The modelled 100-year +30% extent covers a slightly larger area of the eastern extent with maximum depths of 0.65m in the north east and maximum velocities of 0.70m/s in the south east.</p> <p>During the 100-year modelled defended event, hazard covers an area of the eastern boundary smaller than the Flood Zones and is projected at a maximum threshold of 1.25-2.5 which is a significant hazard and dangerous for most people – a Flood Zone with deep and fast flowing water. The 100-year +30% hazard extent covers a much greater extent of the eastern area of the site, and its maximum threshold similarly is projected at 1.25-2.5, a significant hazard and dangerous to most people.</p>		
		<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		2%	5%	20%
	<b>Surface Water</b>	Max depths (m)		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	CRO006		
	Address	Land at Poplars Farm		
	Area	8.11 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		0.3-0.9m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		>0.25m/s	>0.25m/s	>0.25/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		
		<b>Description of surface water flow paths:</b> The site is shown to be affected by surface water flooding in all 3 events. During the 30 and 100-year events, surface water is shown to affect minor areas of lowest topography in the south-east of the site where a paleo-channel has been identified. There is some impact of surface water flooding in the north east corner of the site and covers a greater area during the 100-year event, although no new flow paths are identified, just extended from the 30-year results. The 1,000-year event covers a significantly greater area in the east of the site, whilst remaining within the lowest topographic areas within the boundary. New flow paths are formed in the south-west of the site which will flow in an easterly direction towards the watercourse and areas of lower topography. During this event the surface water extent is in between the extents of Flood Zone 2 and 3a. Overall, there is no change in maximum velocity (>0.25m/s) or depth (300-900mm) throughout the modelled events, although the extent of each increases throughout the models.		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	An area in the eastern extent of the proposed site is shown to be within the reaches of the Environment Agency's Historic Flood Map. There are no specific recorded incidents. The Lead Local Flood Authority should be contacted to obtain further details.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>CRO006</b>		
	<b>Address</b>	Land at Poplars Farm		
	<b>Area</b>	8.11 hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not protected by any formal flood defences.		
	<b>Residual risk</b>	There is a residual risk of blockage at Arbor Road where the river flows under a structure, though water is already out of bank and flows across the road partially bypassing the structure to the west, so additional water backing up here may not affect the site to a large degree. A site-specific FRA should be carried out to confirm risks.		
<b>Emergency planning</b>	<b>Flood warning</b>	The site is not covered by the Environment Agency's Flood Warning Service. The eastern boundary of the site is included within the Environment Agency's Flood Alert Service – Upper Soar catchment (034WAF402).		
	<b>Access and egress</b>	Access/egress from the east of the site should be avoided due to the eastern extent being affected during fluvial and surface water events. The site can be accessed via Broughton Road in all surface water and fluvial events, which is located to the west of the site. Broughton Road links with the village of Croft to the north and Coventry Road to the south. The southern boundary is affected during the 1,000-year surface water event therefore access should be steered to the west (Broughton Road) where there is current road access. There may be constraints in the wider vicinity due to numerous fluvial and surface water flow paths crossing other local roads, so this will need to be considered as well as immediate access to and from the site.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>CRO006</b>
	<b>Address</b>	Land at Poplars Farm
	<b>Area</b>	8.11 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the site from Broughton Brook for the 100-year +20%, +30%, +50% climate change scenarios. These all cover an area similar to Flood Zone 2; this extends across the east of the site, within proximity to Broughton Brook. The modelled climate change data identifies no new fluvial flood paths.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>CRO006</b>
	<b>Address</b>	Land at Poplars Farm
	<b>Area</b>	8.11 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Mercia Mudstone group – Sedimentary bedrock.</li> <li>◦ Superficial – Thrussington Member – Diamicton.</li> </ul> </li> <li>• The majority of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>• There is an area to the eastern part of the site where Groundwater levels are indicated to be between 0.5 and 5m below ground level and there is a risk of flooding to subsurface assets and below ground development such as basements. Groundwater monitoring is recommended to determine the seasonal variability of groundwater levels, as this may affect the design of the surface water drainage system.</li> <li>• Next to this, there is a small area where groundwater levels are indicated to be less than 1m below ground level during a 1% AEP event. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>• The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>• The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>CRO006</b>
	<b>Address</b>	Land at Poplars Farm
	<b>Area</b>	8.11 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'. It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance; Blaby District Council's local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes along the southern and south-western boundaries, preserving these spaces as green infrastructure. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>CRO006</b>
	<b>Address</b>	Land at Poplars Farm
	<b>Area</b>	8.11 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <li>On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>



# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>CRO006</b>
	<b>Address</b>	Land at Poplars Farm
	<b>Area</b>	8.11 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to most of the area of the site located within Flood Zone 1, therefore avoiding land close to the eastern boundary. This eastern end is also where surface water presents a high risk.</li> <li>• Safe access and egress need to be considered as the site is inaccessible from the east during all fluvial and surface water events. Access is achievable to the west via Broughton Road, but considerations of the wider vicinity will be required where numerous flow paths traverse the roads.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development in one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and Tributaries model (Broughton Brook). The 20-year flood extent was used to derive Flood Zone 3b.	
<b>Climate change</b>	Climate change was based on the 2012 River Soar and Tributaries model (Broughton Brook), where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch.	
<b>Fluvial depth, velocity and hazard mapping</b>	There is Fluvial Depth, Velocity and Hazard data available from the Broughton Brook model (2021 River Soar and Tributaries modelling). The 100-year and 100-year + climate change have been assessed.	

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>CRO006</b>
	<b>Address</b>	Land at Poplars Farm
	<b>Area</b>	8.11 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	CRO007			
	Address	Land west of Broughton Road Croft			
	Area	34.19 Hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The proposed site is located south of Croft, with the western boundary adjacent to the River Soar. The south western boundary of the site lies 360 metres north of the River Soar. The south eastern boundary of the site lies adjacent to the B4114 and the north eastern boundary is formed by Broughton Road.			
	Existing drainage features	The Environment Agency's detailed river network shows that the sites existing drainage features are associated with the River Soar. The River Soar flows east along the southern boundary of the site and north along the western boundary of the site.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		2%	3%	5%	95%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		High			
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g., FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)			
		Available data: The Environment Agency's 2012 1D-2D River Soar and tributaries modelling has been used to inform this assessment. The site lies on the River Soar. The Environment Agency's Flood Map for planning has been used to inform Flood Zones 2 and 3a (as this incorporates the latest modelling) and Flood Zone 3b has been derived from the hydraulic model.			
		Flood characteristics: The modelled Flood Zone data for this site shows that flood risk is restricted to the river valley and flood plain of the River Soar. The west of the site is within Flood Zones 2, 3a and 3b. Flood Zone 3b is located along the western boundary of the site, covering approximately 2% of the proposed site. Fluvial Flood Zone 3a is covers a marginally larger area along the north west boundary approximately 3%. Fluvial Flood Zone 2 covers a slightly larger area 5% of the site remaining limited to the area of low topography directly adjacent the river, extending approximately 80m into the site.			
Surface Water	Proportion of site at risk (RoFfSW)				
	30-year	100-year	1,000-year		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	CRO007		
	Address	Land west of Broughton Road Croft		
	Area	34.19 Hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		2%	2%	5%
		Max depths (m)		
		<0.3m	0.3 – 0.9m	0.3 – 0.9m
		Max velocity (m/s)		
		<0.25 m/s	>0.25 m/s	>0.25 m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g., 100-year includes the 30-year %)</i>		
		<b>Description of surface water flow paths:</b> The site is at risk during all modelled events. In the 30-year event two areas of surface water ponding form along the north eastern boundary of the site. The largest, approximately 92m wide is located adjacent to the farm road along Broughton Road. The smaller surface water pond, 22m wide, is located on the eastern corner of the site, by the Broughton Road and B4114 T-Junction. There is also some flooding adjacent the River Soar in the northwest of the site. Depths in the large ponding area are between 0.3-0.6m and below 0.3m across the rest of the site. Velocities are below 0.25m/s. In the 100-year surface water event, two surface water ponds form within the centre of the site and another along the northern boundary of the site. Along the eastern perimeter of the site ponding increase in extent by 30m. Flood extent also increases in the northwest of the site. Depths remain below 0.3m across the site with 0.3-0.6m depths present on the eastern boundary. In the 1000-year surface water event two surface water flow paths flow south toward the southern boundary. Several areas of ponding are present across the site. Surface water ponds along the edge of one of the fields in the north of the site. Depths remain below 0.3m across the site with 0.3-0.6m depths present on the eastern boundary.		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	The site is not within the reaches of the Environment Agency's Historic Flood Map. The Lead Local Flood Authority should be contacted to obtain further details. Developers should contact the LLFA for more information on historic flooding.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>CRO007</b>		
	<b>Address</b>	Land west of Broughton Road Croft		
	<b>Area</b>	34.19 Hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not protected by any formal flood defences.		
	<b>Residual risk</b>	There is no residual risk to the site from flood risk management structures.		
<b>Emergency planning</b>	<b>Flood warning</b>	The north western area of the site is located within the Environment Agency's 'Upper Soar Catchment' Flood Alert area and 'River Soar at Croft' Flood Warning Area.		
	<b>Access and egress</b>	Access to the site is via a track running through the centre of the site, from Broughton Road in the north to the B581 in the South. Additional access routes could be sited on Broughton Road or Coventry Road to the north and east. Access via Coventry Road travelling north may be affected by surface water flooding during the 1,000-year event. Travelling south the road may be affected by the 100 and 1,000-year fluvial event. Access via Broughton Road is impacted by minor surface water flooding during the 1,000-year event but is likely to remain accessible. Access cannot be provided from the south and west of the site owing to the proximity to the River Soar.		

<p><b>Climate Change</b></p>	<p><b>Implications for the site</b></p>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding. Detailed fluvial modelling is available at the site from River Soar, for the 100 year +20%, +30%, +50% climate change scenarios. These all cover an area similar to Fluvial Flood Zone 2; This extends across the north western area of the site, adjacent to the River Soar, but are slightly smaller in area compared to Flood Zone 2, but larger than Flood Zone 3a. The modelled climate change data identifies no new flood path characteristics.</li> <li>In the modelled 100-year event, maximum depth within the site is located in the north western corner of the site with a maximum depth of 0.6m with a maximum velocity of 1.2m/s at the north western boundary of the site. The maximum combined hazard threshold is calculated to be 1.25-2.00, which is categorised as dangerous for most people – a flood zone with deep fast flowing water.</li> <li>In the modelled 100 +30% year event, flood extent is marginally larger. The maximum depth within the site is does not increase significantly, remaining around 0.6m in the north western boundary of the site, with a maximum velocity of 1.6m/s within the upper most corner of the north western area of the site. The combined hazard threshold is measured between 1.25-2.00 within the north eastern area of the site, categorised as 'dangerous for most people, flood zone with deep, fast flowing water'.</li> <li>In the modelled 100 +50% event, flood extent doesn't increase significantly with the greatest depth of 1.1m recorded in the north western corner of the site and a maximum velocity of 1.7m/s.. The maximum combined threshold is measured &gt;2.00 which is categorised as 'dangerous for all, extreme danger, flood zone with deep, fast flowing water' located in the very most north western corner of the site, adjacent to the River Soar.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. The extent of surface water flooding on site does not increase substantially between the 100 and 1,000-year events, indicating that the site is less sensitive to increases in runoff as a result of climate change.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>
<p><b>Requirements for drainage control and impact mitigation</b></p>	<p><b>Broad scale assessment of possible SuDS</b></p>	<ul style="list-style-type: none"> <li>Geology at the site consists of: <ul style="list-style-type: none"> <li>Northern area of the site <ul style="list-style-type: none"> <li>Bedrock – Triassic Rocks – Mudstone, Siltstone and Sandstone</li> <li>Superficial – Till - Diamicton</li> </ul> </li> <li>South eastern area of the site <ul style="list-style-type: none"> <li>Bedrock – Triassic Rocks – Mudstone, Siltstone and Sandstone</li> <li>Superficial – Alluvium – Clay, Silt and Sand</li> </ul> </li> </ul> </li> <li>The majority of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> </ul>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>CRO007</b>
	<b>Address</b>	Land west of Broughton Road Croft
	<b>Area</b>	34.19 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <li>At a small band at the north-west of the site groundwater levels are indicated to be between 0.5 and 5m below ground level and there is a risk of flooding to subsurface assets and below ground development such as basements. Groundwater monitoring is recommended to determine the seasonal variability of groundwater levels, as this may affect the design of the surface water drainage system.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable' It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. 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> </ul> <p>As the site is within Flood Zone 2, the Exception Test will be required.</p>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required as part of the site is within Flood Zones 2 and 3 and the site is greater than one hectare.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> </ul>
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# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	CRO007
	Address	Land west of Broughton Road Croft
	Area	34.19 Hectares
	Current land use	Greenfield
	Proposed land use	Residential
		<ul style="list-style-type: none"> <li>On site attenuation schemes would need to be tested against the watercourse to ensure flows are not exacerbated downstream within the catchment.</li> <li>New development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff. Assessment for runoff should include allowance for climate change effects.</li> <li>SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>Runoff should be limited to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>
Key messages		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>Development is limited to Flood Zone 1, therefore, development should be steered towards the eastern and south eastern area of the site where the risk of fluvial flooding is low.</li> <li>Development is sited away from areas at risk of surface water flooding, particularly along the eastern boundary with Broughton road.</li> <li>If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>Space for green infrastructure should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
Mapping Information		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>CRO007</b>
	<b>Address</b>	Land west of Broughton Road Croft
	<b>Area</b>	34.19 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and Tributaries model (River Soar). The 20-year flood extent was used to derive Flood Zone 3b.	
<b>Climate change</b>	Climate change was based on the 2012 River Soar and Tributaries model (River Soar), where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch.	
<b>Fluvial depth, velocity and hazard mapping</b>	There is Fluvial Depth, Velocity and Hazard data available from the River Soar model (2021 River Soar and Tributaries modelling). The 100-year and 100-year + climate change scenarios have been assessed.	
<b>Surface Water</b>	The Environment Agency's Risk of Flooding from Surface Water dataset has been used to define areas at risk from surface water flooding.	
<b>Surface water depth, velocity and hazard mapping</b>	The surface water depth, velocity, and hazard mapping for the 1 in 30, 100 and 1,000-year events is taken from the Environment Agency's Risk of Flooding from Surface Water dataset.	

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	EAST001			
	Address	Land west of M69 J2			
	Area	44.41 Hectares			
	Current land use	Greenfield			
	Proposed land use	Commercial			
Sources of flood risk	Location of site within catchment	The site is located east of Burbage, west of the M69 motorway, south of Hinckley Road and the B4669, and north of Aston Flamville Road. The site is bisected by a small unnamed road with a pond located in the north eastern portion of the site, along the eastern boundary of the site.			
	Existing drainage features	The Environment Agency’s Detailed River Network shows that the drainage features associated with this site are an unnamed ordinary watercourse which appears to flow culverted under the south eastern corner and a large lake in the east of the site. There also appear to be drainage ditches around the edges of the fields comprising the site.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		0%	0%	0%	100%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		Low			
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)			
		Available data: The Environment Agency’s Flood Zone mapping has been used in this assessment.			
		Flood characteristics: The modelled flood zone data for this site indicates that the site is located solely within Flood Zone 1. As there is no detailed hydraulic model available at this site, there is no depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest next to the channel, where the topography is lowest. Depths and velocities would likely reduce the further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.			
	Surface Water	Proportion of site at risk (RoFfSW)			
		30-year	100-year	1,000-year	
4%		5%	11%		
Max depths (m)					

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	EAST001		
	Address	Land west of M69 J2		
	Area	44.41 Hectares		
	Current land use	Greenfield		
	Proposed land use	Commercial		
		0.3-0.9m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		
		<b>Description of surface water flow paths:</b>		
		<p>The site is affected by surface water flooding in all modelled events. In the 30-year event a surface water flow follows the southern boundary of the site and crosses the south east corner, flowing north east. Two surface water ponds are located 30 metres north of the lake on the eastern boundary of the site. Depths on the site are mostly below 0.3m, with depths of 0.3-0.6m present in the areas of ponding. Velocities in the flow path are above 0.25m/s. In the 100-year event a surface water flow forms along the western boundary, towards the south western corner extending 81 metres within the site. The surface water flow along the southern boundary of the site present in the 30-year event expands slightly, with significant ponding forming halfway along the southern boundary. The flow across the south-eastern corner remains but does not significantly change in area or depth during the 100-year event. Depths on the site remain largely below 0.3m with velocities of over 0.25m/s present in the flow [paths]. In the 1000-year event, flooding extends across the majority of the southern border of the site, extending 20-70m into the site. The flow on the western boundary joins the southern flow at the south west corner and two surface water flows flow from the centre of the site into the main flow on the southern boundary, one following the existing road. Several surface water ponds form during the 1000-year event with the largest located in the central eastern area of the site. Depths remain below 0.3m across most of the site with depths of 0.3-0.9m present in the flow across the south eastern corner. Velocities in the flow paths are above 0.25m/s.</p>		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	This site is not shown to be within the reaches of the Environment Agency's Historic Flood Map. Developers should contact the LLFA for more information on historic flooding.		

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>EAST001</b>		
	<b>Address</b>	Land west of M69 J2		
	<b>Area</b>	44.41 Hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Commercial		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
	<b>Residual risk</b>	The site is not shown to have any implemented flood risk management infrastructure.		
<b>Emergency planning</b>	<b>Flood warning</b>	The site is not located within an Environment Agency Flood Alert Area. The site is not located within an Environment Agency's Flood Warning Area'.		
	<b>Access and egress</b>	An access track currently runs through the centre of the site, between Aston Lane and the B4669 which could be formalised to provide access to the site. Hinckley Road (B4669) and Aston Lane provide access to the northern and southern extents of the site respectively. Hinckley Road is not fully accessible during the 0.1% AEP surface water flood event but remains free from flooding during the 3.3% and 1% AEP event. A flow path crosses Aston Lane during all modelled flood events, meaning this route may not be accessible. Access to the east of the site is not possible as the site borders the M69 and there are no roads near the west boundary to provide access.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>EAST001</b>
	<b>Address</b>	Land west of M69 J2
	<b>Area</b>	44.41 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Commercial
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and Flood Zones are not available for the ordinary watercourses on and in the vicinity of the site. A detailed modelling study should model these ordinary watercourses, including the latest published climate change allowances, which may refine risk in the south eastern of the site.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. The extent of surface water flooding expands significantly between the 100- and 1,000-year event suggesting the site is highly sensitive to increasing runoff as a result of climate change. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>EAST001</b>
	<b>Address</b>	Land west of M69 J2
	<b>Area</b>	44.41 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Commercial
<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 – Triassic Rocks – Mudstone, Siltstone and Sandstone</li> <li>Superficial – Till – Diamicton</li> </ul> </li> <li>The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Employment development is classified as 'Less Vulnerable'. It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site.</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> </ul> <p>The site is located entirely within Flood Zone 1, therefore the Exception test is not required, however the risk to the site from nearby ordinary watercourses should be modelled as part of a site-specific FRA.</p>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required as the development is greater than 1 hectare.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model will be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the unnamed ordinary watercourses in the vicinity of the site.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG. Flood Zone 3 and 3b should be derived using detailed modelling. Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF. Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>EAST001</b>
	<b>Address</b>	Land west of M69 J2
	<b>Area</b>	44.41 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Commercial
		<ul style="list-style-type: none"> <li>On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>
<b>Key messages</b>		<p>The majority of the site is generally at a low risk and is likely to be suitable for development if:</p> <ul style="list-style-type: none"> <li>The risk to the site from the unnamed ordinary watercourse to the south is quantified as part of a site-specific Flood Risk Assessment.</li> <li>Development is steered towards the north western and northern areas of the site, away from the surface water flows along the southern boundary.</li> <li>Safe access and egress are demonstrated during the 100-year event, accounting for climate change.</li> <li>Space for green areas should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
<p>The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>EAST001</b>
	<b>Address</b>	Land west of M69 J2
	<b>Area</b>	44.41 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Commercial
<b>Flood Zones</b>		There is no detailed hydraulic model available, and Flood Zones are unavailable for the ordinary watercourses in the vicinity of the site. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.
<b>Climate change</b>		No climate change modelling or Flood Zone data was available for this site. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.
<b>Fluvial depth, velocity and hazard mapping</b>		There is no available fluvial modelling data available for this site; this should be modelled as part of a site-specific Flood Risk Assessment.
<b>Surface Water</b>		The Environment Agency's Risk of Flooding from Surface Water dataset has been used to define areas at risk from surface water flooding.
<b>Surface water depth, velocity and hazard mapping</b>		The surface water depth, velocity, and hazard mapping for the 1 in 30, 100 and 1,000-year events is taken from the Environment Agency's Risk of Flooding from Surface Water dataset.

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	EBLA002			
	Address	Land off Lutterworth Road			
	Area	3.43 hectares			
	Current land use	Greenfield			
	Proposed land use	Commercial			
Sources of flood risk	Location of site within catchment	The site is located due south of Blaby and east of Countesthorpe. The site is located east of Lutterworth road and 200 metres east of the Whetstone Brook, flowing from south to north parallel to the site.			
	Existing drainage features	The Environment Agency's Detailed River Network shows drainage features associated with the Whetstone Brook. The Whetstone Brook flows south to north of the site.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		0%	0%	0%	100%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		Low			
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)			
		Available data: The Environment Agency's Flood Zone mapping has been used in this assessment. The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling (Whetstone Brook) has been used to inform this assessment. Flood characteristics: The modelled Fluvial Flood Zone data for this site shows the site is located solely within Flood Zone 1. There appears to be a culvert in the north west corner of the site and, if confirmed, developers should investigate the flood risk from the culvert site using a detailed hydraulic model, connecting to the Whetstone Brook.			
	Surface Water	Proportion of site at risk (RoFfSW)			
		30-year	100-year	1,000-year	
		<1%	2%	22%	
		Max depths (m)			
0.3-0.9m		0.3-0.9m	0.3-0.9m		
Max velocity (m/s)					
>0.25m/s	>0.25m/s	>0.25m/s			

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	EBLA002		
	Address	Land off Lutterworth Road		
	Area	3.43 hectares		
	Current land use	Greenfield		
	Proposed land use	Commercial		
		<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i></p> <p><b>Description of surface water flow paths:</b>  The site is at risk during the 100-year and 1000-year risk of surface water flooding events.  In the 30-year event, an area of ponding borders the northern boundary of the site, extending &lt;1.0 metres south into the site.  In the 100-year event a large area of surface water extends approximately 15m into the north western corner of the site. Depths are below 0.3m, with velocities mostly below 0.25m/s, greater in places.  In the 1000-year event the ponding in the north-west corner expands significantly, extending 72 metres south, down the western perimeter of the site. Several surface water flows form parallel to the northern boundary across the site, flowing towards Lutterworth Road. Depths in the flows are below 0.3m with velocities greater than 0.25m/s. In the northwest corner, depths are 0.3-0.9m with velocities above 0.25m/s.</p>		
	Reservoir	The site is shown not to be at risk of reservoir flooding from the available online maps.		
	Flood history	The site is not located within the Historic Flood map, therefore, there is no data on the site. Developers should contact the LLFA for more information on historic flooding.		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
		The site is not shown to have any implemented flood risk management infrastructure.		
	Residual risk	<p>There appears to be one culvert located in the north western corner of the site, underneath Lutterworth Road. This should be confirmed as part of a site-specific flood risk assessment.</p> <p>If this culvert were to become impounded, this could lead to an increase in flood water depth and velocity in the north western corner of the site. Given the topography of the site being relatively flat, surface water flooding could accumulate and affect a majority of the western and northern areas of the site.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>EBLA002</b>
	<b>Address</b>	Land off Lutterworth Road
	<b>Area</b>	3.43 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Commercial
<b>Emergency planning</b>	<b>Flood warning</b>	The site is not located within an Environment Agency's Flood Warning Area. This site is not located within an Environment Agency's Flood Alert Area.
	<b>Access and egress</b>	Access and egress to the site can be obtained via the Lutterworth Road on the western boundary of the site, however, during the 100 and 1000-year surface water flooding event, the north eastern boundary of the site is inundated by surface water, so access should be sited to towards the south west corner. Access from the eastern boundary of the site could be obtained from Winchester Road via a small access road to the site from a small farm road. Access to the north of the site may be possible via a small road from Wychwood Road. Access to the site via the northern area of the site is blocked during the 1000-year event due to surface water bisecting east across the site.
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available for Whetstone Brook at the site, and the site is not shown to be at risk during the 100-year +50% event.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. There is a large increase in the extent of surface water ponding between the 100 and 1,000-year surface water events indicating the site is highly sensitive to increasing runoff as a result of climate change. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>EBLA002</b>
	<b>Address</b>	Land off Lutterworth Road
	<b>Area</b>	3.43 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Commercial
<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 – Triassic Rocks – Mudstone, Siltstone, Sandstone</li> <li>Superficial – Till - Diamicton</li> </ul> </li> <li>The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Employment development is classified as 'less Vulnerable'</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> </ul> <p>The entire site is within Flood Zone 1 therefore the Exception Test is not required.</p>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required if as the site is greater than one hectare.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> </ul>
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# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	EBLA002
	Address	Land off Lutterworth Road
	Area	3.43 hectares
	Current land use	Greenfield
	Proposed land use	Commercial
		<ul style="list-style-type: none"> <li>All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> <li>Risk to the site from the potential culvert near the north western corner should be investigated as part of a site-specific Flood Risk Assessment.</li> </ul>
Key messages		<p>The entire site is at low fluvial risk, and is likely to be suitable for development if:</p> <ul style="list-style-type: none"> <li>Development is directed towards the south and eastern areas of the site, away from areas of surface water flood risk.</li> <li>Safe access and egress can be demonstrated in the 100-year event accounting for climate change, likely via the south western area of the site via Lutterworth Road.</li> <li>Risk to the site from the potential culvert in the north west corner is investigated as part of a site-specific Flood Risk Assessment.</li> <li>If flood mitigation measures are implemented, then they are tested to ensure that they will not displace water elsewhere.</li> <li>Space for green areas should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
Mapping Information		



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>EBLA002</b>
	<b>Address</b>	Land off Lutterworth Road
	<b>Area</b>	3.43 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Commercial
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	The Environment Agency's Flood Zone mapping has been used in this assessment. The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling (Whetstone Brook) has been used to inform this assessment. The site is not shown to be at risk.	
<b>Climate change</b>	The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling (Whetstone Brook) has been used to inform this assessment. The site is not shown to be at risk in the 100-year +50% fluvial event.	
<b>Fluvial depth, velocity and hazard mapping</b>	The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling (Whetstone Brook) has been used to inform this assessment. The site is not shown to be at risk.	
<b>Surface Water</b>	The Environment Agency's Risk of Flooding from Surface Water dataset has been used to define areas at risk from surface water flooding.	
<b>Surface water depth, velocity and hazard mapping</b>	The surface water depth, velocity, and hazard mapping for the 1 in 30, 100 and 1,000-year events is taken Environment Agency's Risk of Flooding from Surface Water dataset.	

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ECRO002</b>		
	<b>Address</b>	Croft Quarry		
	<b>Area</b>	20.39 Hectares		
	<b>Current land use</b>	Greenfield/Brownfield		
	<b>Proposed land use</b>	Commercial		
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	<p>The site is located within the north eastern reaches of the village of Croft. The river Soar flows west to east through the site, with the confluence between the River Soar and an unnamed ordinary watercourse along the eastern boundary of the site.</p> <p>The south-eastern boundary of the site is adjacent to the Birmingham to Leicester railway line. Within the site, a large pond is located in the north eastern area of the site.</p>		
	<b>Existing drainage features</b>	<p>The Environment Agency's Detailed River Network shows that the drainage features associated with this site are the River Soar bisecting the site from west to east and the unnamed ordinary watercourse along the western border of the site. Three culverts are located within the site, two of which are located in the centre of the site and one located under Marion's Way.</p> <p>A large pond is also located in the north east of the site which appears to be artificial, associated with the previous industrial use of the site.</p>		
	<b>Fluvial</b>	<b>Proportion of site at risk</b>		
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>
		7%	9%	25%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>		
		High		
		<p><i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i></p>		

		<p><b>Available data:</b></p> <p>The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment. The site lies on the River Soar model. The EA's Flood Map for Planning has been used to inform Flood Zones 2 and 3a (as this incorporates latest modelling) and Flood Zone 3b has been derived from the hydraulic model.</p> <p><b>Flood characteristics:</b></p> <p>Fluvial flood risk to this site is restricted to the valley of the River Soar which flows from west to east through the site.</p> <p>Flood Zone 2 covers the majority of the south western portion of the site. The northern and eastern parts of the site are not within Flood Zone two, however the western portion of the site is surrounded by Flood Zone 2 on all sides.</p> <p>Flood Zone 3a covers much of the western area of the site directly adjacent the river, covering an area of similar size to Flood Zone 2. Through the rest of the site, Flood Zone 3a is limited to the area adjacent the main river channel, extending approximately 8m either side of the banks.</p> <p>Flood Zone 3b covers a similar area to Flood zone 3a, with a slightly smaller extent in the western portion of the site.</p> <p>In the 100-year modelled defended event, maximum depths in the vicinity of the river channel 1.5-2m, with depths of up to 0.8m across the western portion of the site where flooding extends further from the channel. The maximum velocity within the site is 0.5m/s within the main river channel, with velocities away from the channel being below 0.25m/s across the rest of the flooded area. The recorded maximum combined hazard rating for the site is between 1.25-2.00 which is described as 'dangerous for most people, flood zone with deep, fast flowing water' located along the southern area of the site, adjacent to the River Soar.</p> <p>In the 100-year +30% modelled event, the maximum depths on the site are from 2-4m in the vicinity of the channel and 1.0-1.6m across the majority of the flooded area away from the channel. Velocities on site are around 0.5m /s in the vicinity of the river channel, with velocities below 0.25m/s across the rest of the flooded area. The maximum combined hazard threshold at the site is recorded at &gt;2.00 which is defined as danger for all.</p> <p>In the 100-year +50% modelled event maximum depths are up to 3.8m in the vicinity of the channel with depths of up to 1.8m across the rest of the flooded area. with a velocity of 0.70m/s. The maximum combined hazard threshold is measured between 1.25-2.00 along the southern area of the site adjacent to the River Soar, which is defined as 'dangerous for most people, flood zone with deep, fast flowing water'.</p>		
		<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		4%	7%	24%
		Max depths (m)		
		>0.9m	>0.9m	>0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i></p>		
		<p><b>Description of surface water flow paths:</b></p> <p>The site is at risk of surface water flooding in all modelled surface water events.</p>		
	<b>Surface Water</b>			

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	ECRO002		
	Address	Croft Quarry		
	Area	20.39 Hectares		
	Current land use	Greenfield/Brownfield		
	Proposed land use	Commercial		
		<p>In the 30-year surface water event there are several areas of surface water ponding across the northern part of the site, including associated with the existing artificial pond. There is also some minor ponding in the south west of the site and small flow path flowing from the southern boundary towards the river Soar.</p> <p>In the 100-year event surface water follows a similar pattern to the 30-year event with areas of ponding increasing in slightly in extent. The flow path in the south of the site also increases in extent slightly. In the south eastern area of the site, three additional areas of ponding form. In this event, an additional surface water flow path forms on the north west boundary of the site, flowing from high ground in the north towards the existing artificial ponds.</p> <p>In the 1000-year event the entire south western corner of the site is flooded, with surface water extending from the river to the railway at the southern boundary of the site. In the centre of the site, surface water branch flows south from the centre of the site, toward the river Soar. There is extensive flooding across the north west of the site at the end of the surface water flow. In the south eastern corner of the site, there are also several large areas of surface water ponding.</p> <p>Depths are &gt;0.9mm and velocities &gt;0.25m/s in all modelled events.</p>		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	This site is not shown to be within the reaches of the Environment Agency's Historic Flood Map. Developers should contact the LLFA for more information on historic flooding.		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
		The site is not shown to have any implemented flood risk management infrastructure.		
	Residual risk	<p>Residual risk at this site is deemed low, but there is a potential risk from the following:</p> <p>If the culverts within the centre of the site were to become blocked, this could increase the depth, velocity, and extent of flood water on the site. Similarly, if the culvert under Marion's Way were to become blocked, this could increase the depth, velocity, and extent of flood water on site.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ECRO002</b>
	<b>Address</b>	Croft Quarry
	<b>Area</b>	20.39 Hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Commercial
<b>Emergency planning</b>	<b>Flood warning</b>	<p>The site is not located within an Environment Agency Flood Alert Area.</p> <p>The site is not located within an Environment Agency's Flood Warning Area.</p>
	<b>Access and egress</b>	<p>Access and egress is not possible to the north of the site due to the quarry pit.</p> <p>Access to the south of the site is can be obtained via Marion's Way, which crosses the railway line, allowing direct access to the south of the site. It may also be possible to provide access to the site from Dovecote road, to the west. Access and egress via Marion's Way is unlikely to be impacted in either surface water or fluvial events.</p> <p>However, there are a number of areas off flooding and significant surface water flow routes on the suite and access routes must be planned to ensure that users of the site have safe access and egress during the 100-year event. Raising of access routes must not impede surface water flow routes or contribute to a loss of floodplain.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>ECRO002</b>
	<b>Address</b>	Croft Quarry
	<b>Area</b>	20.39 Hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Commercial
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding</li> <li>Detailed fluvial modelling is available at the site from River Soar and Tributaries Model for the 100 year +20%, +30% and +50% climate change scenarios. These all cover an area similar to Fluvial Flood Zone 2; however, the extents are slightly smaller area compared to Flood Zone 2, but larger than Flood Zone 3a. The modelled climate change data identifies no new flood path characteristics.</li> <li>Comparing the flood extents of Flood Zone 3b (20 year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40 % event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to access the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

<p><b>Requirements for drainage control and impact mitigation</b></p>	<p><b>Broad scale assessment of possible SuDS</b></p>	<ul style="list-style-type: none"> <li>• Geology at the site consists of: <ul style="list-style-type: none"> <li>◦ Bedrock – Triassic Rocks – Mudstone, Siltstone and Sandstone Western portion of the site</li> <li>◦ Superficial – River Terrace Deposits – Sand and Gravel Eastern portion of the site</li> <li>◦ Superficial – Alluvium – Clay, Silt and Sand</li> </ul> </li> <li>• The southern area of the site that is longer is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>• The northern part of the site above this that is in a square is made up for varying groundwater levels. To the north-east and middle area of the site the majority of groundwater levels are indicated to be between 0.5 and 5m below ground level and there is a risk of flooding to subsurface assets and below ground development such as basements. Groundwater monitoring is recommended to determine the seasonal variability of groundwater levels, as this may affect the design of the surface water drainage system. There is a circle of the site within the north-east area, and towards the western side of this square where groundwater levels are indicated to be less than 1m below ground level to at or very near ground level during a 1% AEP event. Where groundwater levels are high, which may flow to and pool within topographic low spots. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>• This site has areas within its boundary designated by the Environment Agency as being a landfill site. A thorough ground investigation will be required as part of a detailed FRA to determine the extent of the contamination and the impact this may have on SuDS. As such proposed SuDS should be discussed with the relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible constraints.</li> <li>• The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<p><b>NPPF and planning implications</b></p>	<p><b>Exception Test requirements</b></p>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied. Employment development is classified as 'Less Vulnerable'. It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required as part of the site is located within Flood Zones 2 and 3, and the site is greater than one hectare.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• The site extents include a Main River (in culvert), where an easement of 8m is required from either side of the bank. In this site, the culvert runs along the western boundary, so an 8-10m easement area will be required from the channel. Developers will be required to apply for a permit and ensure the activity being carried out over this easement would not increase flood risk.</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ECRO002</b>
	<b>Address</b>	Croft Quarry
	<b>Area</b>	20.39 Hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Commercial
		<p>drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</p> <ul style="list-style-type: none"> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space. Existing surface water flow routes should be incorporated into SuDS using blue-green infrastructure.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>ECRO002</b>
	<b>Address</b>	Croft Quarry
	<b>Area</b>	20.39 Hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Commercial
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is located within Flood Zone 1, the north eastern and the south eastern areas of the site.</li> <li>• Any proposal is accompanied by a carefully considered drainage strategy to inform site layout and design, ensuring development is not located in areas of high surface water risk.</li> <li>• Safe access and egress from the site can be demonstrated during the 100-year event, accounting for climate change. Raising of access routes should not impede surface water flows or increase surface water flood risk to third party land.</li> <li>• The site extents include a Main River (in culvert), where an easement of 8m is required from either side of the bank. In this site, the culvert runs along the western boundary, so an 8-10m easement area will be required from the channel. Developers will be required to apply for a permit and ensure the activity being carried out over this easement would not increase flood risk.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and Tributaries model (River Soar). The 20-year flood extent was used to derive Flood Zone 3b.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ECRO002</b>
	<b>Address</b>	Croft Quarry
	<b>Area</b>	20.39 Hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Commercial
<b>Climate change</b>		Climate change was based on the 2012 River Soar and Tributaries model (River Soar), where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch.
<b>Fluvial depth, velocity and hazard mapping</b>		There is Fluvial Depth, Velocity and Hazard data available from the Cobsy Brook model (2021 River Soar and Tributaries modelling). The 100-year and 100-year + climate change have been assessed.
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	EELM001			
	Address	Land north of Junction 2, M69 (Elmesthorpe Parish)			
	Area	224.01			
	Current land use	Predominantly Greenfield			
	Proposed land use	Commercial			
Sources of flood risk	Location of site within catchment	<p>The site is located to the south west of Leicester, south of the Village Elmesthorpe. Most of the site lies to the north of Hinckley Road (B4669) and is bound to the east by the M69. The Birmingham-Leicester railway line borders the proposed site to the north west. Burbage Common Road runs through the north of the site. The southern extent of the site incorporates the M69 Junction 2 and Hinckley Road (B4669).</p> <p>An unnamed tributary of Thurlaston Brook flows westward north of the site. Two small associated tributaries flow into the watercourse from the north of the site, although these may be seasonal. A second unnamed tributary flows from the centre of the site along the eastern boundary, converging with the larger watercourse just north of the site.</p> <p>The site is located in the upstream catchment of the unnamed watercourse which converges with Thurlaston Brook approximately 4.2km downstream, to the north east of the site. Thurlaston Brook is a tributary in the Upper Soar catchment and converges with the River Soar a further 3km downstream, to the east of the site.</p> <p>In the southern extent of the site the Soar Brook is present, which converges with the River Soar approximately 5.5km to the south west of the site.</p>			
		<p>The Environment Agency's Detailed River Network shows drainage features at this site are associated with the unnamed ordinary watercourse in the northern extent, including 3 tributary channels flowing from the site, and with Soar Brook in the south.</p>			
	Existing drainage features	<p>The Environment Agency's Detailed River Network shows drainage features at this site are associated with the unnamed ordinary watercourse in the northern extent, including 3 tributary channels flowing from the site, and with Soar Brook in the south.</p>			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		0%	1%	1%	99%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		Low			
		<p>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</p>			

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	EELM001		
	Address	Land north of Junction 2, M69 (Elmesthorpe Parish)		
	Area	224.01		
	Current land use	Predominantly Greenfield		
	Proposed land use	Commercial		
		<b>Available data:</b> The Environment Agency's Flood Zone mapping has been used in this assessment.		
		<b>Flood characteristics:</b> The modelled Flood Zone data for this site indicates flood risk through this site is confined to the valley of the unnamed watercourses. Fluvial Flood Zones 2 and 3a are present in the northern corner of the site, covering 1% of the area. There is no data for Flood Zone 3b on the site and no Flood Zone data for the southern watercourse or tributaries on the site. A detailed hydraulic model would be required for these, although the RoFSW dataset can be used as a proxy. The RoFSW flooding dataset suggests that these watercourses could pose a risk to parts of the site. Risk is confined to the channel in the 30 and 100-year events, with wider extents in the 1,000-year event. As there is no detailed hydraulic model available at this site, there is no depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest nearest the channel, where topography is lowest. Depths and velocities would likely reduce the further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.		
	Surface Water	<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		2%	3%	10%
		Max depths (mm)		
		>0.9m	>0.9m	>0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	EELM001
	Address	Land north of Junction 2, M69 (Elmesthorpe Parish)
	Area	224.01
	Current land use	Predominantly Greenfield
	Proposed land use	Commercial
		<p><b>Description of surface water flow paths:</b></p> <p>The site is affected by surface water flooding in all 3 modelled events.</p> <p>In the 30 and 100-year events areas of localised ponding form across the site, near to the boundaries in the lowest areas of topography. A flow path also forms, following the channel of one of the ordinary watercourses across the centre of the site and along the eastern boundary. A large area of surface water ponding is located in the south western corner of the site where a small unnamed ordinary watercourse is located flowing under the railway track. Depths across the site are generally below 0.3m, with depths of over 0.9m in the large areas of ponding along the northern boundary.</p> <p>In the 1,000-year event identifies two paths flow north in the western portion of the site, following the ordinary watercourses. Three smaller flow paths lead into the main surface water channel following the ordinary watercourse along the eastern boundary of the site. A large area of surface water ponding is located in the south western corner of the site where a small unnamed ordinary watercourse is located flowing under the railway track. Multiple surface water ponds are located throughout the site.</p> <p>Depths across the site are generally between 0.3-0.6m, with depths of over 0.9m present in areas of ponding. Velocities are above &gt;0.25m/s and the area covered increases between events. The deepest areas will be in the areas of 30-year ponding in the lowest topography of the site, with shallower depths as the extents spreads away from here.</p>
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.
	Flood history	<p>The site is not shown to be within the reaches of the Environment Agency's Historic Flood Map.</p> <p>The Lead Local Flood Authority should be contacted to obtain further details.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>EELM001</b>		
	<b>Address</b>	Land north of Junction 2, M69 (Elmesthorpe Parish)		
	<b>Area</b>	224.01		
	<b>Current land use</b>	Predominantly Greenfield		
	<b>Proposed land use</b>	Commercial		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not protected by any formal flood defences.		
<b>Emergency planning</b>	<b>Residual risk</b>	<p>There are 6 culverts within the site which pose a residual risk to the site.</p> <p>If the 6 culverts located along the northern boundary of the site were to become blocked, flood water could back up within the site, Additionally, if the culvert in the centre of the eastern, south western, western and northern area of the site were to become blocked, water could pond and flow around the culvert, flowing into the various areas of the site.</p>		
	<b>Flood warning</b>	The site is not covered by modelled data in the Environment Agency's Flood Warning or Alert services.		
	<b>Access and egress</b>	<p>The site can be accessed in the north via Burbage Common Road which links with Leicester Road (B4668) in the north west and Station Road (B581) in the north east, both of which link with the A47 to the north. The centre and south of the site can be accessed via the M69 / B4669. The southern boundary is affected during the 1,000-year surface water event therefore access should be steered away from Aston Lane during an event.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>EELM001</b>
	<b>Address</b>	Land north of Junction 2, M69 (Elmesthorpe Parish)
	<b>Area</b>	224.01
	<b>Current land use</b>	Predominantly Greenfield
	<b>Proposed land use</b>	Commercial
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and therefore Flood Zone 2 has been used as a conservative indication of flood risk from climate change. Flood Zone 2 is present in the north of the site, encompassing the lower incline ground. A detailed modelling study should test the 2080s climate change allowances, which may refine risk in the north-western corner of the site.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. There is a significant increase in flood extent between the 100 and 100-year event, suggesting the site is highly sensitive to increasing runoff as a result of climate change. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>EELM001</b>
	<b>Address</b>	Land north of Junction 2, M69 (Elmesthorpe Parish)
	<b>Area</b>	224.01
	<b>Current land use</b>	Predominantly Greenfield
	<b>Proposed land use</b>	Commercial
<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 – Mercia Mudstone group – Mudstone</li> <li>◦ Superficial – North and south: Bosworth Clay and Silt. Centre: Thrussington Member – Diamicton</li> </ul> </li> <li>• The majority of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>• There is a very small part in the middle of the site where groundwater levels are indicated to be less than 1m below ground level, to very close to ground level (below 0.025m) during a 1% AEP event. Where it is very close to ground level it may flow to and pool within topographic low spots. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>• The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>• The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>EELM001</b>
	<b>Address</b>	Land north of Junction 2, M69 (Elmesthorpe Parish)
	<b>Area</b>	224.01
	<b>Current land use</b>	Predominantly Greenfield
	<b>Proposed land use</b>	Commercial
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Employment development is classified as 'Less Vulnerable'. It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required as part of the site is located within Flood Zones 2 or 3 and the site is greater than one hectare.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model may be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the unnamed ordinary watercourses along the northern and south eastern boundaries, using channel topographic survey.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance; Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes along the southern and south-western boundaries, preserving these spaces as green infrastructure. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>EELM001</b>
	<b>Address</b>	Land north of Junction 2, M69 (Elmesthorpe Parish)
	<b>Area</b>	224.01
	<b>Current land use</b>	Predominantly Greenfield
	<b>Proposed land use</b>	Commercial
		<p>drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</p> <ul style="list-style-type: none"> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects. Existing surface water flow routes should be incorporated into SuDS using blue-green Infrastructure.</li> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse, and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>EELM001</b>
	<b>Address</b>	Land north of Junction 2, M69 (Elmesthorpe Parish)
	<b>Area</b>	224.01
	<b>Current land use</b>	Predominantly Greenfield
	<b>Proposed land use</b>	Commercial
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to the majority of the area of the site located in Flood Zone 1, therefore avoiding the northern boundary of the proposed site.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk. The EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs.	
<b>Climate change</b>	Climate change was based on Flood Zone 2 to serve as an indication of possible extents. The EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.	

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>EELM001</b>
	<b>Address</b>	Land north of Junction 2, M69 (Elmesthorpe Parish)
	<b>Area</b>	224.01
	<b>Current land use</b>	Predominantly Greenfield
	<b>Proposed land use</b>	Commercial
<b>Fluvial depth, velocity and hazard mapping</b>		There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping has been used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage; the EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs.
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM001</b>			
	<b>Address</b>	Land north of The Home Farm			
	<b>Area</b>	26.25 hectares			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	The site is located north of the B581 to the south west of Leicester. It is between Elmesthorpe (to the north-west) and Stoney Stanton (to the south-east). The site is bisected by the Birmingham Leicester railway and the M69 runs adjacent to the eastern boundary of the site. The site is located along an unnamed tributary of a confluence with Thurlaston Brook			
	<b>Existing drainage features</b>	The Environment Agency's Detailed River Network shows drainage features at this site are associated with an unnamed ordinary watercourse. The unnamed watercourse bisects the site from the western edge of the site to the eastern edge of the site. Another unnamed watercourse flows from the southern border of the site and the two meet in the middle of the site.			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		0%	27%	30%	70%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		High			
		<i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>			

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	ELM001		
	Address	Land north of The Home Farm		
	Area	26.25 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><b>Available data:</b> The Environment Agency's Flood Zone mapping has been used in this assessment.</p> <p><b>Flood characteristics:</b> The modelled Flood Zone data for this site indicates flood risk through this site is confined to the valley of the unnamed ordinary watercourses.</p> <p>Fluvial Flood Zones 2 and 3a are both present within the extent of the site. Flood Zone 3a bisects the site from west to east covering 27% of the site. The extent of Flood Zone 2 is mostly similar to Flood Zone 3a on the southern side of the channel, with a slight expansion on the north side.</p> <p>There is no data for Flood Zone 3b on the site and no Flood Zone data for the tributary joining from the south, a detailed hydraulic model would be required for these, although the RoFSW dataset can be used as a proxy for the tributary to the south. This suggests that the risk to the site from the southern watercourse is likely to be similar to the present Flood Zones.</p> <p>As there is no detailed hydraulic model available at this site, there is no depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest next to the channel, where the topography is lowest. Depths and velocities would likely reduce the further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.</p>		
	Surface Water	<b>Proportion of site at risk (RoFSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		7%	13%	30%
		Max depth (m)		
		0.3-0.9m	0.3-0.9m	>0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g., 100-year includes the 30-year %)</i></p>		



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM001</b>
	<b>Address</b>	Land north of The Home Farm
	<b>Area</b>	26.25 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<p><b>Description of surface water flow paths:</b></p> <p>The site is affected by the surface water flooding in all three modelled events. The 30-year event largely follows the flow path of the ordinary watercourses on site. Depths in the flow are largely between 0.3 and 0.9m, with velocities greater than 0.25m/s.</p> <p>The extent of the 100-year event is roughly the same as the 30-year except to the eastern boundary of the site where the flow path expands and diverges around an area of higher topography. There is localised ponding in the south eastern area of the site.</p> <p>The 1000-year event covers approximately 30% of the site. There are areas of localised ponding at the south east of the site and the south west of the site. Depths are greatest near the channels of the watercourses, 0.3-0.9m with depths of over 0.9m present in the western corner of the site. Velocities in the flow are above 0.25m/s.</p> <p>The 1000-year event identifies the greatest surface water depths (&gt;900mm) similarly identified within close proximity to the channel of the watercourse. The majority of the flooded area is covered by depths between 300-900mm. There is an area of ponding at the south eastern edge of the site, with a depth of between 300-900mm.</p> <p>Velocities in all events are greater than 0.25m/s, with faster velocities expected in the larger events.</p>
	<b>Reservoir</b>	The site is not shown to be at risk of reservoir flooding from the available online maps.
	<b>Flood history</b>	<p>This site is not shown to be within the reaches of the Environment Agency's Historic Flood Map.</p> <p>Developers should contact the LLFA for more information on historic flooding.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM001</b>		
	<b>Address</b>	Land north of The Home Farm		
	<b>Area</b>	26.25 hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<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 shown to have any implemented flood risk management infrastructure.		
	<b>Residual risk</b>	<p>Residual risk at the site is deemed low, but there is a potential risk from the following:</p> <p>A culvert on the western boundary of the site potentially presents a risk of overtopping if it were to become blocked, flowing across Station Road and into the site. To obtain the specific flood history of the site, contacting the LLFA for historic flooding incidents should be considered.</p>		
<b>Emergency planning</b>	<b>Flood warning</b>	<p>The site is not located within an Environment Agency Flood Warning Area.</p> <p>The site is included within the Environment Agency's Flood Alert Service, this follows the unnamed watercourse through the site.</p>		
	<b>Access and egress</b>	<p>Access to the northern section of the site can be gained from Station Road to the north west of the site. The south eastern portion of the site can also be accessed via Station Road. Although mapping suggests Station Road is affected by surface water flooding in all modelled events, the LiDAR shows the road to be of a higher elevation and may be unaffected. This should be confirmed at FRA stage.</p> <p>There will be challenges in establishing an access/egress route to the south eastern portion of the site because of the fluvial and surface water flooding bisecting the site, impeding safe access to the site. Additionally, the M69 and the Railway tracks form the border of the southern portion of the site. Developers will need to demonstrate safe access and egress in the 100-year event, accounting for climate change.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM001</b>
	<b>Address</b>	Land north of The Home Farm
	<b>Area</b>	26.25 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and therefore Flood Zone 2 has been used as a conservative indication of flood risk from climate change. This extends from west to east, bisecting through the centre of the site. A detailed modelling study should test the latest published climate change allowances, which may refine risk to the site.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. There is a major increase in extent between the 100 and 1,000-year surface water events, indicating that the site is extremely sensitive to increases in runoff as a result of climate change. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM001</b>
	<b>Address</b>	Land north of The Home Farm
	<b>Area</b>	26.25 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Diamicton</li> <li>◦ Superficial – Sand and Gravel</li> </ul> </li> <li>• The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>• The site is not located within any Historic Landfill Sites.</li> <li>• The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as ‘More Vulnerable’ It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site.</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> </ul> <p>As part of the site is within Flood Zones 2 and 3, the Exception Test will be required.</p>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required as the site is greater than 1ha and contains areas within Flood Zones 2 and 3..</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model may be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the unnamed watercourses, using channel topographic survey.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM001</b>
	<b>Address</b>	Land north of The Home Farm
	<b>Area</b>	26.25 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<p>to ensure there is no increase in runoff beyond the current greenfield rates.</p> <ul style="list-style-type: none"> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space. The existing surface water flow paths through the site should be incorporated into SuDS using blue-green infrastructure.</li> <li>• Runoff must be limited to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>ELM001</b>
	<b>Address</b>	Land north of The Home Farm
	<b>Area</b>	26.25 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to the 70% of the site located within Flood Zone 1, therefore, the north eastern and southern portions of the site should be focused on for future development.</li> <li>• Safe access and egress need to be considered as challenges from the south east portion of the site are presented when identifying routes for access/egress routes. Furthermore, access to the south of the site is affected by both surface water extents and fluvial Flood Zones bisecting the site.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green infrastructure should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
<p>The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.</p>		
<b>Flood Zones</b>		<p>Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.</p>
<b>Climate change</b>		<p>Climate change was based on Flood Zone 2 to serve as an indication of possible extents. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.</p>
<b>Fluvial depth, velocity, and hazard mapping</b>		<p>There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping can be used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM001</b>
	<b>Address</b>	Land north of The Home Farm
	<b>Area</b>	26.25 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<b>Surface water depth, velocity, and hazard mapping</b>		The surface water depth, velocity, and hazard mapping for the 1 in 30, 100 and 1000-year events is taken Environment Agency's Risk of Flooding from Surface Water.



# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	ELM008			
	Address	Land north of railway line, Elmhursthorpe			
	Area	68.61 hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The site is located due south of Earl Shilton, Elmhursthorpe and the A47. The southern boundary of the site is adjacent to the Birmingham Leicester railway. The southern and western boundaries of the site are formed by Leicester Road and Burbage Common Road. There are six ordinary watercourses located within this site, three of which confluence within the centre of the site. The site is bisected by an unnamed ordinary tributary of the Thurlaston Brook, flowing from the south western border of the site, bisecting the from south to north of the site. The unnamed ordinary watercourse flows south east from where it exits the site, remaining in close proximity to the eastern boundary of the site. The two tributaries of this ordinary watercourse are located within 600 metres of the south western boundary of the site, one 230 metres south west of Church View Farm and one 290 metres north west of Bridge Farm. There are two tributaries located in the eastern portion of the site within close proximity of Billington Lakes and one further tributary located in the northern portion of the site flowing south along the perimeter of the site. The topography of the site identifies the highest elevation of the site at 98.8m in the south western portion of the site and a topographic low of 86.6m elevation at the north eastern boundary of the site, located in close proximity to the watercourse channel.			
		The Environment Agency’s Detailed River Network shows six drainage features at this site are associated with an unnamed ordinary watercourse.			
	Existing drainage features				
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		<1%	4%	5%	95%
Highest zone of risk (Risk of Flooding from Rivers and Sea)					
High					
The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)					

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	ELM008		
	Address	Land north of railway line, Elvesthorpe		
	Area	68.61 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><b>Available data:</b> The Environment Agency's Flood Zone mapping has been used in this assessment as there is no detailed modelling available.</p> <p><b>Flood characteristics:</b> The Flood Zone data for this site indicates flood risk through this site is confined to the river valley of the unnamed watercourse. Fluvial Flood Zones 2 and 3a are both located within this site and in the generalised national modelling appear very similar in extent. Flood Zone 2 is confined to the unnamed ordinary watercourse. The Flood Zone bisects the site and partially covers the eastern tip of the site by Billington Lakes. The flood water ingresses the site by 43 metres in the north east portion of the site.</p> <p>Flood Zone 3a covers a smaller area of the site south of Billington Lakes, the flood water ingresses south from the eastern area of the site by 40 metres.</p> <p>As there is no detailed hydraulic model available at this site, there is no depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest next to the channel, where the topography is lowest. Depths and velocities would likely reduce the further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.</p>		
	Surface Water	Proportion of site at risk (RoFfSW)		
		30-year	100-year	1,000-year
		2%	4%	14%
		Max depths (m)		
		0.3-0.9m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)		

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	ELM008
	Address	Land north of railway line, Elvesthorpe
	Area	68.61 hectares
	Current land use	Greenfield
	Proposed land use	Residential
		<p><b>Description of surface water flow paths:</b></p> <p>The site is at risk of flooding from all surface water flooding events. The surface water flow paths, of which there are 3 main ones, follow the topographic alignment of the unnamed watercourses, and bisect the site in several places.</p> <p>The 30-year event surface water event identifies multiple areas of ponding throughout the site, most notably in the northern portion of the site where seven separate ponding events are located. Additionally, a large area of surface water ponding is located within the centre of the site, at 92 metres in length. Areas of surface water ponding are also located at two separate ingress routes for the farmland at the southern and western boundary of the site. A small branch of surface water flooding is located at the tributary just south of Church View Fields Farm.</p> <p>The 100-year event forms a new flow path in the northern border of the site, from an ordinary watercourse along the northern boundary of the site. The small branch of surface water flooding located within the 30-year events further extends west of the site, extending to Leicester Road. In addition to this, two areas of surface water ponding are located in the eastern portion of the site, by the railway track and one other area located along Burbage Common Road.</p> <p>The 1,000-year event ponds further in an area of topographic impoundment within the northern area of the site, creating an area of ponding covering much of the northern portion of the site. A new flow path is identified within the eastern area of the site, entering the site across from the Birmingham Leicester Railway. A branch of surface water extends into the site from this new flow path. From Burbage Common Road, a new flow path flows from south of the site to the confluence of the ordinary watercourse within the centre of the site. The surface water branch south of Church View Farm Fields extends west towards Leicester Road and branches south west towards the Leicester Road, Burbage Common Road T junction.</p> <p>Five additional areas of surface water ponding are located within the south east portion (four areas of ponding) of the site and the northern portion of the site (one area of ponding).</p> <p>Overall, across the three events, the depth of the surface water within the site remains consistent at 300-900mm, with surface water velocity similarly consistent at &gt;0.25m/s.</p>
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	ELM008		
	Address	Land north of railway line, Elmesthorpe		
	Area	68.61 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
	Flood history	This site is not shown to be within the reaches of the Environment Agency's Historic Flood Map. Developers should contact the LLFA for more information on historic flooding.		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
		The site is not shown to have any implemented flood risk management structures.		
	Residual risk	<p>Residual risk at this site is deemed low, but there is a potential risk from the following:</p> <p>The small unnamed watercourse from the southern area of the site appears to enter a culvert underneath the Birmingham/Leicester railway.</p> <p>If the culvert upstream of the site was to block, this could create an area of impoundment leading to increased flood depth and velocity within the site, though risk is deemed low.</p> <p>If the culvert located below bridlepath road was to block at the unnamed ordinary watercourse structure just north of the site, this could increase flood depth and extents within the northern area of the site as well as the eastern portion of the site. It is unlikely to impact the site significantly as the risk to the site is already at the outer edge of the floodplain extents and the structure may be a suitable size, but it could increase risk to the eastern corner if the depths and extents were to increase slightly.</p> <p>The potential impacts should be considered in an FRA.</p>		
Emergency planning	Flood warning	<p>The site is not located within both the Environment Agency's Flood Warning Service map.</p> <p>The site is not located within the Environment Agency's Flood Alert Service map.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM008</b>
	<b>Address</b>	Land north of railway line, Elmhurst
	<b>Area</b>	68.61 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
	<b>Access and egress</b>	<p>Safe access and egress to the site can be obtained via the Leicester Road which runs adjacent to the western boundary of the site and Burbage Common Road running parallel to the southern boundary of the site.</p> <p>Flood Zone 2 and 3a bisect the site from the northern boundary of the site to the southern boundary, bisecting Burbage Common Road. Additionally, access and egress routes from the north east of the site is challenging due to the proximity of the site border to both the unnamed ordinary watercourse and Billington Lakes.</p> <p>The 30-year surface water event bisects Burbage Common road in two different locations with an area of ponding at the southern boundary of the site, causing potential issues to safe access and egress. Leicester Road remains relatively unaffected by surface water flooding, with small areas of flooding to the side of the road on the western boundary of the site.</p> <p>The 100-year flooding event similarly is affected by surface water as the 30-year event. The ponding along Burbage Common Road in the 30-year event develops into a third flow path. Additionally, the ponding along the western boundary adjacent to Leicester road increases in size.</p> <p>The 1,000-year event identifies three areas of surface water flow paths bisecting the Leicester Road, preventing safe access and egress from this area. Along the northern boundary of the site, the three flow paths develop in size compared to the 100-year event, with surface water flowing parallel to the site.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM008</b>
	<b>Address</b>	Land north of railway line, Elmesthorpe
	<b>Area</b>	68.61 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and therefore Flood Zone 2 has been used as a conservative indication of flood risk from climate change. This extends across the centre of the site, bisecting the site from west to the east of the site. A detailed modelling study should test the latest published climate change allowances, which may refine risk across the centre of the site from the west to the north east of the site</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>ELM008</b>
	<b>Address</b>	Land north of railway line, Elmesthorpe
	<b>Area</b>	68.61 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Diamicton</li> </ul> </li> <li>The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable' It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model may be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the unnamed ordinary watercourses, using channel topographic survey.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design</li> </ul>
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# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	ELM008
	Address	Land north of railway line, Elmesthorpe
	Area	68.61 hectares
	Current land use	Greenfield
	Proposed land use	Residential
		<p>to ensure there is no increase in runoff beyond the current greenfield rates.</p> <ul style="list-style-type: none"> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>ELM008</b>
	<b>Address</b>	Land north of railway line, Elmeathorpe
	<b>Area</b>	68.61 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to 95% of the site located within Flood Zone 1, therefore, the development should be steered towards the south-eastern corner of the site and away from the watercourses and surface water flow paths.</li> <li>• Safe access and egress need to be considered as the site as the 100-year and 1,000-year flooding events present some challenges to access and egress from both Leicester Road and Burbage Common Road as the roads are cut off to the south east of the site. This due to a surface water branch bisecting the road. Greater consideration needs to be taken in regard to safe access and egress for emergency services and where parts of site are bisected by flood risk, how would these areas gain access if not located near roads.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green infrastructure should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
<p>The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.</p>		
<b>Flood Zones</b>		<p>Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.</p>
<b>Climate change</b>		<p>Climate change was based on Flood Zone 2 to serve as an indication of possible extents. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM008</b>
	<b>Address</b>	Land north of railway line, Elmesthorpe
	<b>Area</b>	68.61 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Fluvial depth, velocity and hazard mapping</b>		There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping has been used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	ELM009			
	Address	Land at 24 Billington Road East			
	Area	3.01 Hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The site is located south of Elmeshorpe, north-west of the M69. The site's southern boundary is shared with an unnamed ordinary watercourse, further downstream of the ordinary watercourse is the confluence of the watercourse and the Thurlaston Brook. The north-western boundary of the site is adjacent to the Bridlepath Road and the north-eastern boundary is shared with Billington Road East.			
	Existing drainage features	The Environment Agency's Detailed River Network shows drainage features at this site are associated with an unnamed ordinary watercourse flowing from the west of the site to the south-east of the site.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		0%	12%	14%	86%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		High			
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)			

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	ELM009		
	Address	Land at 24 Billington Road East		
	Area	3.01 Hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><b>Available data:</b> The Environment Agency's Flood Zone mapping has been used in this assessment as there is no detailed modelling available.</p> <p><b>Flood characteristics:</b> The Flood Zone data for this site indicates flood risk through this side is confined to the river valley of the unnamed watercourse. Fluvial Flood Zones 2 and 3a are both present within the topographic extent of the site, FZ3b is not present within the site as there is no detailed modelling, therefore FZ3a is assumed as an indication of FZ3b.</p> <p>Flood Zone 3a covers approximately 12% of the site, which is concentrated at the area of the site adjacent to the unnamed ordinary watercourse.</p> <p>Fluvial Flood Zone 2 is very similar, just spreading a further 4% into the site. It is likely that flood risk may be refined in a detailed model, as the Flood Zones are formed from 2D generalised modelling.</p> <p>Both FZ2 and FZ3a have similar flood characteristics where flooding is concentrated by the watercourse at the southern border of the site.</p> <p>As there is no detailed hydraulic model available at this site, there is no depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest next to the channel, where the topography is lowest. Depths and velocities would likely reduce the further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.</p>		
	Surface Water	Proportion of site at risk (RoFfSW)		
		30-year	100-year	1,000-year
		6%	8%	12%
		Max depths (m)		
		0.3-0.9m	0.3-0.9m	>0.9m
		Max velocity (m/s)		
		>0.25m/s	>0.25m/s	>0.25m/s

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	ELM009		
	Address	Land at 24 Billington Road East		
	Area	3.01 Hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i></p>		
		<p><b>Description of surface water flow paths:</b>  The site is affected by the surface water flooding in all three events. The 30-year event follows the flow path of the ordinary watercourse, along the southern boundary of the site. Surface water ingresses 20 metres into the site at a maximum.  The 100-year event follows a similar flow path as shown in the 30-year event, only at a slightly greater extent. The 1,000-year event follows similar routes as observed within the 30 and 100-year events but spreads wider into the site. Within the 1,000-year event, surface water extends 34 metres into the site from the site's southern boundary.</p>		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available Online maps.		
	Flood history	<p>This site is not shown to be within the reaches of the Environment Agency's Historic Flood Map.  The Lead Local Flood Authority should be contacted to obtain further details</p>		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
	This site is not shown to have no implemented flood risk management infrastructure.			
	Residual risk	<p>Residual risk at the site is deemed low, but there is a potential risk from the following:  A culvert located 15 metres west of the site at Bridle Path Road presents a potential overflow risk to the site. A blockage of the culvert could cause water to back up behind the culvert, which could breach and could increase flood depths and extents slightly within the south-eastern area of the site.  The potential impacts should be considered in an FRA.</p>		
Emergency planning	Flood warning	<p>The site is not covered by the Environment Agency's Flood Warning Service.  The site is not included within the Environment Agency's Flood Alert Service.</p>		

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>ELM009</b>
	<b>Address</b>	Land at 24 Billington Road East
	<b>Area</b>	3.01 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
	<b>Access and egress</b>	Access and egress from the site are viable from Bridlepath Road from the north-west of the site and Billington Road to the north of the site. Access via the south of the site is not a viable option due to the site boundary lying adjacent to the ordinary watercourse. Site access is also feasible from the east of the site where another unnamed road is parallel with the boundary leading to Billington Road. Bridle Path Road is only exposed to surface water risk in the 1,000-year surface water flood risk event. Billington Road East and West have small surface water flow paths crossing in various locations. The main route out is via Bridle Path Road.
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and therefore Flood Zone 2 has been used as a conservative indication of flood risk from climate change. This extends across the western third of the site encompassing the lower incline ground. A detailed modelling study should test the latest published climate change allowances, which may refine risk in the south of the site.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>ELM009</b>
	<b>Address</b>	Land at 24 Billington Road East
	<b>Area</b>	3.01 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Triassic Rocks – Mudstone, Siltstone and Sandstone</li> <li>Superficial – Glacial Sand and Gravel – Sand and Gravel</li> </ul> </li> <li>The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'</p> <p>It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site.</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> </ul>



	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model may be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the Thurlaston Brook, using channel topographic survey.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design</li> </ul>
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# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	ELM009
	Address	Land at 24 Billington Road East
	Area	3.01 Hectares
	Current land use	Greenfield
	Proposed land use	Residential
		<p>to ensure there is no increase in runoff beyond the current greenfield rates.</p> <ul style="list-style-type: none"> <li>On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> </ul> <p>Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>ELM009</b>
	<b>Address</b>	Land at 24 Billington Road East
	<b>Area</b>	3.01 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to the 84% of the site located within Flood Zone 1. The development of the site should be steered towards the northern area of the site, where the risk from fluvial and surface water flooding is lesser.</li> <li>• Safe access and egress from the site should be obtained from Bridle Path Road and Billington Road East. Bridle Path Road is only exposed to surface water risk in the 1,000-year surface water flood risk event.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green infrastructure should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.	
<b>Climate change</b>	Climate change was based on Flood Zone 2 to serve as an indication of possible extents. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.	
<b>Fluvial depth, velocity and hazard mapping</b>	There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping can be used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage.	

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM009</b>
	<b>Address</b>	Land at 24 Billington Road East
	<b>Area</b>	3.01 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM010</b>			
	<b>Address</b>	Station Road, Elmeſthorpe			
	<b>Area</b>	7.93ha			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	The site is in the ſouth eaſt of Elmeſthorpe, ſouth off the B581, and to the ſouth weſt of Leiſter. There are dwellings located along the eaſtern boundary of the ſite, off Station Road (B541), and land to the north is currently uſed for agricultural purpoſes. The ſite is bound to the ſouth by an unnamed tributary of the Thurlaſton Brook, and the Birmingham Leiſter railway runs juſt ſouth of this watercourse. The ſite is located at the downstream end of the Thurlaſton Brook in the Upper Soar catchment.			
	<b>Existing drainage features</b>	The Environment Agency’s Detailed River Network ſhows drainage features at this ſite are aſſociated with an unnamed ordinary watercourse which flows in an eaſterly direction and converges with the Thurlaſton Brook approximately 4km weſt of the propoſed ſite.			
	<b>Fluvial</b>	<b>Proportion of ſite at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		0%	8%	10%	90%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		High			
		<i>The % Flood Zones quoted ſhow the % of the ſite at flood risk from that particular Flood Zone/event, including the percentage of the ſite at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>			

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	ELM010		
	Address	Station Road, Elmeſthorpe		
	Area	7.93ha		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><b>Available data:</b> The Environment Agency's Flood Zone mapping has been used in this assessment. This is based on 2D generalised modelling; there is no detailed modelling available.</p> <p><b>Flood characteristics:</b> The Flood Zone data for this site indicates flood risk through this site is confined to the valley of the unnamed watercourse which is a tributary to the Thurlaston Brook. Flood Zones 2 and 3a are present within the southern extent of the site. The extent of Flood Zone 3a is very similar to that of Flood Zone 2, covering only a slightly smaller area, particularly in the south east of the site. The watercourse then goes into a culvert to the east of the site, under Station Road.</p> <p>There is no data for Flood Zone 3b on the site, a detailed hydraulic model would be required for this, although the RoFfSW dataset can be used as a proxy and FZ3a as a conservative indication</p> <p>As the Flood Zones are generalised, it may be that a more detailed model would refine the risk around the railway line using channel survey and local topographic data.</p> <p>There is no detailed hydraulic modelling available at the site, therefore there is no depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest in the south of the site nearest the channel, where topography is lowest. Depths and velocities would likely reduce further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.</p>		
	Surface Water	<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		8%	16%	34%
		Max depths (mm)		
		>0.9m	>0.9m	>0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i></p>		

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	ELM010		
	Address	Station Road, Elvesthorpe		
	Area	7.93ha		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<b>Description of surface water flow paths:</b> The site is affected by the surface water flooding in all three events, more so than fluvial risk. During the 30-year event surface water flow paths are generally along the southern boundary flowing east of the site following the channel. The 100-year event covers a greater extent particularly in the south east of the site and develops a new flow path from the centre to the south of the site. During the 1,000-year event surface water covers just over one third of the site, focussed in the southern extent of the site. The flow path from the centre of the site is greater, and a new flow path from the northern boundary into the centre of the site is projected, as the water flows into areas of lower topography. Overall, there is no projected change to depth (>900mm) or velocity (>0.25m/s) throughout the events. The deepest areas will be in the lowest topography at the site, within the southern extent.		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	The site is not shown to be within the reaches of the Environment Agency's Historic Flood Map. Developers should contact the Lead Local Flood Authority to obtain further details.		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
		The site is not protected by any formal flood defences.		
	Residual risk	A culvert on the eastern boundary of the site potentially poses a risk of overtopping Station Road and spilling further into the site should a blockage occur. This should be investigated at the FRA site-specific stage.		
Emergency planning	Flood warning	The site is not covered by the modelled data in the Environment Agency's Flood Warning Service. A small area in the south east proportion of the site is included within the Environment Agency's Flood Alert Service. Flood Alert – "River Soar in Leicestershire including tributaries from Sharnford to the River Wreake confluence at Syston (034WAF402)".		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM010</b>
	<b>Address</b>	Station Road, Elvesthorpe
	<b>Area</b>	7.93ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
	<b>Access and egress</b>	Access can be gained from the east of the site via Station Road. However, there is surface water risk over this road between the Roundhills and the railway line. Access is therefore recommended towards the north. There is no access from the south due to the watercourse and railway line that run parallel to the site boundary.
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and therefore Flood Zone 2 has been used as a conservative indication of flood risk from climate change. This extends across the southern extent of the site towards the centre. A detailed modelling study should test the 2080s climate change allowances, which may refine risk.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM010</b>
	<b>Address</b>	Station Road, Elvesthorpe
	<b>Area</b>	7.93ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Mercia Mudstone Group – Mudstone</li> <li>Superficial – Bosworth Clay Member – Clay and Silt</li> </ul> </li> <li>The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable' and Employment development is classified as 'Less Vulnerable'. For mixed use developments, the highest level of vulnerability should be considered.</p> <p>It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site.</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 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model may be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the unnamed watercourse along the southern boundaries, using channel topographic survey.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance; Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes along the southern and south-western boundaries, preserving these spaces as green infrastructure. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in Flood Zone 3 may require floodplain compensation, and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM010</b>
	<b>Address</b>	Station Road, Elmesthorpe
	<b>Area</b>	7.93ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<p>drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</p> <ul style="list-style-type: none"> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse, and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>ELM010</b>
	<b>Address</b>	Station Road, Elmeſthorpe
	<b>Area</b>	7.93ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to the majority of the area of the site located within Flood Zone 1, therefore the northern portion of the site.</li> <li>• Safe access and egress need to be considered as the site is inaccessible from the south a south-east. Access is achievable to the east via Station Road heading north.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure they will not displace water elsewhere (for example, if land is raised to permit development in one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.	
<b>Climate change</b>	Climate change was based on Flood Zone 2 to serve as an indication of possible extents. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.	
<b>Fluvial depth, velocity and hazard mapping</b>	There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping has been used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage	
<b>Surface Water</b>	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.	

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELM010</b>
	<b>Address</b>	Station Road, Elvesthorpe
	<b>Area</b>	7.93ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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.

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	ELUB002			
	Address	Land east of Narborough Wood Park			
	Area	7.60 ha			
	Current land use	Greenfield			
	Proposed land use	Commercial			
Sources of flood risk	Location of site within catchment	The site is located to the east of Desford Road (B582), north of Enderby. Narborough Wood House and Park (existing commercial development) borders the site to the west. Agricultural land lies adjacent to other boundaries. An unnamed tributary of Lubbesthorpe Brook flows in an easterly direction approximately 300m to the north east of the site. Lubbesthorpe Brook is in the Upper Soar catchment, converging with the River Soar approximately 4.5km to the west of the site.			
	Existing drainage features	The Environment Agency's Detailed River Network shows drainage features at this site are associated with an unnamed ordinary watercourse which flows in an easterly direction to the north east of the site and converges with Lubbesthorpe Brook to the east of the proposed site.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		0%	0%	0%	100%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		Very Low			
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)			
		Available data: The Environment Agency's Flood Zone mapping has been used in this assessment. Flood characteristics: The entire site is located within Flood Zone 1. There is no detailed hydraulic modelling available for the watercourse near the site, therefore there is no depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model.			
	Surface Water	Proportion of site at risk (RoFfSW)			
		30-year	100-year	1,000-year	
		0%	<1%	3%	
		Max depths (mm)			
N/A		<0.3m	<0.3m		
Max velocity (m/s)					
N/A		>0.25 m/s	>0.25 m/s		

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	ELUB002		
	Address	Land east of Narborough Wood Park		
	Area	7.60 ha		
	Current land use	Greenfield		
	Proposed land use	Commercial		
		<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i></p> <p><b>Description of surface water flow paths:</b>  The site is unaffected by surface water flooding during the 30-year event. During the 100-year event there is some minor ponding along the southern boundary, affecting a small area. Depths are below 0.3m with velocities greater than 0.25m/s  During the 1,000-year event the areas of ponding present during the 100-year event form two flow paths which flow south out of the site and merge just outside the site boundary. Depths across the flow remain below 0.3m with velocities above 0.25m/s..</p>		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	The site is not shown to be within the reaches of the Environment Agency's Historic Flood Map. Developers should contact the Lead Local Flood Authority to obtain further details.		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
	The site is not protected by any formal flood defences.			
Emergency planning	Residual risk	There is no residual risk presented at this site. There is no anticipated fluvial risk however a site-specific FRA should be carried out.		
	Flood warning	The site is not covered by the modelled data in the Environment Agency's Flood Warning or Alert Services.		
	Access and egress	Access can be gained to the north west boundary of the site via Narborough Wood Park, which is a private single-track road leading off from Desford Road (B582). Narborough Wood House is situated along the west boundary which may remain accessible during the 3.3% and 1% AEP events. Access to the north of the site is not affected during surface water or fluvial flooding events.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELUB002</b>
	<b>Address</b>	Land east of Narborough Wood Park
	<b>Area</b>	7.60 ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Commercial
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and Flood Zones are not available for the nearby ordinary watercourse. A detailed modelling study should test the 2080s climate change allowances, which may refine risk in the north-western corner of the site.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. There is a slight increase in extent of surface water flooding on the site between the 100 and 1,000-year event suggesting the site is less sensitive to increases in runoff as a result of climate change.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELUB002</b>
	<b>Address</b>	Land east of Narborough Wood Park
	<b>Area</b>	7.60 ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Commercial
<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 – The north of the site is composed of Arden Sandstone Formation – Sandstone. The southern extent is composed of Edwalton member – Mudstone.</li> <li>Superficial – None recorded</li> </ul> </li> <li>The upper half of the site has groundwater levels that are indicated to be less than 1m below ground level during a 1% AEP event. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>The southern half of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Employment development is classified as 'Less Vulnerable'.</p> <p>The entire site is within Flood Zone 1 therefore the exception test is not required.</p>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required as the site is greater than 1 ha.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model will be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the unnamed watercourse to the north east of the site, using channel topographic survey.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance; Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes along the southern and south-western boundaries, preserving these spaces for green infrastructure. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> </ul>
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# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	ELUB002
	Address	Land east of Narborough Wood Park
	Area	7.60 ha
	Current land use	Greenfield
	Proposed land use	Commercial
		<ul style="list-style-type: none"> <li>On site attenuation schemes would need to be tested against the watercourse to ensure flows are not exacerbated downstream within the catchment.</li> <li>New development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff. Assessment for runoff should include allowance for climate change effects.</li> <li>All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse, and permeable paving.</li> <li>Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development.</li> <li>Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>
Key messages		<p>As the site is located entirely within Flood Zone 1, the Exception Test is not required and the site is likely to be suitable for development if:</p> <ul style="list-style-type: none"> <li>Development is limited to the majority of the site outside of areas of surface water flood risk.</li> <li>Post-development runoff is limited to present greenfield rates.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
Mapping Information		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ELUB002</b>
	<b>Address</b>	Land east of Narborough Wood Park
	<b>Area</b>	7.60 ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Commercial
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning and Flood Zones were not available for the ordinary watercourse to the north of the site; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.
<b>Climate change</b>		Climate change outputs were not available for this site. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.
<b>Fluvial depth, velocity and hazard mapping</b>		There is no available fluvial modelling data for the site. This should be explored further at site-specific stage
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<b>Surface water depth, velocity and hazard mapping</b>		The surface water depth, velocity, and hazard mapping for the 1 in 30, 100, and 1000-year events is taken Environment Agency's Risk of Flooding from Surface Water.

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	ESHA001			
	Address	Aston Lane, Sharnford			
	Area	14.06 hectares			
	Current land use	Greenfield			
	Proposed land use	Commercial			
Sources of flood risk	Location of site within catchment	The site is located north west of the village of Sharnford. The site is located 200 metres north of the Soar Brook, flowing from west to east of the site. The topography of the site is highest in the north western corner of the site and lowest at the southern border of the site.			
	Existing drainage features	The Soar Brook is located approximately 200m south of the site. There are no other drainage features associated with the site.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		0%	0%	0%	100%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		Low			
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g., FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)			
		Available data: The Environment Agency’s Flood Zone mapping has been used in this assessment. The Environment Agency’s 2012 1D-2D River Soar and Tributaries modelling (Soar Brook) has been used to inform this assessment. Flood characteristics: The modelled Flood Zone data for this site indicates that the site is located solely within Flood Zone 1. The site is not at risk of flooding from the Soar Brook in the 1,000-year event.			
	Surface Water	Proportion of site at risk (RoFfSW)			
		30-year	100-year	1,000-year	
		<1%	2%	8%	
		Max depths (m)			
<0.3m		<0.3m	<0.3m		
Max velocity (m/s)					
>0.25 m/s	>0.25 m/s	>0.25 m/s			

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	ESHA001		
	Address	Aston Lane, Sharnford		
	Area	14.06 hectares		
	Current land use	Greenfield		
	Proposed land use	Commercial		
		<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g., 100-year includes the 30-year %)</i></p> <p><b>Description of surface water flow paths:</b>  The site is affected by in all modelled surface water flooding events. In the 30- year event, there is some minor surface water flooding along the boundary between the two fields comprising the northern part of the site, in the topographic depression. Depths are below 0.3m with velocities above 0.25m/s.  In the 100-year event, a surface water flow begins to develop from Aston Lane southward toward the industrial yard at the southern boundary. Flooding is limited to the topographic depression through the middle of the site with depths remaining below 0.3m and velocities above 0.25m/s.  In the 1000-year event, the flow path expands significantly, forming a flow approximately 35m wide which bisects the east of the site from Aston Lane to the industrial site on the southern border. Depths remain below 0.3m with velocities greater than 0.25m/s.</p>		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	This site is not shown to be within the reaches of the Environment Agency's Historic Flood Map. Developers should contact the LLFA for more information on historic flooding.		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
		The site is not shown to have any implemented flood risk management infrastructure.		
	Residual risk	There is no residual risk to the site form flood risk management structures.		
	Flood warning	The site is not within An Environment Agency Flood Alert area. The site is not within an Environment Agency Flood Warning Area.		

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	ESHA001
	Address	Aston Lane, Sharnford
	Area	14.06 hectares
	Current land use	Greenfield
	Proposed land use	Commercial
Emergency planning	Access and egress	<p>Access to the north and east of the site can be gained by Aston Lane running along the northern and north eastern boundary of the site.</p> <p>Access to the south of the site is not possible due to an industrial complex on the southern border.</p> <p>Aston Lane is affected by surface water flooding in all three modelled events; however, depths are low, and the road is unaffected travelling either direction from the affected areas.</p>
Climate Change	Implications for the site	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding</li> <li>Detailed fluvial modelling is available at the site from the Soar and Tributaries model (Soar Brook), for the 100 year +20% +30% +50% climate change scenarios and the site is not shown to be at risk.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40 % event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. There is a significant increase in flood extent between the 100 and 1,00-year surface water events, indicating that the site is highly sensitive to increased runoff as a result of climate change. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>ESHA001</b>
	<b>Address</b>	Aston Lane, Sharnford
	<b>Area</b>	14.06 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Commercial
<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 – Triassic Rocks – Mudstone, Siltstone and Sandstone.</li> <li>Superficial – Till – Diamicton</li> </ul> </li> <li>The majority of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>There is a band running vertically down part of the eastern side of the site where groundwater levels are indicated to be between 0.5 and 5m below ground level and there is a risk of flooding to subsurface assets and below ground development such as basements. Groundwater monitoring is recommended to determine the seasonal variability of groundwater levels, as this may affect the design of the surface water drainage system.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Employment development is classified as 'Less Vulnerable'.</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> </ul>



	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required as the site is greater than one hectare.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse to ensure flows are not exacerbated downstream within the catchment.</li> <li>• New development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff. Assessment for runoff should include allowance for climate change effects.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ESHA001</b>
	<b>Address</b>	Aston Lane, Sharnford
	<b>Area</b>	14.06 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Commercial
		<ul style="list-style-type: none"> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development. The surface water flow route through the centre of the site should be incorporated into SuDS using green infrastructure and opportunities explored for SuDS to alleviate known flooding issues downstream.</li> <li>• Runoff must be limited to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>
<b>Key messages</b>		<ul style="list-style-type: none"> <li>• The site is located entirely within Flood Zone 1 therefore the Exception test is not required. The site is likely to be suitable for development if: Development is sited away from the surface water flow route which develops during the 100 and 1,00-year events.</li> <li>• Safe access and egress can be demonstrated in the 100-year fluvial and surface water events, allowing for climate change.</li> <li>• Any proposal is accompanied by a drainage strategy to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes.</li> <li>• Space for green areas should be considered in the areas of highest flood risk, and the significant surface water flow route through the centre of the site should be incorporated into SuDS using green infrastructure.</li> <li>• Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
<p>The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>ESHA001</b>
	<b>Address</b>	Aston Lane, Sharnford
	<b>Area</b>	14.06 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Commercial
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and Tributaries model (Soar Brook).
<b>Climate change</b>		Climate change was based on modelled outputs from the 2012 River Soar and Tributaries model (Soar Brook).
<b>Fluvial depth, velocity and hazard mapping</b>		Depth velocity and hazard outputs are taken from the 2012 River Soar and Tributaries model (Soar Brook). The site is not shown to be at risk therefore there are no outputs for the site.
<b>Surface Water</b>		The Environment Agency's Risk of Flooding from Surface Water dataset has been used to define areas at risk from surface water flooding.
<b>Surface water depth, velocity and hazard mapping</b>		The surface water depth, velocity, and hazard mapping for the 1 in 30, 100 and 1,000-year events) is taken from the Environment Agency's Risk of Flooding from Surface Water dataset.

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	GLE030			
	Address	Land to the rear of County Hall			
	Area	73.11 Hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The site is located west of Beaumont Leys, west of the City of Leicester and south of the A46/A5630 junction. The site is also 245 metres south of the Rothley Brook and unnamed ordinary water course confluence. A small unnamed ordinary watercourse is located within the centre of the eastern area of the site, flowing south towards the southern boundary of the site, then flowing east towards the A5630. The site identifies a large elevation change with topographic lows along the northern perimeter of the site (68.31m AOD) and a topographic higher within the centre of the site (89.05m AOD).			
	Existing drainage features	The Environment Agency’s Detailed River Network identifies that an unnamed ordinary watercourse crossing the site near the eastern corner, flowing north towards the A5630. Additionally, there is a 145-metre-long unnamed ordinary watercourse within the centre of the site.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		0%	0%	0%	100%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		Low			
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)			
		<b>Available data:</b> The Environment Agency’s Flood Zone mapping has been used in this assessment. <b>Flood characteristics:</b> The modelled Flood Zone data for this site indicates that the site is located solely within Flood Zone 1. The site is not at risk of flooding in the 1000-year event. As there is no detailed hydraulic modelling available for the ordinary watercourses on this site, there is no depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest next to the channel, where topography is lowest. Depths and velocities would likely reduce the further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.			

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	GLE030		
	Address	Land to the rear of County Hall		
	Area	73.11 Hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
	Surface Water	Proportion of site at risk (RoFfSW)		
		30-year	100-year	1,000-year
		2%	4%	10%
		Max depths (m)		
		>0.9m	>0.9m	>0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		
		<b>Description of surface water flow paths:</b> The site is at risk of surface water flooding in all modelled events. In the 30-year surface water event there are two large areas of surface water ponding on the northern perimeter of the site, where surface water pools as water flows from the topographic high areas to the south portion of the site. Depths across the ponding areas are mostly above 0.9m. There is a surface water flow, with depths below 0.3m running from the centre of the site, north towards the area of ponding. In the 100-year surface water event, two surface water flow paths flow north across the site towards the areas of ponding on the northern boundary. The eastern flow path appears to follow one of the unnamed ordinary watercourses. There is also a notable increase in area coverage of both surface water ponds along the northern boundary of the site. Depths in both flows remains below 0.3m with velocities greater than 0.25m/s and depths in the ponding areas remain above 0.9m. In the 1000-year surface water event two significant surface water flows bisect the site, with several smaller flows leading into them. These flow northwards across the site towards the areas of ponding, one across the centre of the site, the other across the eastern portion. Depths across the majority of the flow paths remain below 0.3m with velocities greater than 0.25m/s, whilst the areas of ponding have depths of over 0.9m.		
	Reservoir	The site is not at risk of reservoir flooding from the available online maps.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GLE030</b>		
	<b>Address</b>	Land to the rear of County Hall		
	<b>Area</b>	73.11 Hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
	<b>Flood history</b>	The site is not included within the Environment Agency's Historic Flood Map. Developers should contact the LLFA for more information on historic flooding.		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not shown to have any implemented flood risk management infrastructure.		
	<b>Residual risk</b>	<p>Residual risk at the site is deemed low, but there is a potential risk from the following:</p> <p>If the 2 culverts located along the northern boundary of the site were to become blocked, flood water could back up within the site. Additionally, if the culvert in the centre of the eastern area of the site were to become blocked, water could pond and flow around the culvert, flowing north into the site.</p>		
<b>Emergency planning</b>	<b>Flood warning</b>	<p>The site is not within an Environment Agency Flood Alert Area.</p> <p>The site is not within an Environment Agency Flood Warning Area.</p>		
	<b>Access and egress</b>	<p>Access to the site can be obtained by via Gynsill Lane along the northern perimeter of the site. Access via Gynsill Lane is unlikely to be affected by surface water during the 3.3% and 1% AEP events but access via this road may be partially impeded during the 0.1% AEP event. Access to the north east of the site is challenging due to the proximity of the site to the A5630. The site is bisected by two surface water flows in the 1000-year events and access routes should be sited to ensure that no part of the site is cut off during a flood event. Raising of access routes should not impeded existing surface water flow routes.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GLE030</b>
	<b>Address</b>	Land to the rear of County Hall
	<b>Area</b>	73.11 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding</li> <li>There is no detailed fluvial modelling available at this site, and therefore, flood zone 2 has been used as a conservative indication of flood risk from climate change, which has not been identified within the site. A detailed modelling study should test the latest published climate change allowances, which may refine risk in the centre of the site.</li> <li>Comparing the flood extents of Flood Zone 3b (20 year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40 % event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GLE030</b>
	<b>Address</b>	Land to the rear of County Hall
	<b>Area</b>	73.11 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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>North western area of the site <ul style="list-style-type: none"> <li>Bedrock – Triassic Rocks – Mudstone, Sandstone and Siltstone</li> <li>Superficial – Alluvium - Clay, Silt and Sand</li> </ul> </li> <li>South eastern area of the site <ul style="list-style-type: none"> <li>Bedrock - Alluvium - Clay, Silt and Sand</li> <li>Superficial – Till – Diamicton</li> </ul> </li> </ul> </li> <li>Groundwater mapping for the south of the site shows that it is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>There is a small part in the middle of the site where groundwater levels are indicated to be between 0.5 and 5m below ground level and there is a risk of flooding to subsurface assets and below ground development such as basements. Groundwater monitoring is recommended to determine the seasonal variability of groundwater levels, as this may affect the design of the surface water drainage system.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied. As the entire site is within Flood Zone 1, the Exception test is not required.</p> <p>Residential development is classified as 'More Vulnerable' As the site is at relatively low risk it is likely to be suitable for development with some mitigation.</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> </ul>



	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required as the site is greater than one hectare.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Detailed hydraulic model should be undertaken at Flood Risk Assessment stage, to confirm flood risk to the site from the two unnamed watercourses.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse to ensure flows are not exacerbated downstream within the catchment.</li> <li>• New development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff. Assessment for runoff should include allowance for climate change effects. All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GLE030</b>
	<b>Address</b>	Land to the rear of County Hall
	<b>Area</b>	73.11 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space. The two existing surface water flow paths should be incorporated into SUDS using green infrastructure.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• As the site is greater than 1 ha, a detailed FRA will be required.</li> <li>• Surface water flooding bisects the site in two separate locations; the western area of the site is bisected from north to south as well as the eastern area of the site being bisected from north to south- these should be considered when assessing site layout to ensure access and egress to all parts of the site remains unaffected by surface water flooding.</li> <li>• Development should be steered away from the areas of surface water ponding on the northern boundary.</li> <li>• Risk to the site from the unnamed watercourses should be investigated using detailed modelling as part of a site-specific FRA.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
<p>The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GLE030</b>
	<b>Address</b>	Land to the rear of County Hall
	<b>Area</b>	73.11 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk. The EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs.
<b>Climate change</b>		Climate change was based on Flood Zone 2 to serve as an indication of possible extents. The EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.
<b>Fluvial depth, velocity and hazard mapping</b>		There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping has been used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage; the EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs.
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	GLE032		
	Address	Land north of Glenfield		
	Area	74.34ha		
	Current land use	Greenfield		
	Proposed land use	Residential		
Sources of flood risk	Location of site within catchment	The site is located to the north of the village of Glenfield, west of Leicester. The site is bound to the west by the Leicester Western Bypass and to the north by a small area of residential development and Groby Road (A50). The east and southern boundaries of the site are bound by Rothley Brook, a tributary of the river Soar, which flows in a northerly direction. The site is in the mid catchment of Rothley Brook in the Upper Soar catchment. The site is highest in the north west, sloping down towards Rothley Brook to the east.		
	Existing drainage features	The Environment Agency's Detailed River Network shows drainage features are associated with Rothley Brook, which flows in a northerly direction along the south eastern boundary of the site. The Rothley Brook joins the River Soar approximately 10km north east of the site.		
	Fluvial	Proportion of site at risk		
		FZ3b	FZ3a	FZ2
		3%	5%	6%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)		
		High		
		<i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>		
		Available data:		
		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available		
		Flood characteristics:		
		Part of the site is within Flood Zones 2, 3 and 3b. Flood Zones are associated with Rothley Brook, along the eastern boundary. Flood zones are limited to a small area of the site, with Flood Zone 2 covering 6%. As there is no detailed hydraulic model available at this site, there is no depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest next to the channel, where the topography is lowest. Depths and velocities would likely reduce the further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.		

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	GLE032		
	Address	Land north of Glenfield		
	Area	74.34ha		
	Current land use	Greenfield		
	Proposed land use	Residential		
	Surface Water	Proportion of site at risk (RoFfSW)		
		30-year	100-year	1,000-year
		3%	4%	7%
		Max depths (m)		
		>0.9m	>0.9m	>0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g., 100-year includes the 30-year %)		
		Description of surface water flow paths:		
		The east of the site is affected by surface water in all 3 modelled events. During the 30-year event there is some localised ponding in an area of low topography along the southern boundary, and more extensive ponding in the north eastern corner. Depths are over 0.9m in the south and between 0.3-0.9m in the north east, with velocities generally below 0.25m/s away from the Rothley Brook channel.		
		The 100-year surface water extent covers a similar extent, although has a greater extent in the north east corner of the site. Depths remain over 0.9m in the south and between 0.3-0.9m in the north east, with velocities generally below 0.25m/s away from the Rothley Brook channel.		
		During the 1,000-year event three surface water flows from the centre of the site flowing towards the eastern boundary. Flooding in the north eastern corner covers a greater extent than during the 100-year event.		
		Depth in the surface water flows from the centre of the site are below 0.3m, with velocities greater than 0.25m/s. Across the wider areas of flooding, depths are greater than 0.9m with velocities above 0.25m/s.		
	Reservoir	The east of the site is shown to be at risk of flooding from a reservoir breach, within the Thomson Reservoir maximum flood extent.		
	Flood history	The site is shown to not be within the reaches of the Environment Agency's Historic Flood Map.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GLE032</b>		
	<b>Address</b>	Land north of Glenfield		
	<b>Area</b>	74.34ha		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not protected by any formal flood defences		
	<b>Residual risk</b>	<p>There is a residual risk presented along land in the east as the Thornton Reservoir maximum Flood Extent overlaps into the site boundary.</p> <p>There is a culvert located on Groby Road to the north. Should the culvert become blocked, water could spill onto the site- this should be investigated as part of a site-specific Flood Risk Assessment.</p>		
<b>Emergency planning</b>	<b>Flood warning</b>	<p>The eastern boundary of the site is within Environment Agency Flood Alert and Flood Warning areas.</p> <ul style="list-style-type: none"> <li>- Flood Alert – Rothley Brook and tributaries from Botcheston to the River Soar at Rothley (034WAF403).</li> <li>- Flood Warning – Rothley Brook at Glenfield and Anstey including Thurcaston Lane at Thurcaston (034FWFROGLENFLD).</li> </ul>		
	<b>Access and egress</b>	<p>The site can be accessed via the A46 which runs along the north western boundary of the site. Site access could also be developed utilising the residential development that exits to the north of the site (Glen Park Avenue / Overdale Avenue). Access via the A46 is unaffected by fluvial and surface water flooding during the 1,000-year events.</p> <p>Access should be steered away from the north east boundary adjacent to Groby Road as this is subject to flooding during the 100-year and 1000-year surface water flood events.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GLE032</b>
	<b>Address</b>	Land north of Glenfield
	<b>Area</b>	74.34ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and therefore Flood Zone 2 has been used as a conservative indication of flood risk from climate change. This covers a small percentage of land across the east of the encompassing the lower incline ground. A detailed modelling study should test the 2080s climate change allowances, which may refine risk in the eastern area of the site.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change. This indicates that there will be a marginal increase in the extent of Flood Zone 3b on the site.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. There is a large increase in surface water flood extent between the 100 and 1,000-year events indicating that the site is highly sensitive to increases in runoff as a result of climate change. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GLE032</b>
	<b>Address</b>	Land north of Glenfield
	<b>Area</b>	74.34ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Gunthorpe Member – Mudstone.</li> <li>◦ Superficial – Thrussington Member – Diamicton</li> </ul> </li> <li>• From mapping for half of the site, the majority of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>• There is a band of the site to the south-west where groundwater levels are indicated to be less than 1m below ground level during a 1% AEP event. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>• There is a small portion to the north of the site where groundwater levels are indicated to be between 0.5 and 5m below ground level and there is a risk of flooding to subsurface assets and below ground development such as basements. Groundwater monitoring is recommended to determine the seasonal variability of groundwater levels, as this may affect the design of the surface water drainage system.</li> <li>• The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>• The site is not located within any Environment Agency designated Source Protection Zone.</li> <li>•</li> </ul>



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GLE032</b>
	<b>Address</b>	Land north of Glenfield
	<b>Area</b>	74.34ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable' and Employment development is classified as 'Less Vulnerable'. For mixed use developments, the highest level of vulnerability should be considered.</p> <p>It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site.</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 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> </ul> <p>As part of the site is within Flood Zone 2, the Exception Test will be required.</p>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required as part of the site is within Flood Zones 2 and 3 and is greater than one hectare.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model will be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the Rothley Brook along the eastern boundary, using channel topographic survey.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance; Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes along the southern and south-western boundaries, preserving these spaces as green infrastructure. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 will require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• Any proposal should be accompanied by an overall Surface Water Management Masterplan and Strategy (SWMMS) which should cover: <ul style="list-style-type: none"> <li>◦ How the cumulative effects of potential peak rates and volumes of water from development sites would impact on peak flows, duration of flooding and timing of flood peaks on receiving watercourses. This should be used to develop and implement appropriate drainage sub catchments and specific runoff rate and volume requirements for each phase of the development.</li> <li>◦ The risk of flooding from all sources, including for rainfall events greater than the design standard of the surface water drainage system should be taken into account to ensure there is no flood risk to new properties and that exceedance flows in extreme events are safely routed around those properties.</li> <li>◦ The consideration of how SuDS, natural flood management techniques, green infrastructure and green-blue corridors can be designed into the development master plan to facilitate drainage flood risk management and ensure wider benefits</li> </ul> </li> </ul>
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		<p>such as biodiversity, amenity, water quality and recreation are realised.</p> <ul style="list-style-type: none"> <li>○ Based on the above, a Drainage Phasing Plan should be developed, based on the SuDS train method (considering firstly how water can be infiltrated/stored at a plot level, then conveyed through the site and any regional storage needs at a settlement level).</li> <li>○ The provision of drainage during the building phase shall be based on the Drainage Phasing Plan to ensure adequate drainage is provided and implemented throughout the development life.</li> <li>○ The LLFA, Environment Agency and LPA should be consulted during the development of the Surface Water Management Masterplan and Strategy.</li> </ul> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse to ensure flows are not exacerbated downstream within the catchment.</li> <li>• New should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff. Assessment for runoff should include allowance for climate change effects.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development run off.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse, and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential</li> </ul>
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# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>GLE032</b>
	<b>Address</b>	Land north of Glenfield
	<b>Area</b>	74.34ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<p>development and consider using Flood Zones 2 and 3 as public open space.</p> <ul style="list-style-type: none"> <li>Runoff must be limited to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>Development is limited the area of the site located in Flood Zone 1, avoiding the eastern boundary.</li> <li>Safe access and egress will need to be demonstrated during the 100-year event accounting for climate change. Particular consideration will be needed with regard to the risk to the north east of the site from fluvial and surface water events.</li> <li>Any proposal should be accompanied by an overall Surface Water Management Masterplan and Strategy (SWMMS).</li> <li>Space for green areas should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
<p>The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.</p>		
<b>Flood Zones</b>		<p>Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.</p>
<b>Climate change</b>		<p>Climate change was based on Flood Zone 2 to serve as an indication of possible extents. It is recommended that the EA's latest climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GLE032</b>
	<b>Address</b>	Land north of Glenfield
	<b>Area</b>	74.34ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Fluvial depth, velocity and hazard mapping</b>		There only generalised fluvial modelling data available therefore there is no depth, velocity, or hazard data. This should be explored further at site-specific stage
<b>Surface Water</b>		The Environment' Agency's Risk of Flooding from Surface Water dataset has been used to define areas at risk from surface water flooding.
<b>Surface water depth, velocity and hazard mapping</b>		The surface water depth, velocity, and hazard mapping for the 1 in 30, 100 or 1,000-year event is taken Environment Agency's Risk of Flooding from Surface Water dataset.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA024</b>			
	<b>Address</b>	The Old Piggery, Little Glen Road, Glen Parva			
	<b>Area</b>	0.14			
	<b>Current land use</b>	Brownfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	<p>The site is located to the south of Leicester, just south of Glen Parva. The site is bound to the east by The Ford, a single-track lane which is south off Little Glen Road (B582). Directly north of the proposed site is a singular dwelling, and to the west and south the site is bound by greenfield land. Land further north of the site is predominantly existing residential development, and further south-west is the village of Blaby. Land to the south-east of the site is predominantly used for agricultural purposes.</p> <p>The River Sence flows in a westerly direction to the south of the site which is a tributary to the River Soar. The site is in the downstream catchment of the River Sence in the Upper Soar catchment, the confluence is 2.6km to the west of the proposed site. The Grand Union Canal flows approximately 250m to the north of the site.</p>			
		<p>The Environment Agency's Detailed River Network shows drainage features are associated with the River Sence which flows in a westerly direction approximately 50m to the south of the proposed development. This watercourse confluences with the River Soar approximately 2.6km to the west of the site.</p>			
	<b>Existing drainage features</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		<7%	7%	50%	50%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		High			
		<p><i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i></p>			

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	GPA024		
	Address	The Old Piggery, Little Glen Road, Glen Parva		
	Area	0.14		
	Current land use	Brownfield		
	Proposed land use	Residential		
		<p><b>Available data:</b> The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment. This includes the downstream portion of the River Sence. The EA's Flood Map for Planning has been used to inform Flood Zones 2 and 3a (as this incorporates the latest modelling) and Flood Zone 3b has been derived from the hydraulic model.</p> <p><b>Flood characteristics:</b> The modelled Flood Zone data for this site indicates that flood risk to this site is from the outer extents of the River Sence floodplain extents. Fluvial Flood Zones 2, 3a and 3b are all present within the site boundary. Flood Zone 2 covers the greatest area, 50% of the site, from the south and then encroaching in from the east. Flood Zones 3a and 3b cover 7% of the site, along the southern boundary and in the north-eastern corner of the site.</p> <p>The modelled defended 100-year extent affects land along the southern boundary and a pocket in the north-eastern area of the site. Maximum depths of the 100-year extent from the River Soar and Tributaries model are recorded at 0.38m, and maximum velocities of 0.29m/s. The modelled 100-year +30% climate change extent covers slightly more land in the south of the proposed site, with maximum depths of 0.49m and maximum velocities of 0.41m/s.</p> <p>During the 100-year modelled defended event, hazard is projected at a maximum threshold of 1.25 – 2 which presents a significant risk and dangerous for most – a Flood Zone with deep and fast flowing water. This extent covers a very small percentage of land along the southern boundary. The 100-year +30% climate change hazard is projected to cover a very similar area to the 100-year, with a slightly greater coverage along the southern boundary, and crossing into the north-east boundary of the site. The maximum threshold is similarly 1.25 -2, a significant risk and dangerous for most.</p>		
		<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		<1%	<1%	1%
		Max depths (mm)		
		<0.3m	<0.3m	<0.3m
	Surface Water	Max velocity (m/s)		

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	GPA024		
	Address	The Old Piggery, Little Glen Road, Glen Parva		
	Area	0.14		
	Current land use	Brownfield		
	Proposed land use	Residential		
		<0.25 m/s	<0.25 m/s	>0.25 m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		
		<b>Description of surface water flow paths:</b> The site is at very low risk of surface water flooding, though is surrounded by extents to the south and east in all surface water events, and west in the 1,000-year event. The 30 and 100-year events project minimal coverage of <1% of the proposed land. During the 30 and 100-year events the surface water risk is in the south-east of the site, and just overlaps the south-east boundary, where the topography is at its lowest. The 1,000-year surface water risk covers 1% of the land in the south-eastern corner of the proposed site. Overall, the increase in depth and velocity takes place during the 1,000-year event in the south of the site. The greatest risk is within the south-east of the site where the topography is lowest.		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	The entire area of the proposed site is shown to be within the reaches of the Environment Agency's Historic Flood Map. Half of this area is located within Flood Zone 2, the other 50% is Flood Zone 1. There are no specific recorded incidents. The Lead Local Flood Authority should be contacted to obtain further details.		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
	Residual risk	The site is not protected by any formal flood defences.		
		There is potential residual risk from the culvert under The Ford; if this were to block, it could push extents slightly further into the site, though risk is deemed low given the site is on the outer extremities of the floodplain.		



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA024</b>
	<b>Address</b>	The Old Piggery, Little Glen Road, Glen Parva
	<b>Area</b>	0.14
	<b>Current land use</b>	Brownfield
	<b>Proposed land use</b>	Residential
<b>Emergency planning</b>	<b>Flood warning</b>	<p>The area of the site is covered by the Environment Agency's Flood Warning and Flood Alert services.</p> <p>Flood Warning – River Sence at Blaby and Glen Parva including New Bridge and Welford Roads and riverside mills and works (034WAF401).</p> <p>Flood Alert – River Sence and tributaries from Billesdon to the River Soar at Glen Parva (034WAF401).</p>
	<b>Access and egress</b>	<p>The site can be accessed via The Ford, which is a single-track lane and joins onto Little Glen Road to the north. However, The Ford is at risk of flooding during the 3.3%, 1% and 0.1% AEP surface water events and Little Glen Road in the 1% and 0.1% AEP events. This therefore poses significant challenges, unless alternative routes can be steered to the site from the north. There is also risk along the B582 in the 100-year and 1,000-year surface water events in the vicinity of the site.</p>
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the site from the River Sence, for the 100-year +20%, +30%, +50% climate change scenarios. The extents are smaller than the Flood Zones, covering only small areas of the proposed site. The modelled climate change data identifies no new flood path characteristics.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA024</b>
	<b>Address</b>	The Old Piggery, Little Glen Road, Glen Parva
	<b>Area</b>	0.14
	<b>Current land use</b>	Brownfield
	<b>Proposed land use</b>	Residential
<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 – Branscombe Mudstone formation – Mudstone.</li> <li>Superficial – Alluvium – Clay, Silt, Sand and Gravel.</li> </ul> </li> <li>The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'. It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site.</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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance; Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at the existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes along the southern and south-western boundaries, preserving these spaces as green infrastructure. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA024</b>
	<b>Address</b>	The Old Piggery, Little Glen Road, Glen Parva
	<b>Area</b>	0.14
	<b>Current land use</b>	Brownfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <li>On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse, and permeable paving.</li> <li>Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA024</b>
	<b>Address</b>	The Old Piggery, Little Glen Road, Glen Parva
	<b>Area</b>	0.14
	<b>Current land use</b>	Brownfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to most of the area of the site located within Flood Zone 1, therefore the northern proportion of the site; there is only 50% of the site in Flood Zone 1 and some of this is surrounded by risk, leaving less space to the north.</li> <li>• Safe access and egress need to be considered in more detail given the current challenges; the site is surrounded to the south and east by fluvial and surface water flooding, including the access route The Ford in all events. The access route currently does not look suitable unless mitigation can be provided or a new access route in from the north.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development in one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2012 River Soar and Tributaries model. The 20-year flood extent was used to derive Flood Zone 3b.	
<b>Climate change</b>	Climate change was based on the 2012 River Soar and Tributaries model, where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch.	
<b>Fluvial depth, velocity and hazard mapping</b>	There is Fluvial Depth, Velocity and Hazard data available from the 2012 River Soar and Tributaries model. The 100-year and 100-year + climate change have been assessed.	

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA024</b>
	<b>Address</b>	The Old Piggery, Little Glen Road, Glen Parva
	<b>Area</b>	0.14
	<b>Current land use</b>	Brownfield
	<b>Proposed land use</b>	Residential
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA025</b>			
	<b>Address</b>	Land west of 23 Little Glen Road, Glen Parva			
	<b>Area</b>	1.48 Hectares			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	<p>The site is located on the floodplain of the River Sence on the northern right bank of the river. The site is located north of the town of Blaby and south of Eyres Monsall. The southern boundary of the site lies adjacent to Birmingham Leicester Railway track, and the northern boundary lies adjacent to the B582. The south-eastern boundary of the site is shared with the River Sence. The Grand Union canal is located 40 metres north of the site.</p> <p>The River Sence flows in a westerly direction to the south of the site which is a tributary to the River Soar. The site is in the downstream catchment of the River Sence in the Upper Soar catchment, the confluence is 2.6km to the west of the proposed site. The Grand Union Canal flows approximately 250m to the north of the site.</p>			
	<b>Existing drainage features</b>	<p>The Environment Agency's Detailed River Network shows drainage features associated with the River Sence. The River Sence flows from east to west of the site. This watercourse confluent with the River Soar approximately 2.6km to the west of the site.</p>			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		6%	7%	11%	89%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		High			
		<p><i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i></p>			

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	GPA025		
	Address	Land west of 23 Little Glen Road, Glen Parva		
	Area	1.48 Hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><b>Available data:</b> The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment. The site lies on the River Sence part of the model. The EA's Flood Map for Planning has been used to inform Flood Zones 2 and 3a (as this incorporates latest modelling) and Flood Zone 3b has been derived from the hydraulic model.</p> <p><b>Flood characteristics:</b> The modelled Flood Zone data for this site indicates that flood risk to this site is from the outer extents of the River Sence floodplain extents. The site is generally raised outside of the floodplain, but the western edge of the floodplain abuts the site and encroaches slightly.</p> <p>All 3 Flood Zones encroach into the site's western edge, just slightly more in FZ3a and FZ2 in the south-western corner where topography is a little lower.</p> <p>The Sence flows through a rail embankment just upstream of the site, and then is confined topographically in a 'square' shape in the floodplain as it then enters another culvert under the A426.</p> <p>The modelled defended 100-year extent affects the western and south-western boundary of the site. Maximum depths of the 100-year extent from the Sence model are recorded at 0.75m with a maximum velocity of 0.88m/s observed in the south-western corner of the site. A maximum combined threshold of between 1.25-2.00 defined as dangerous for most people, flood zone with fast flowing water.</p> <p>The modelled defended 100 year +30% climate change extent shows depth of flood water to be 0.96m with a velocity of 0.97m/s observed within the south-western boundary of the site, 15 metres north of the River Sence. A hazard threshold of between 1.25-2.00 defined as dangerous for most people, flood zone with fast flowing water.</p> <p>The modelled defended 100 year +50% climate change extent shows depth of 0.94m with a velocity of 0.97m/s in the south-western portion of the site. A hazard threshold of between 1.25-2.00 defined as dangerous for most people, flood zone with fast flowing water also located in the south-western portion of the site.</p>		
	Surface Water	<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		1%	4%	11%



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	GPA025		
	Address	Land west of 23 Little Glen Road, Glen Parva		
	Area	1.48 Hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		Max depths (m)		
		<0.3m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		
		<b>Description of surface water flow paths:</b> The site is affected by surface water flooding in all three events, but overall, the risk is low and confined to the boundaries, as per the Flood Zones. The 30-year event identifies two small areas of surface water ponding along the western perimeter of the site. Along the south-western portion of the site, surface water extends 5 metres north into the site. The most southern area of the site identifies surface water covering the very southern boundary of the site. The 100-year event extends 105 metres north of the site along the western boundary. Surface water extends 75 metres along the southern boundary, adjacent to the railway track, with a large surface water pond along the eastern boundary of the site. The 1,000-year surface water event Surrounds the site boundaries on the west, south and majority of the east. Overall, there is little change in the velocity of the surface water within the site, remaining >0.25m/s with a change in depth from <300mm to between 300-900mm. The deepest areas will be in the area of 1,000-year ponding in the lowest topography of the site, with shallower depths as the extent spreads away from here.		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	The south-western portion of the site is shown to be within the reaches of the Environment Agency's Historic Flood Map.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA025</b>		
	<b>Address</b>	Land west of 23 Little Glen Road, Glen Parva		
	<b>Area</b>	1.48 Hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not protected by any formal flood defences.		
	<b>Residual risk</b>	<p>Residual risk at the site is deemed low, but there is a potential risk from the following:</p> <p>If the culvert below the A426 were to become blocked, the build-up of flood water behind the culvert could increase the depth and area of flood water within the site. It is unlikely to impact the site significantly, but it could increase risk in the south-western corner if depths or extents were to increase slightly.</p> <p>The potential impacts should be considered in an FRA.</p>		
<b>Emergency planning</b>	<b>Flood warning</b>	<p>The site is included within the Environment Agency's Flood Warning Area "River Sence at Blaby and Glen Parva".</p> <p>The site is included within the Environment Agency's Flood Alert Area "River Sence in Leicestershire".</p>		
	<b>Access and egress</b>	<p>Access and egress to the site can be obtained from the B582 Little Glen Road from the northern boundary of the site. This would permit access to the north-eastern portion of the site where both the fluvial and surface water flood risks are low. Additionally, access from the south of the site presents a challenge due to the site boundary being shared with a railway line and fluvial/ surface water risk. Access from the western boundary of the identifies challenges due to the site border being inundated by all three modelled flood zones with the B582 bisected by flood water and surface water north-west of the site.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA025</b>
	<b>Address</b>	Land west of 23 Little Glen Road, Glen Parva
	<b>Area</b>	1.48 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the site from the 2012 1D-2D Soar/Scene model, for the 100 year +20% +30% +50% climate change scenarios. These all cover an area similar to Fluvial Flood Zone 2; however, the extents are slightly smaller area compared to Flood Zone 2. The modelled climate change data identifies no new flood path characteristics.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA025</b>
	<b>Address</b>	Land west of 23 Little Glen Road, Glen Parva
	<b>Area</b>	1.48 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Triassic Rocks – Mudstone, Siltstone, Sandstone</li> <li>Superficial – Till - Diamicton</li> </ul> </li> <li>The majority of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>There is a small area to the north-east of the site where groundwater levels are indicated to be between 0.5 and 5m below ground level and there is a risk of flooding to subsurface assets and below ground development such as basements. Groundwater monitoring is recommended to determine the seasonal variability of groundwater levels, as this may affect the design of the surface water drainage system.</li> <li>This site has areas within its boundary designated by the Environment Agency as being a landfill site. A thorough ground investigation will be required as part of a detailed FRA to determine the extent of the contamination and the impact this may have on SuDS. As such proposed SuDS should be discussed with the relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible constraints.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable' It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes along the southern and south-western boundaries, preserving these spaces as green infrastructure. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse to ensure flows are not exacerbated downstream within the catchment.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA025</b>
	<b>Address</b>	Land west of 23 Little Glen Road, Glen Parva
	<b>Area</b>	1.48 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <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. Assessment for runoff should include allowance for climate change effects.</li> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>GPA025</b>
	<b>Address</b>	Land west of 23 Little Glen Road, Glen Parva
	<b>Area</b>	1.48 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to the 89% of the site located within Flood Zone 1, located away from the western boundary.</li> <li>• Safe access and egress can be obtained from the B582 at the northern boundary of the site. Access and egress from the site is challenging from the south, west, and east of the site due to the proximity to the River Sence floodplain and surface water risk and the Birmingham to Leicester Railway as well as the effects of surface water and Flood Zone flooding on the access roads.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green infrastructure should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and Tributaries model (River Sence). The 20-year flood extent was used to derive Flood Zone 3b. Modelled data was used for the depth, velocity and hazard data derived from the Cosby Baseline model.	
<b>Climate change</b>	Climate change was based on the 2012 River Soar and Tributaries model (River Soar and Sence), where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch.	
<b>Fluvial depth, velocity and hazard mapping</b>	There is Fluvial Depth, Velocity and Hazard data available from the Cosby Brook model (2012 River Soar and Tributaries modelling). The 100-year and 100-year + climate change have been assessed.	

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA025</b>
	<b>Address</b>	Land west of 23 Little Glen Road, Glen Parva
	<b>Area</b>	1.48 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.



# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	GPA026			
	Address	Land south of 111 Little Glen Road			
	Area	4.26 Hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The site is located north of the village of Blaby, south of South Wigston. The site is located within the floodplain of the River Sence. The southern boundary of the site lies adjacent to the River Sence. The River Sence flows in a westerly direction to the south of the site which is a tributary to the River Soar. The site is in the downstream catchment of the River Sence in the Upper Soar catchment. The Grand Union Canal is located along the eastern boundary of the site. The site has a 4 metres slope from the north to the south of the site, from 69m AOD to 65m AOD.			
	Existing drainage features	The Environment Agency's Detailed River Network shows drainage features associated with the River Sence. The River Sence flows from east to west of the site.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		4%	4%	5%	95%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		High			
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)			

		<p><b>Available data:</b></p> <p>The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment. The site lies on the River Sence model. The EA's Flood Map for Planning has been used to inform Flood Zones 2 and 3a (as this incorporates latest modelling) and Flood Zone 3b has been derived from the hydraulic model.</p> <p><b>Flood characteristics:</b></p> <p>The modelled Flood Zone data for this site indicates that flood risk to this site is from the outer extents of the River Sence floodplain extents.</p> <p>Fluvial Flood Zone 3b covers a small area across the southern border of the site.</p> <p>Fluvial Flood Zone 3a covers a very similar area across the southern border of the site as observed in Flood Zone 3b.</p> <p>Fluvial Flood Zone 2 is also very similar to the extents above but encroaches ever so slightly more into the site.</p> <p>The modelled defended 100-year extent affects the southern border of the site. The maximum depth at the site is recorded in the south-eastern corner of the site, 5 metres north-east of the River Sence at 1.52m. The maximum velocity at the site is located within the south-eastern area of the site, at 1.00m/s. The maximum hazard is recorded at &gt;2.00, which is categorised as 'dangerous for all, extreme danger, flood zone with deep and fast flowing water'. This is located within the south eastern boundary of the site.</p> <p>The modelled 100-year +30% climate change extent maximum recorded depth is located within the south eastern border of the site, adjacent to the River Sence, measured at 1.61 metres. The maximum velocity is recorded at 1.16m/s within the south eastern corner of the site, however, compared to the modelled 100-year event, it is located 15 metres north of the River Sence. The hazard threshold is recorded &gt;2.00 within the south eastern portion of the site, within 5 metres of the River Sence. This is categorised as 'dangerous for all, extreme danger, flood zone with deep and fast flowing water'.</p> <p>The modelled 100-year +50% climate change extent identifies a similar flood extent to the 100-year +30% climate change modelled event. The maximum depth recorded at the site is measured at 1.67 metres at the most south eastern area of the site. The maximum velocity recorded within the site is 1.44m/s within the south-eastern corner of the site, within the same location as the modelled 100+ 30% event. The latest 100 year +50% climate change results were not available for this site, but developers should ensure these are applied and considered as part of an FRA</p>		
		<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		2%	4%	8%
		Max depths (m)		
		0.3-0.9m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i></p>		
		<b>Description of surface water flow paths:</b>		
	<b>Surface Water</b>			

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	GPA026		
	Address	Land south of 111 Little Glen Road		
	Area	4.26 Hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p>The site is affected by all three surface water flooding events, but overall, this is very low and restricted to the southern and northern boundaries of the site.</p> <p>The 30-year event identifies 2 areas of surface water ponding along the northern perimeter of the site. Surface water flooding extends for the length of the southern border of the site, with a small surface water branch, 22 metres in length, flowing south east into the site.</p> <p>The 100-year event is very similar to the 30-year event. Along the northern boundary of the site, a surface water branch flows west along the northern boundary of the site in the 100-year event. A small area of surface water ingress is identified within the south eastern border of the site.</p> <p>The 1,000-year event is very similar again along the southern boundary of the site and encroaches more into the site along the northern boundary. A surface water branch extends along the whole eastern boundary of the site.</p> <p>Overall, the depth and velocity of the surface water within the site remains consistent, with depth between 300-900mm and velocity above 0.25m/s.</p>		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	The southern half of the site is shown to be within the reaches of the Environment Agency's Historic Flood Map.		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
	The site is not protected by any formal flood defences.			
Flood risk management infrastructure	Residual risk	Residual risk at the site is deemed low, but there is a potential risk from the following:		
		<p>As the site is located between 1 and 2 metres lower than the elevation of the Grand Union Canal. If the canal was to breach or overtop, this would enter the site along the eastern border with a substantial increase in flooding depths, velocity, and area coverage.</p> <p>If the culvert under The Ford was to block, it could back water up, encroaching slightly further into the site, though risk is deemed low as the site in general rises steeply away from the floodplain.</p> <p>The potential impacts should be considered in an FRA.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA026</b>
	<b>Address</b>	Land south of 111 Little Glen Road
	<b>Area</b>	4.26 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Emergency planning</b>	<b>Flood warning</b>	<p>The southern and central areas of the site are included within the Environment Agency's Flood Warning Area's Map "River Sence at Blaby and Glen Parva". The northern most area of the site is not included within the Flood Warning Area's Map.</p> <p>The southern and central areas of the site are included within the site are included within the Environment Agency's Flood Alert Area "River Sence in Leicestershire".</p>
	<b>Access and egress</b>	<p>Access and egress can be permitted via the B582 along the northern perimeter of the site, though there is surface water risk in the 100-year and 1,000-year events along this road. Access from the B582 needs to consider the proximity of the B582 to the Grand Union canal along the western boundary of the site. The LiDAR identifies that the topography of the road is raised and sloped compared to the surrounding areas. Ford Road presents a challenge in establishing access to the site due to the road being bisected by the River Sence via a ford 270 metres south west of the site.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA026</b>
	<b>Address</b>	Land south of 111 Little Glen Road
	<b>Area</b>	4.26 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the site from the Soar/Scene model, for the 100 year +20% +30% +50% climate change scenarios. These all cover an area similar to Fluvial Flood Zone 2; however, the extents are slightly smaller area compared to Flood Zone 2. The modelled climate change data identifies no new flood path characteristics.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>GPA026</b>
	<b>Address</b>	Land south of 111 Little Glen Road
	<b>Area</b>	4.26 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Triassic Rocks – Mudstone, Siltstone and Sandstone</li> <li>Superficial – Till - Diamicton</li> </ul> </li> <li>The majority of the site shaped as a oval starting in the middle and expanding out has groundwater levels that are indicated to be between 0.5 and 5m below ground level and there is a risk of flooding to subsurface assets and below ground development such as basements. Groundwater monitoring is recommended to determine the seasonal variability of groundwater levels, as this may affect the design of the surface water drainage system.</li> <li>The rest of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'</p> <p>It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site.</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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes along the southern and south-western boundaries, preserving these spaces as green infrastructure. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse to ensure flows are not exacerbated downstream within the catchment.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA026</b>
	<b>Address</b>	Land south of 111 Little Glen Road
	<b>Area</b>	4.26 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <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. Assessment for runoff should include allowance for climate change effects.</li> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>



# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>GPA026</b>
	<b>Address</b>	Land south of 111 Little Glen Road
	<b>Area</b>	4.26 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to the 95% of the site located within Flood Zone 1, located away from the southern and northern boundaries.</li> <li>• Access and egress can be gained via the B582 to the north of the site, though there are some surface water flow paths along the road to be aware of and investigate at detailed FRA stage. Access should be avoided to the south of the site, and the east is the canal.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green infrastructure should be considered in the areas of highest flood risk.</li> <li>• Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and Tributaries model (River Sence). The 20-year flood extent was used to derive Flood Zone 3b. Modelled data was used for the depth, velocity and hazard data derived from the Cosby Baseline model.	
<b>Climate change</b>	Climate change was based on the 2012 River Soar and Tributaries model (River Soar and Scene), where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch.	
<b>Fluvial depth, velocity and hazard mapping</b>	There is Fluvial Depth, Velocity and Hazard data available from the Cosby Brook model (2012 River Soar and Tributaries modelling). The 100-year and 100-year + climate change have been assessed.	

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>GPA026</b>
	<b>Address</b>	Land south of 111 Little Glen Road
	<b>Area</b>	4.26 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>HUN013</b>			
	<b>Address</b>	Land south of Narborough Road, Huncote			
	<b>Area</b>	12.95 hectares			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	This site is located southwest of Leicester at Huncote on the banks of the Thurlaston Brook, just upstream of the confluence of River Soar. The Thurlaston brook lies at the foot of Croft Hill. The northern boundary of the site runs parallel to Ratcliffe Drive which leads off Narborough Road in southern Huncote. The southern border of the site lies on the Thurlaston Brook. Croft Quarry is located south-west of the site.			
	<b>Existing drainage features</b>	The Environment Agency's Detailed River Network shows drainage features at this site are associated with the Thurlaston Brook along the southern boundary for the majority of the site. Thurlaston Brook is a tributary of the River Soar; the confluence of the two located shortly downstream of the site.			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		23%	25%	33%	67%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		High			
		<i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>			

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>HUN013</b>		
	<b>Address</b>	Land south of Narborough Road, Huncote		
	<b>Area</b>	12.95 hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
		<p><b>Available data:</b> The Environment Agency's Flood Zone mapping has been used in this assessment to inform Flood Zones 2 and 3a. 2D generalised modelling where available from the Level 1 SFRA was used to inform Flood Zone 3b. This watercourse is not part of the Soar and Tributaries 2012 modelling and therefore is broadscale. Developers would need to refine flood risk through detailed modelling at the FRA stage.</p> <p><b>Flood characteristics:</b> The Flood Zone data for this site indicates flood risks through this site being associated with the floodplain of the Thurlaston Brook, which bisects the southern edge of the site. Fluvial Flood Zone 2 bisects the site, covering the majority of the southern and western area of the site, flowing in a south-easterly direction. A small area of the site on southern border is not covered by flood water, where the land rises away. Flood Zone 2 covers approximately one third of the site and the extent looks to include a historic extent owing to the smooth shape of the Flood Zone extent. Flood Zone 3a has a slightly smaller extent on the site, similarly, bisecting the site but lesser site coverage. but overall, all Flood Zones cover between a quarter and a third of the site.</p> <p>As there is no detailed hydraulic model available at this site, there is no depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest next to the channel, where the topography is lowest. Depths and velocities would likely reduce the further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.</p>		
	<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>
		11%	15%	25%
		Max depths (m)		
		0.3-0.9m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>HUN013</b>
	<b>Address</b>	Land south of Narborough Road, Huncote
	<b>Area</b>	12.95 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i></p> <p><b>Description of surface water flow paths:</b>  The site is affected by surface water flooding in all 3 events. The 30-year and 100-year events are quite similar in size, following the topography of the Thurlaston Brook watercourse and floodplain. Additionally, the surface water flows at the south-western border of the site braids, creating more flow paths across the southern portion of the site away from the channel. Depths are recorded between 300-900mm within the centre of the flood extents and the portion of the site on the right bank of the channel. Maximum velocities are &gt;0.25m/s at the site, which are consistently high across all events. The 1,000-year event has the greatest surface water extent and fills a larger area of floodplain similar to the Flood Zones. There are isolated pockets or exposed land where the topography is at a higher elevation than the flood water.  Across all three events, the depth of surface water remains consistent (between 300-900mm) and velocity too remains consistent (Over 0.25m/s).</p>
	<b>Reservoir</b>	The site is exposed to a reservoir inundation extent from Mallory Park Reservoir. The flood water would cover the southern portion of the site where the Thurlaston Brook borders the site. Reservoir risk is very low, but this should still be considered in a site-specific FRA and advice referred to in the Level 1 SFRA.
	<b>Flood history</b>	The site is not located within the Historic Flood map, therefore, there is no data on the site. The Lead Local Flood Authority should be contacted to obtain further details.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>HUN013</b>		
	<b>Address</b>	Land south of Narborough Road, Huncote		
	<b>Area</b>	12.95 hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
	<b>Residual risk</b>	<p>A culvert is located upstream of the site, located underneath the Croft Hill Road/ Main Street, which could pose a blockage risk, increasing flood risk to the site downstream. This would need to be investigated in a site-specific assessment.</p> <p>The site is exposed to potential reservoir flooding hazard in the event of a failure from the Mallory Park Reservoir.</p>		
<b>Emergency planning</b>	<b>Flood warning</b>	<p>The site is not within an Environment Agency Flood Alert Area.</p> <p>The site is not within an Environment Agency Flood Warning Area.</p>		
	<b>Access and egress</b>	<p>Access and egress at this site are possible to the north/ north-east via the smaller residential roads leading to Narborough Road (Preston Way, Peers Way, Ratcliffe Drive). There is fluvial and surface water risk in most events over the Croft Hill Road/ Main Street which bisects the site. Access/ egress should also be avoided anywhere to the south/west of the site where the Thurlaston Brook flows through the site and shortly downstream confluences with the River Soar. As there is no direct connection from Croft Road, access and egress should be directed towards the north-east of the site, furthest away from the floodplain.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>HUN013</b>
	<b>Address</b>	Land south of Narborough Road, Huncote
	<b>Area</b>	12.95 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and therefore Flood Zone 2 has been used as a conservative indication of flood risk from climate change. This extends across the western third of the site encompassing the lower incline ground. A detailed modelling study should test the latest published climate change allowances, which may refine risk in the north-western area of the site.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>HUN013</b>
	<b>Address</b>	Land south of Narborough Road, Huncote
	<b>Area</b>	12.95 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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> </ul> </li> <li>The majority of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>There is a band running through the middle of the site groundwater levels are indicated to be between 0.5 and 5m below ground level and there is a risk of flooding to subsurface assets and below ground development such as basements. Groundwater monitoring is recommended to determine the seasonal variability of groundwater levels, as this may affect the design of the surface water drainage system.</li> <li>A small portion to the western edge of the site groundwater levels are indicated to be less than 1m below ground level during a 1% AEP event. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>This site has areas within its boundary designated by the Environment Agency as being a landfill site. A thorough ground investigation will be required as part of a detailed FRA to determine the extent of the contamination and the impact this may have on SuDS. As such proposed SuDS should be discussed with the relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible constraints.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>HUN013</b>
	<b>Address</b>	Land south of Narborough Road, Huncote
	<b>Area</b>	12.95 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied. Residential development is classified as 'More Vulnerable'. It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model may be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the Thurlaston Brook, using channel topographic survey.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>HUN013</b>
	<b>Address</b>	Land south of Narborough Road, Huncote
	<b>Area</b>	12.95 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space. Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>HUN013</b>
	<b>Address</b>	Land south of Narborough Road, Huncote
	<b>Area</b>	12.95 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to the 67% of the site located within Flood Zone 1, therefore, the eastern portion of the site as well as the northern corner of the site. A large proportion of the site (a quarter) is located in Flood Zone 3 which will present development challenges.</li> <li>• Residential development should be avoided in Flood Zone 3 and steered away to the lowest risk areas in the site.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Safe access and egress need to be considered as the site is inaccessible from the west due to the Thurlaston Brook forming the boundary of the site. Access to the site can be permitted via small residential roads leading to Narborough Road.</li> <li>• Space for green infrastructure should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
<p>The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.</p>		
<b>Flood Zones</b>		<p>Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>HUN013</b>
	<b>Address</b>	Land south of Narborough Road, Huncote
	<b>Area</b>	12.95 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate change</b>		Climate change was based on Flood Zone 2 to serve as an indication of possible extents. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.
<b>Fluvial depth, velocity, and hazard mapping</b>		There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping can be used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage.
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# Stratford on Avon District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	HUN018			
	Address	Land off Chantry Close Huncote			
	Area	1.24 Hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The site is located on the western fringes of Huncote, 110 metres north of the Thurlaston Brook. The site is located 380 metres downstream of the confluence between the Thurlaston Brook and the Feeding Brook.			
	Existing drainage features	The Environment Agency’s Detailed River Network shows drainage features at this site are associated with the Thurlaston Brook. The Thurlaston Brook flows from the north west to the south east, along the southern boundary of the site. The Thurlaston Brook and Feeding brook confluence is located upstream of the site.			
	Fluvial	Proportion of site at risk			
		FZ3a	FZ3b	FZ2	FZ1
		<1%	0%	23%	77%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		High			
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)			
		Available data:			
		The Environment Agency’s Flood Zone mapping has been used in this assessment. This is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.			
	Flood characteristics:				
	The modelled Flood Zone data for this site indicates that flood risk to this site is associated with the Thurlaston Brook. Parts of the site are located within Flood Zones 2 and 3a, A very small area of the site (<1%) is within Flood Zone 3b, the southern corner. Approximately 22% of the site is within Flood Zone 2				
As the Flood Zones are based on generalised modelling, depth hazard and velocity outputs are not available. Developers should investigate the flood risk from the Thurlaston Brook using a detailed hydraulic model, to understand the impacts of flood risk and climate change at the site.					
Surface Water	Proportion of site at risk (RoFfSW)				
	30-year	100-year	1,000-year		
	0%	1%	5%		

# Stratford on Avon District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	HUN018		
	Address	Land off Chantry Close Huncote		
	Area	1.24 Hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		Max depths (m)		
		N/A	0.3 – 0.9m	0.3 – 0.9m
		Max velocity (m/s)		
		N/A	>0.25 m/s	>0.25 m/s
		<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i></p>		
		<p><b>Description of surface water flow paths:</b>  The site is not risk during the 30-year event however is affected by the 100 and 1000-year surface water events.  In the 100-year event, a surface water pond 35 metres in length is forms in the north western area of the site. Depths are below 0.3m with velocity greater than 0.25m/s.  In the 1000-year event a surface water flow path forms, running along the northern edge of the site toward Thurlaston Brook. Additionally, a surface water branch flows westward into the site from Chantry Close. Depths remain below 0.3m with velocities greater than 0.25m/s.</p>		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	This site is not shown to be within the reaches of the Environment Agency's Historic Flood Map. Developers should contact the LLFA for more information on historic flooding.		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
	Residual risk	<p>The site is not shown to have any implemented flood risk management infrastructure.</p> <p>The site is not protected by any formal flood defences. A culvert is located south east of the site, located under Main Street. If this culvert were to become blocked, the site may be at risk of flooding.</p>		
Emergency planning	Flood warning	The southern portion of the site is within the Environment Agency's 'Upper Soar Catchment' Flood Alert Area. The site is not within an Environment Agency Flood Warning Area.		

# Stratford on Avon District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>HUN018</b>
	<b>Address</b>	Land off Chantry Close Huncote
	<b>Area</b>	1.24 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
	<b>Access and egress</b>	Access to the site is via Cheney End and Chantry Close. Both these roads are unaffected by fluvial flooding in the 1,000-year event. Access via Chantry close may be affected by surface water flooding during the 100 year event and access via both affected during the 1,000 year event. Access to the south of the site is not possible due to Thurlaston Brook.
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at this site, and therefore, Flood Zone 2 has been used as a conservative indication of flood risk from climate change. This extends across the southern area of the site, encompassing the lower incline ground. A detailed modelling study should test the latest published climate change allowances, which may refine risk in the southern and the south eastern area of the site.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change. This suggests that a small part of the site (&lt;1%) may form part of the functional floodplain in future.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. There is a small increase surface water extent between the 100 and 1,000-year events, suggesting the site is less sensitive to increasing runoff as a result of climate change.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>



## Stratford on Avon District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>HUN018</b>
	<b>Address</b>	Land off Chantry Close Huncote
	<b>Area</b>	1.24 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Triassic Rocks – Mudstone, Siltstone and Sandstone</li> <li>Superficial – Till – Diamicton</li> </ul> </li> <li>Approximately half of the site comprised of an area to the north and a band to the south is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>In the middle of the site there is a band where groundwater levels are indicated to be between 0.5 and 5m, to less than 1m below ground level during a 1% AEP event. There is a risk of flooding to subsurface assets and below ground development such as basements. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>

## Stratford on Avon District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>HUN018</b>
	<b>Address</b>	Land off Chantry Close Huncote
	<b>Area</b>	1.24 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'</p> <p>It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site.</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> </ul> <p>As part of the site is located within Flood Zone 2, the Exception Test will be required.</p>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required as the development is located within Flood Zones 2 and 3 and is greater than one hectare.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model will be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the Thurlaston Brook, using channel topographic survey.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> </ul>
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## Stratford on Avon District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	HUN018
	Address	Land off Chantry Close Huncote
	Area	1.24 Hectares
	Current land use	Greenfield
	Proposed land use	Residential
		<ul style="list-style-type: none"> <li>On site attenuation schemes would need to be tested against the watercourse to ensure flows are not exacerbated downstream within the catchment.</li> <li>New development should adopt exemplar source control SuDS techniques to reduce the risk of frequent low impact flooding due to post-development runoff. Assessment for runoff should include allowance for climate change effects.</li> <li>All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>Runoff must be limited to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>
Key messages		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>Development is limited to the 77% of the site located within Flood Zone 1, the northern section of the site, steering development away from the southern and south eastern areas of the site.</li> <li>Safe access and egress can be demonstrated during the 100-year event, accounting for climate change.</li> <li>Detailed modelling of Thurlaston Brook is completed as part of a site-specific flood risk assessment.</li> <li>Space for green infrastructure should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
Mapping Information		

## Stratford on Avon District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>HUN018</b>
	<b>Address</b>	Land off Chantry Close Huncote
	<b>Area</b>	1.24 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.	
<b>Climate change</b>	Climate change was based on Flood Zone 2 to serve as an indication of possible extents. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.	
<b>Fluvial depth, velocity and hazard mapping</b>	Fluvial flooding was assessed using generalised modelling outputs, therefore there are no velocity, depth, or hazard outputs. This should be explored further at site-specific stage using detailed modelling.	
<b>Surface Water</b>	The Environment Agency's Risk of Flooding from Surface Water dataset has been used to define areas at risk from surface water flooding.	
<b>Surface water depth, velocity and hazard mapping</b>	The surface water depth, velocity, and hazard mapping for the 1 in 30, 100 and 1,000-year events is taken from the Environment Agency's Risk of Flooding from Surface Water dataset.	

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	KIL006			
	Address	Land to the south of Chapel Close and Main Street			
	Area	0.80 hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The site is located just south of the small village of Kilby, situated west off Fleckney Road and east of Welford Road. The southern part of the site borders the unnamed ordinary watercourse which flows in a north westerly direction of the site. The site is located upstream of the confluence between the River Sence and the unnamed ordinary watercourse. The topography of the area surrounding the site is located relatively high, with the northern section of the site located at 4 metres higher (83.5m AOD of elevation) than the southern area of the site (79.5m AOD of elevation). The site is located within the river valley of the ordinary watercourse.			
	Existing drainage features	The Environment Agency’s Detailed River Network shows drainage features at this site are associated with the unnamed ordinary watercourse which runs parallel along the south-western boundary of the site. The River Sence is located 700 metres due north.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		9%	11%	16%	84%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		High			
		Max depths (m)			
		300-900mm	300-900mm	300-900mm	
		Max velocity (m/s)			
		> 0.25m/s	> 0.25m/s	> 0.25m/s	
	The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)				

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	KIL006		
	Address	Land to the south of Chapel Close and Main Street		
	Area	0.80 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><b>Available data:</b> The Environment Agency's Flood Zone mapping has been used in this assessment. This is based on 2D generalised data.</p> <p><b>Flood characteristics:</b> The Flood Zone data for this site is based on 2D generalised modelling, which indicates flood risk through this site is restricted to the river valley of the unnamed ordinary watercourse, which flows parallel to the south-westerly site boundary.</p> <p>All Flood Zones are relatively confined to the south-western and north-western edges of the site due to a steep increase in elevation.</p> <p>Flood Zone 3b is mostly reduced to the immediate vicinity of the boundary. Flood Zone 3a is very similar, only extending slightly further into the site. Flood Zone 2 extends a little further again, more so in the north-western corner of the site.</p> <p>As there is no detailed hydraulic model available at this time, there is no depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that the depths would be greatest close to the channel where the topography is at its lowest. Depths and velocities would likely reduce the further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.</p>		
	Surface Water	<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		19%	22%	45%
		Max depths (m)		
		0.3-0.9m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i></p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	KIL006		
	Address	Land to the south of Chapel Close and Main Street		
	Area	0.80 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><b>Description of surface water flow paths:</b></p> <p>The site is affected by surface water flooding in all 3 events. The 30-year and 100-year event have very similar characteristics and extents. The southern and north-western boundary of the site have surface water encroaching on the site, similar to the Flood Zones as this follows the alignment of the watercourse and lower topography of the floodplain.</p> <p>The 100-year event shows that surface water extends along the western boundary of the site and onto Main Street within Kilby.</p> <p>The 1,000-year event encroaches more significantly into the site, covering approximately 45% of the site. The surface water covers a greater area at the southern boundary and north-western boundary of the site.</p> <p>Across the three events, there is consistent high velocities at &gt;0.25m/s. The depth of surface water remains the same for the 30-year and 100-year events of 300-900mm. The depth increases to &gt;900mm in the 1,000-year event.</p>		
	Reservoir	The site is not shown to be at risk of flooding from a reservoir from the available online maps.		
	Flood history	The site is shown to not be within reaches of the environment agency's Historic Flood Map. The Lead Local Flood Authority should be contacted to obtain further details.		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
		The site is not protected by formal flood defences.		
	Residual risk	There is a culvert downstream of the site under the Main Street; this could act to back water up towards the site in the event of a blockage, though risk is anticipated to be low due to the confined topography at the site. A site-specific FRA should be carried out to investigate this further.		
Emergency planning	Flood warning	<p>The site is not covered within the Environment Agency's Flood Warning Service.</p> <p>The site is included within the Environment Agency's Flood Alert Service; this service is present from the west to the centre of the site.</p>		



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KIL006</b>
	<b>Address</b>	Land to the south of Chapel Close and Main Street
	<b>Area</b>	0.80 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
	<b>Access and egress</b>	<p>Access and egress at this site are possible through both Fleckney Road to the east of the site and off of Main Street Road that bisects Kilby. From Flood Zones 2, 3a and 3b, there is safe access to the east into Kilby. Access should be avoided to the west/ north-west where the floodplain lies.</p> <p>However, Main Street is exposed to risks of surface water ponding in the 100-year and 1,000-year events. Fleckney Road is at flood risk from surface water in both the 100- and 1,000-year events and south of the site where a flow path crosses the road; otherwise, this road is generally clear.</p>
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and therefore Flood Zone 2 has been used as a conservative indication of flood risk from climate change. This extends across the western half of the site encompassing the lower incline ground. A detailed modelling study should test the 2080s climate change allowances, which may refine risk in the north-western corner of the site.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KIL006</b>
	<b>Address</b>	Land to the south of Chapel Close and Main Street
	<b>Area</b>	0.80 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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, Sandstone, Limestone and Siltstone</li> <li>Superficial – Alluvium - Clay, silt, and Sand</li> </ul> </li> <li>The majority of the large band running through the middle of the site groundwater levels are indicated to be at or very near (within 0.025m) ground level and there is a risk of groundwater flooding at the surface during a 1% AEP event, which may flow to and pool within topographic low spots. There is a small band to the western edge of this area where groundwater levels are slightly higher but less than 1m below ground level. At both levels detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>At the eastern and western edges of the site, the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not located within any historic Landfill sites.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'.</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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model may be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the unmodelled drains along the southern/ western boundaries, using channel topographic survey.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KIL006</b>
	<b>Address</b>	Land to the south of Chapel Close and Main Street
	<b>Area</b>	0.80 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>KIL006</b>
	<b>Address</b>	Land to the south of Chapel Close and Main Street
	<b>Area</b>	0.80 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to 84% of the site located within Flood Zone 1, therefore the northern eastern and eastern portion of the site. The southern and western boundaries are located along Flood Zone 3 which will present some development challenges.</li> <li>• Residential development should be avoided in Flood Zone 3 and steered away to the lowest risk areas in the site.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> </ul> <p>Safe access and egress need to be considered in terms of surface water along Main Street. Access to the west should be avoided due to fluvial and surface water risk. Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.	
<b>Climate change</b>	Climate change was based on Flood Zone 2 to serve as an indication of possible extents. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.	
<b>Fluvial depth, velocity, and hazard mapping</b>	There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping can be used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage.	

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KIL006</b>
	<b>Address</b>	Land to the south of Chapel Close and Main Street
	<b>Area</b>	0.80 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	KMU021		
	Address	Blood's Hill (large)		
	Area	19.11 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
Sources of flood risk	Location of site within catchment	The site is located west of the city of Leicester, adjacent to the northbound M1, A46 junction. The site lies adjacent to an unnamed watercourse flowing from west to east along the northern boundary of the site before flowing north towards the confluence with the Rothley Brook. The site's topographic low area is located at the northern boundary of the site adjacent to the unnamed ordinary watercourse, at 78m AOD. A topographic high of 99m AOD is located at the south western boundary of the site.		
	Existing drainage features	The Environment Agency's Detailed River Network shows drainage features at this site are associated with the unnamed ordinary watercourse that flows south-west to north-east along the western border of the site. The watercourse flows through a culvert located underneath Ratby Lane to the north of the site. Additionally, an unnamed watercourse is present along the northern boundary of the site: this originates from the ordinary watercourse along the northern boundary of the site. A culvert is located just downstream of the confluence between the two unnamed watercourses.		
	Fluvial	Proportion of site at risk		
		FZ3b	FZ3a	FZ2
		1%	2%	3%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)		
		High		
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)		

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	KMU021		
	Address	Blood's Hill (large)		
	Area	19.11 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<b>Available data:</b> The Environment Agency's Flood Zone mapping has been used in this assessment, along with existing 2D generalised modelling of the Rothley Brook from past studies. The EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs.		
		<b>Flood characteristics:</b> The Flood Zone Data for this site indicates flood risk through this site is restricted by the river channel of the unnamed ordinary watercourse located at the western border of the site, flowing the south-west to the north-east of the site along the boundary.		
		Fluvial Flood Zones 2, 3a and 3b are all present within this site but are all very confined to the immediate floodplain and only slightly encroach into the site. Overall, risk is low.		
		Flood Zone 2 and 3a are very similar and are confined to the topographical low points within the site, located within the unnamed ordinary watercourse floodplain. Within FZ2, flood water ingresses 50 metres into the north western boundary of the site and 38 metres at the south western boundary of the site.		
		FZ3b is only observed within the north-western area of the site where flood water ingresses by 51 metres. FZ3b is located at the north eastern area of the site, upstream of the culvert under Ratby Lane. The flood water ingresses 50 metres east into the site.		
		As there is no detailed hydraulic model available at this site, there is no depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest next to the channel, where the topography is lowest. Depths and velocities would likely reduce the further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.		
	Surface Water	<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		2%	3%	8%
		Max depths (m)		
		0.3-0.9m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s



# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	KMU021
	Address	Blood's Hill (large)
	Area	19.11 hectares
	Current land use	Greenfield
	Proposed land use	Residential
		<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g., 100-year includes the 30-year %)</i></p> <p><b>Description of surface water flow paths:</b></p> <p>This site is at risk of surface water flooding from all three surface water events.</p> <p>The 30-year event is confined to the north western boundary of the site; the surface water risk is limited to the area of the unnamed ordinary watercourse. A small branch of flooding is located within the centre of the north western boundary of the site. The surface water event also identifies an area of localised ponding at the culvert beneath Ratby Lane.</p> <p>The 100-year event is predominantly located along the western boundary of the site, restricted to the outer edge of the floodplain extent where the surface water naturally flows towards. The surface water branch is observed in the 30-year event extends 112 metres further, originating from the centre/ eastern half of the site starting to form a flow path. Two areas of surface water ponding are located 30 metres and 90 metres from the eastern boundary of the site.</p> <p>The 1000-year event shows that the surface water branch bisects the site from north to south. The surface water branch converges in the centre of the site, flowing in a north westerly direction. The two surface water channels converge 150 from the western boundary of the site. The northern most surface water branch originates along the eastern boundary of the site, flowing north then west, converging with the surface water branch along from the south of the site. The south-eastern surface water branch extends 200 metres south-east into the site. A small surface water pond is located in the south eastern boundary of the site, 13 metres in length.</p> <p>Across the three surface water events, the depth of surface water changes from 300-900mm for the 30-year and 100-year to &gt;900mm in the 1,000-year event. The maximum velocity remains over 0.25 m/s across all three events.</p>
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.
	Flood history	The site is not located within the Historic Flood map, therefore, there is no data on the site. Developers should contact the LLFA for more information on historic flooding.

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	KMU021		
	Address	Blood's Hill (large)		
	Area	19.11 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
		The site is not protected by any formal flood defences.		
	Residual risk	<p>Residual risk at the site is deemed low, but there is a potential risk from the following:</p> <p>The small unnamed ordinary watercourse which flows along the site's northern boundary and into a culvert located under Ratby Lane.</p> <p>If the culvert under Ratby Lane downstream of the site was to block, this could increase flood depths and extents slightly within the zone of impoundment between the culvert and Station Road, nearest the site.</p> <p>It is unlikely to impact the site significantly as the risk to the site is already on the outer edge of the wide floodplain extents and the structure may be a suitable size, but it could increase risk in the north-western corner if depth or extents were to increase slightly.</p> <p>The potential impacts should be considered in an FRA.</p>		
Emergency planning	Flood warning	<p>The site is not incorporated within the Environment Agency's Flood Warning Areas.</p> <p>This site's far northerly corner just clips the Environment Agency's Flood Alert Area of Rothley Brook in Leicestershire.</p>		
	Access and egress	<p>Access and egress to the site can be permitted from Ratby Lane on the north eastern boundary of the site. The route would have to be within the north-eastern half of the northern boundary to prevent the risk of the road being bisected by both the Fluvial Flood Zones as well as the surface water flooding events.</p> <p>There will be challenges in establishing safe access and egress from the western border of the site because of both the unnamed ordinary watercourse being located within this area, as well as the location of Kirby Muxloe Castle presenting a potential issue in regard to forming a new access/egress route. Access along this boundary should therefore be avoided.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KMU021</b>
	<b>Address</b>	Blood's Hill (large)
	<b>Area</b>	19.11 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and therefore Flood Zone 2 has been used as a conservative indication of flood risk from climate change. This extends across the western portion of the site, encompassing the lower incline ground. A detailed modelling study should test the latest published climate change allowances, which may refine risk in the north-western area of the site.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>KMU021</b>
	<b>Address</b>	Blood's Hill (large)
	<b>Area</b>	19.11 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Till – Diamicton</li> </ul> </li> <li>The majority of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>There is small meandering band of the site where groundwater levels are indicated to be less than 1m below ground level during a 1% AEP event. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'. It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model may be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the unnamed watercourse, western boundary of the site to the north--eastern boundary of the site, using a channel topographic survey. It is understood that the EA are currently updating the Rothley Brook model, so developers should contact the EA to ascertain latest data available for FRAs.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A</li> </ul>
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# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	KMU021
	Address	Blood's Hill (large)
	Area	19.11 hectares
	Current land use	Greenfield
	Proposed land use	Residential
		<p>drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</p> <ul style="list-style-type: none"> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	KMU021
	Address	Blood's Hill (large)
	Area	19.11 hectares
	Current land use	Greenfield
	Proposed land use	Residential
Key messages		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to 97% of the site located within Flood Zone 1, therefore, it is recommended to avoid the land on the north western boundary of the within close proximity to the unnamed ordinary watercourse.</li> <li>• Safe access and egress need to be considered as this site presents some challenges from the north western border where the boundary is shared with an unnamed watercourse and Kirby Muxloe Castle. Additionally, Flood Zone flooding inundates the northern portion of the site. Surface water flooding bisects the site, making access to the north-eastern portion of the site challenging in more extreme events.</li> <li>• Surface water risk is relatively low at this site, as surface water only covers 8% of the site during the 1,000-year event. However, this risk forms a flow path which splits the site and surface water can prevent safe access and egress via Ratby Lane in the vicinity of the watercourse due to high depths and velocities.</li> <li>• The site is bisected by surface water in the 1000-year event and the 100-year event is close to bisecting the site, with a large area of surface water ponding.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
Mapping Information		
<p>The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KMU021</b>
	<b>Address</b>	Blood's Hill (large)
	<b>Area</b>	19.11 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. The EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs.
<b>Climate change</b>		Climate change was based on Flood Zone 2 to serve as an indication of possible extents. The EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.
<b>Fluvial depth, velocity and hazard mapping</b>		There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping has been used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage; the EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs.
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	KMU022			
	Address	Land off Farley Way			
	Area	1.69 hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The site is located west of the city of Leicester, south east of Ratby. The site is located between Ratby Lane to the south, The M1 to the north-east and the A46 to the north-east. The north-western boundary of the site lies adjacent to Greenfield Lane and Primrose Way. The site is south-western boundary lies adjacent to the unnamed ordinary watercourse. Downstream of the unnamed ordinary watercourse is the confluence between the unnamed watercourse and Rothley Brook. The topography of the site is relatively flat, with a variance of 3m in elevation from the most southern (75m AOD) to northern area of the site (78m AOD). The site is located within the floodplain of the ordinary watercourse. The land surrounding the site is considerably higher in elevation than land on which the site is located.			
		The Environment Agency’s Detailed River Network shows drainage features are associated with the unnamed ordinary watercourse which flows in a north easterly direction along the southern boundary of the site. The confluence between this watercourse and the watercourse of the Rothley Brook is located 1.4km north-east of the site. A culvert is located at the southern boundary of the site, with the ordinary watercourse flowing underneath Ratby Lane.			
	Existing drainage features	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		27%	52%	57%	43%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		High			
Fluvial	The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)				

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	KMU022
	Address	Land off Farley Way
	Area	1.69 hectares
	Current land use	Greenfield
	Proposed land use	Residential
		<p><b>Available data:</b> The Environment Agency's Flood Zone mapping has been used in this assessment, along with existing 2D generalised modelling of the Rothley Brook from past studies. The EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs.</p> <p><b>Flood characteristics:</b> The Flood Zone Data for this site indicates flood risk through this site is predominantly left bank out of bank flooding from the river channel of the unnamed ordinary watercourse, located at the southern border of the site, flowing from south-west to north-east of the site. Due to the topography of the site and the site being situated within a floodplain, a majority of the site is adversely affected by the impacts of fluvial flooding events. Fluvial Flood Zones 2, 3a and 3b are all present within this site. Flood Zone 3b is located within the southern and south-eastern boundaries of the site, with 3 'dry islands' located at the southern boundary of the site with flood paths flowing round these. Flood Zone 3a has a wider extent from the south-western boundary to the north-eastern boundary, and Flood Zone 2 covers the whole of the eastern perimeter of the site, with the northern and most south westerly portion of the site unaffected by Flood Zone 2. The channel then goes into culvert underneath the motorway; as the current extents are from 2D generalised modelling, it is likely this structure has not been considered in the modelling (similarly for risk at Ratby Lane just upstream) and therefore shows a conservative risk through the motorway. In reality, flood extents may be refined in this area, though the effects of the impoundment from the raised land east of the site at the culvert may affect the site. As there is no detailed hydraulic model available at this site, there is no depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest next to the channel, where the topography is lowest. Depths and velocities would likely reduce the further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	KMU022		
	Address	Land off Farley Way		
	Area	1.69 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
	Surface Water	Proportion of site at risk (RoFfSW)		
		30-year	100-year	1,000-year
		74%	78%	94%
		Max depths (m)		
		>0.9m	>0.9m	>0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g., 100-year includes the 30-year %)		
		Description of surface water flow paths:		
		The site is affected significantly by surface water flooding in all 3 events. Due to the topography of the site and the site being situated within a floodplain, a majority of the site is adversely affected by the impacts of surface water flooding events.		
		The 30-year event covers 74% of the site area, with the south-eastern and north eastern boundary of the site completely inundated with surface water flooding. The south-western and north-western areas of the site are bisected by the surface water and are not affected by surface water flooding.		
		The 100-year event covers 74% of the site, so very similar to the 30-year event.		
		The 1,000-year event covers 94% of the site and completely inundates the site excepting the very north-western edge by Glenfield Lane.		
		Across all three surface water events, both the depth and the velocity of surface remains in the same banding which is deep and fast. The Maximum depth of surface water is >900mm and the max velocity is >0.25 m/s.		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	The site is not located within the Historic Flood map, and there is no data on the site. Developers should contact the LLFA for more information on historic flooding.		

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>KMU022</b>		
	<b>Address</b>	Land off Farley Way		
	<b>Area</b>	1.69 hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
	The site is not protected by formal flood defences.			
<b>Emergency planning</b>	<b>Residual risk</b>	<p>Residual risk at the site should be investigated further using detailed modelling in an FRA. The site is located between two culvert structures; one at Ratby Lane immediately upstream and one at the motorway, both of which are raised with some embankment impounding not incorporated in the 2D generalised modelling.</p> <p>If the culvert under the M1 and A46 were to become impounded, this could potentially increase the flood depths and extents slightly within the zone of impoundment between the culvert and the site. It is unlikely to impact the site the site significantly as the risk to the site is already on the outer edge of the wide floodplain extents and the structure may be a suitable size, but it could increase risk in the north-eastern corner if depth or extents were to increase slightly.</p>		
	<b>Flood warning</b>	<p>The site is not incorporated within the Environment Agency's Flood Warning Areas.</p> <p>This site is incorporated within the Environment Agency's Flood Alert Area of Rothley Brook in Leicestershire, which begins at the site on this watercourse.</p>		
<b>Emergency planning</b>	<b>Access and egress</b>	<p>Access and egress for this site can be obtained via Ratby Lane and Greenfield Lane. There will be challenges in establishing an access/egress route via the eastern boundary of the site as the site boundary is shared with the unnamed ordinary watercourse, M1 and the A46 so this should be avoided</p> <p>Access from the western boundary of the site will be challenging due to the proximity of the boundary to the housing estate to the north west of the site, though Glenfield Lane is largely free of flood risk. Ratby Lane is shown to be inundated in fluvial and surface water events, though a detailed model may refine risk here when the structure and road levels are incorporated, as 2D generalised modelling cuts through these areas and does not represent structures.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KMU022</b>
	<b>Address</b>	Land off Farley Way
	<b>Area</b>	1.69 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and therefore Flood Zone 2 has been used as a conservative indication of flood risk from climate change. This extends across the south-east and the eastern portion of the site encompassing the lower incline ground. A detailed modelling study should test the latest published climate change allowances, which may refine risk in the eastern and south-eastern portion of the site.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>KMU022</b>
	<b>Address</b>	Land off Farley Way
	<b>Area</b>	1.69 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Triassic Class: Mudstone, Siltstone and Sandstone.</li> <li>Superficial – Alluvium Class: Clay, Silt and Sand</li> </ul> </li> <li>The majority of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>There is a small area to the north of the site where groundwater levels are indicated to be between 0.5 and 5m below ground level and there is a risk of flooding to subsurface assets and below ground development such as basements. Groundwater monitoring is recommended to determine the seasonal variability of groundwater levels, as this may affect the design of the surface water drainage system.</li> <li>To the north of the site there is a small area where groundwater levels are indicated to be less than 1m below ground level, or at or very near (within 0.025m) ground level and there is a risk of groundwater flooding at the surface during a 1% AEP event, which may flow to and pool within topographic low spots. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KMU022</b>
	<b>Address</b>	Land off Farley Way
	<b>Area</b>	1.69 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'</p> <p>It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site; however, there is little Flood Zone 1 land in the site and therefore this poses significant development constraints, especially as the surface water extents are also worse than the fluvial extents and therefore there is minimal space in the site for flood risk mitigation. It may be that more detailed modelling could refine this risk given the lack of inclusion of structures and higher road topography in the 2D generalised modelling, which may reduce the flood extents overall, but development should be steered towards Glenfield Lane.</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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model may be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the unnamed ordinary watercourse from the unmodelled drains along the southern area of the site as well as the eastern portion of the site, using channel topographic survey. It is understood that the EA are currently updating the Rothley Brook model, so developers should contact the EA to ascertain latest data available for FRAs.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development</li> </ul>
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# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	KMU022
	Address	Land off Farley Way
	Area	1.69 hectares
	Current land use	Greenfield
	Proposed land use	Residential
		<p>across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</p> <ul style="list-style-type: none"> <li>On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> </ul> <p>Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	KMU022
	Address	Land off Farley Way
	Area	1.69 hectares
	Current land use	Greenfield
	Proposed land use	Residential
Key messages		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to 43% of the site located within Flood Zone 1. It is recommended to avoid development on the land within the southern area of the site as well as the eastern area of the site. This is due to both the fluvial and pluvial flood risk. Therefore, development should be directed to the very north of the site.</li> <li>• This site poses significant development constraints, especially as the surface water extents are also worse than the fluvial extents and therefore there is minimal space in the site for flood risk mitigation. It may be that more detailed modelling could refine this risk given the lack of inclusion of structures and higher road topography in the 2D generalised modelling, which may reduce the flood extents overall, but development should be steered towards Glenfield Lane.</li> <li>• Access to/ from the site looks possible in the 30-year from the northern area of the site through Glenfield Lane. Ratby Lane is shown to be inundated in fluvial and surface water events, though a detailed model may refine risk here when the structure and road levels are incorporated, as 2D generalised modelling cuts through these areas and does not represent structures.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> <li>• Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</li> </ul>
Mapping Information		
<p>The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KMU022</b>
	<b>Address</b>	Land off Farley Way
	<b>Area</b>	1.69 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk. The EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs.
<b>Climate change</b>		Climate change was based on Flood Zone 2 to serve as an indication of possible extents. The EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.
<b>Fluvial depth, velocity and hazard mapping</b>		There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping has been used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage; the EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs.
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KMU024</b>			
	<b>Address</b>	Land off Portland Road			
	<b>Area</b>	5.88 Hectares			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	The site is located within Kirby Muxloe, north of Portland Road and east of Court Close. The site is bisected by an unnamed ordinary watercourse which flows into the site from the western boundary of the site and exiting via the northern boundary of the site. This watercourse eventually joins the Rothley Brook. The topography of the site identifies the western side of the site is located within a floodplain with a topographic low of 80m AOD of elevation. The eastern boundary of the site is located at 96m AOD of elevation showing a variance of 16m across the site.			
	<b>Existing drainage features</b>	The Environment Agency's Detailed River Network shows drainage features at this site are associated with the unnamed ordinary watercourse that flows from the south to the north of the western portion of the site.			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		6%	13%	16%	84%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		High			
		<i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>			

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	KMU024		
	Address	Land off Portland Road		
	Area	5.88 Hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<b>Available data:</b> The Environment Agency's Flood Zone mapping has been used in this assessment, along with existing 2D generalised modelling of the Rothley Brook from past studies. The EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs.		
		<b>Flood characteristics:</b> The Flood Zone Data for this site indicates flood risk through this site is located in the vicinity of the river channel of the unnamed ordinary watercourse located at the western border of the site, flowing from the south of the site to the north of the site. Across all three flood zones, the flooding is confined to the topographic low points within the site, located within the floodplain of the unnamed ordinary watercourse. Flood Zone 3b extents are narrower in the immediate floodplain, with Flood Zone 3a and Flood Zone 2 following a very similar flood path, spilling wider into the floodplain. Flood Zone 3b floods only 6% of the western portion of the site. FZ3a covers 13% of the site. As there is no detailed hydraulic model available at this site, there is no depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest next to the channel, where the topography is lowest. Depths and velocities would likely reduce the further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.		
	Surface Water	<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		9%	11%	19%
		Max depths (m)		
		0.3-0.9m	>0.9m	>0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g., 100-year includes the 30-year %)</i>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KMU024</b>
	<b>Address</b>	Land off Portland Road
	<b>Area</b>	5.88 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<p><b>Description of surface water flow paths:</b></p> <p>This site is at risk of surface water flooding from all three surface water events. The surface water extents largely match those of the fluvial events, as water is following the natural topographic alignment of the floodplain.</p> <p>The 30-year event is confined to the western boundary of the site, the surface water is confined to the topographic low point within the site, located within the floodplain of the unnamed ordinary watercourse. Within the 30-year event, a dry island is located along the south-western boundary of the site where land is slightly higher.</p> <p>The 100-year event is very similar to the 30-year event, extending slightly further.</p> <p>The 1,000-year surface water event covers 19% of the site; with three small 'dry islands' are located on the western boundary of the site. At the southernmost boundary of the site, a small flow path forms from the end of Portland Road and joins the floodplain. Additionally, a second branch of flooding flows into the western boundary of the site from Barwell Close.</p> <p>Overall, the velocity of the surface water remains consistent across the site at &gt;0.25 m/s. Within the 30-year event, surface water is between 300-900mm and this increases to &gt;900mm for both the 100 and 1,000-year events.</p>
	<b>Reservoir</b>	The site is not shown to be at risk of reservoir flooding from the available online maps.
	<b>Flood history</b>	The site is not located within the Historic Flood map, and there is no data on the site. The Lead Local Flood Authority should be contacted to obtain further details.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KMU024</b>		
	<b>Address</b>	Land off Portland Road		
	<b>Area</b>	5.88 Hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<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 shown to have any implemented flood risk management infrastructure.		
	<b>Residual risk</b>	<p>Residual risk at the site is deemed low, but there is a potential risk from the following:</p> <p>If the culvert located 400 metres downstream of the site were to block, this could increase flood depths and extents slightly in this zone of impoundment, between this culvert and the site. It is unlikely to impact the site significantly as the site is located relatively further upstream of the culvert the potential impacts should be considered in a FRA.</p>		
<b>Emergency planning</b>	<b>Flood warning</b>	<p>The site is not incorporated within the Environment Agency's Flood Warning Area's</p> <p>This site is not incorporated within the Environment Agency's Flood Alerts Area's</p>		
	<b>Access and egress</b>	<p>The site can be accessed via Forest Drive and Portland Road at the southern boundary of the site. Access should be avoided to the west at Court Close on the northern boundary of the site because this is where both fluvial and surface risk is highest, crossing the channel. Access and egress from the south site will be challenging due to the proximity of the site to a residential area. The eastern border of the site similarly presents challenges to access due to the proximity to residential areas.</p> <p>Access to and from the site is affected by the 1,000-year surface water flooding event where all potential access and egress routes are blocked by surface water flooding. Surface water flow paths are located along Forest Drive which may restrict resident and emergency service access and egress from the site with as surface water velocities are identified to be over 0.25m/s. Access to and from the site is not restricted during the 30-year flooding event.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KMU024</b>
	<b>Address</b>	Land off Portland Road
	<b>Area</b>	5.88 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and therefore Flood Zone 2 has been used as a conservative indication of flood risk from climate change. This extends across the western border of the site encompassing the lower incline ground. A detailed modelling study should test the latest published climate change allowances, which may refine risk in the western portion site of the site.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KMU024</b>
	<b>Address</b>	Land off Portland Road
	<b>Area</b>	5.88 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Triassic Rocks; Mudstone, Siltstone and Sandstone</li> <li>Superficial – Drift Geology – Not mapped</li> </ul> </li> <li>The majority of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>There is a band running vertically to the east of the site where groundwater levels are indicated to be less than 1m below ground level during a 1% AEP event. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>There is a small area to the west of the site where groundwater levels are indicated to be at or very near (within 0.025m) ground level and there is a risk of groundwater flooding at the surface during a 1% AEP event, which may flow to and pool within topographic low spots. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KMU024</b>
	<b>Address</b>	Land off Portland Road
	<b>Area</b>	5.88 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'. It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model may be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the unnamed ordinary watercourse using channel topographic survey. It is understood that the EA are currently updating the Rothley Brook model, so developers should contact the EA to ascertain latest data available for FRAs.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KMU024</b>
	<b>Address</b>	Land off Portland Road
	<b>Area</b>	5.88 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<p>to ensure there is no increase in runoff beyond the current greenfield rates.</p> <ul style="list-style-type: none"> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>KMU024</b>
	<b>Address</b>	Land off Portland Road
	<b>Area</b>	5.88 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to 84% of the site in Flood Zone 1. Due to the ordinary watercourse, fluvial and surface water flooding in the western section of the site, it is recommended that development is steered towards the eastern side of the site where there is a lower flood risk.</li> <li>• Safe access and egress can be permitted via the south eastern area of the site via Portland Road. Challenges to safe access and egress from the site are located along the western and north western boundary of the site.</li> <li>• Consideration should be given to any development placed in the small area of no risk on the left-side of the channel by Court Close; access is possible here, but there would be a need to join up access with the rest of the site across the watercourse</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk. The EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>KMU024</b>
	<b>Address</b>	Land off Portland Road
	<b>Area</b>	5.88 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate change</b>		Climate change was based on Flood Zone 2 to serve as an indication of possible extents. The EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.
<b>Fluvial depth, velocity and hazard mapping</b>		There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping has been used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage; the EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs.
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	LFE018			
	Address	Land at Baines Lane, LFE			
	Area	2.62 hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The site is located between the Welcome Break Leicester Forest services on the M1 north bound and Leicester Forest East. The site's southern boundary is parallel to an unnamed ordinary watercourse, a tributary of the Lubbesthorpe Brook. There is also a small pond area at the south western portion of the site. The north eastern boundary lies adjacent to Chapel Green Road, which connects the M1 service station and the A47. The topography of the site identifies an 8-metre height difference between the northern (96m AOD elevation) and southern (88m AOD elevation) boundary of the site.			
	Existing drainage features	The site's southern boundary is parallel to an unnamed ordinary watercourse, which forms a tributary of the Lubbesthorpe Brook. There is also a small pond area at the south-western portion of the site. The watercourse enters the site from the western border and flows along the southern border of the site and exits from the eastern edge of the southern border via a culvert.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		<1%	<1%	1%	99%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		High			
The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)					

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	LFE018		
	Address	Land at Baines Lane, LFE		
	Area	2.62 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><b>Available data:</b> The outputs from the 1D HEC-RAS model of the Lubbesthorpe Brook has been used in this assessment, as this upstream stretch of watercourse is not represented in the EA's Flood Map for Planning as the catchment is &lt;3km<sup>2</sup>.</p> <p><b>Flood characteristics:</b> The modelled Flood Zone Data for this site indicates flood risk through this site is restricted by the river channel of the unnamed ordinary watercourse located at the southern border of the site, flowing west to east. Fluvial Flood Zones 2 and 3a are both present within the same confined topographic extent throughout this site. Flood Zone 2 extends a greater distance from the south eastern border of the site, extending approximately 55 metres along the site from east to west. Furthermore, the floodwater also extends 1 metre into the site in Flood Zone 3b compared to 7 metres in FZ2. There is greater accumulation of flood water in the south eastern border of the site in FZ2 compared to FZ3a. However, overall flood risk to the site is extremely low. The 100-year event shows velocity of up to 0.61m/s and depth of up to 0.69m in the south eastern corner of the site. The 100-year +20 shows a maximum velocity of 0.70 m/s and a depth of up to 0.68m in the south-eastern corner of the site. The 100-year +30 event shows a maximum velocity of 0.71m/s with a depth of up to 0.74m in the south-eastern corner of the site. The 100-year +50 shows velocity of up to 0.82 m/s and a depth of up to 0.80m in the south-eastern corner of the site.</p>		
	Surface Water	<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		2%	4%	12%
		Max depths (m)		
		0.3-0.9m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		>0.25m/s	>0.25m/s	>0.25m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	LFE018		
	Address	Land at Baines Lane, LFE		
	Area	2.62 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><b>Description of surface water flow paths:</b></p> <p>The site is affected by surface water flooding in all 3 events, more so than fluvial risk. The 30-year and 100-year extents are located at the southern boundary of the site, flowing from the western border to the eastern border of the site along the alignment of the tributary floodplain.</p> <p>The 30-year event is wholly concentrated and confined to the southern boundary of the site, with very little ingress into the site. The 100-year event, similarly to the 30-year event, is confined to the southern boundary of the site. The 100-year event covers a slightly larger area.</p> <p>The 1,000-year event identifies an additional flow route for surface water within the site. Surface water ingresses into the centre of the site from the watercourse at the southern border of the site and also from a second flow path from Cox Meadow Road and Forest House Lane into the site. The 1,000-year event also identifies a new flow channel flowing up the western boundary of the site.</p> <p>Overall, across all events, the maximum velocity recorded at the site is &lt;0.25m/s. 1 in 30 and 1 in 100-year events 300-900mm maximum depth at with the site, located at the southern boundary. The 1 in 1000-year event had a maximum depth of &lt;900mm.</p>		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	The site is not located within the Historic Flood map, therefore, there is no data on the site. The Lead Local Flood Authority should be contacted to obtain further details.		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
		The site is not protected by formal flood defences.		
	Residual risk	There is a culvert immediately at the south-eastern corner of the site. If this was to block, water would likely back up and enter the site more, though this would still be confined to the southern/south-eastern edges before the site topography rises away. A site-specific FRA should be carried out to confirm this risk.		
Emergency planning	Flood warning	<p>The site is not covered by the Environment Agency's Flood Warning Map.</p> <p>The site is not covered by the Environment Agency's Flood Alert Map.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LFE018</b>
	<b>Address</b>	Land at Baines Lane, LFE
	<b>Area</b>	2.62 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
	<b>Access and egress</b>	Access and egress at this site are possible via Chapel Green Road and Forest House Lane. Chapel Green Road is raised above the M1 which leads to the A47 Hinckley Road, and Forest House Lane is largely free of surface water except in the 1,000-year event. There are other surface water risk crossings of local roads further out from the site which may need to be considered.
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the site from the Lubbesthorpe Brook, the 100 year +20%, +30%, +50% climate change scenarios. These all cover an area similar to Fluvial Flood Zone 2; However, the extents are slightly smaller area compared to Flood Zone 2, but larger than Flood Zone 3a. The modelled climate change data identifies no new flood path characteristics.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>LFE018</b>
	<b>Address</b>	Land at Baines Lane, LFE
	<b>Area</b>	2.62 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Till - Diamicton.</li> <li>Superficial – Mudstone, Siltstone and Sandstone.</li> </ul> </li> <li>Most of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>There is a small portion in the south-western corner of the site where groundwater levels are indicated to be less than 1m below ground level during a 1% AEP event. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>This site is not located within an area of historic land fill site/s.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'</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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse to ensure flows are not exacerbated downstream within the catchment.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LFE018</b>
	<b>Address</b>	Land at Baines Lane, LFE
	<b>Area</b>	2.62 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <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. Assessment for runoff should include allowance for climate change effects.</li> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>LFE018</b>
	<b>Address</b>	Land at Baines Lane, LFE
	<b>Area</b>	2.62 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to the majority of the area of the site located within 99% of Flood Zone 1, therefore, it is recommended to avoid the land adjacent to the ordinary watercourse.</li> <li>• Surface water is at high risk to the site only in the southern boundary area</li> <li>• Safe access and egress need to be considered at the site, the access routes proposed are all affected by both the 100 and 1,000-year surface water events.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the 1D HEC-RAS model of the Lubbethorpe Brook.
<b>Climate change</b>		Climate change was based on the 1D HEC-RAS model of the Lubbethorpe Brook, modelled for climate change in the Level 1 SFRA.
<b>Fluvial depth, velocity and hazard mapping</b>		There is Fluvial Depth and Velocity data available from the 1D HEC-RAS model of the Lubbethorpe Brook. The 100-year and 100-year + climate change have been assessed.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LFE018</b>
	<b>Address</b>	Land at Baines Lane, LFE
	<b>Area</b>	2.62 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT008</b>			
	<b>Address</b>	Land south of Tysoes Nursey and west of Cosby Road			
	<b>Area</b>	0.95 hectares			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	The site is located to the south west of Leicester, south of Littlethorpe, on the western side of Cosby Road. To the north of the site there is a developed residential area (Sycamore Way), and to the south is the village of Cosby. Cosby Brook flows along the western boundary of the site, which is a tributary to the River Soar which flows to the north of the site location. The site is located at the downstream end of the Cosby Brook in the Upper Soar catchment, close to an area of floodplain ponding and interacting area of several watercourses (including the Soar) due to railway embankment impoundments and low-lying land.			
	<b>Existing drainage features</b>	The Environment Agency's Detailed River Network shows drainage features are associated with Cosby Brook which flows in a northerly direction, along the western boundary of the site. This watercourse confluent with the River Soar approximately 700m to the north west of the site.			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		35%	37%	44%	56%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		High			
		<i>The % Flood Zones quoted show the % of the site at flood risk from that Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>			



# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	LIT008
	Address	Land south of Tysoes Nursey and west of Cosby Road
	Area	0.95 hectares
	Current land use	Greenfield
	Proposed land use	Residential
		<p><b>Available data:</b> The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment. The site lies on the Cosby Brook model. The EA's Flood Map for Planning has been used to inform Flood Zones 2 and 3a (as this incorporates latest modelling) and Flood Zone 3b has been derived from the hydraulic model.</p> <p><b>Flood characteristics:</b> The modelled Flood Zone data for this site indicates that flood risk to this site is restricted through the river valley of Cosby Brook from the south, up to the site, which then runs along the western boundary of the site. Fluvial Flood Zones 2, 3a and 3b are all present within the western lower topographic half of this site.</p> <p>Flood Zone 2 covers the greatest area covering 44% of the site from the west into the centre of the proposed site area. Flood Zones 3a covers 37% of the site and 3b covers 34%. The Historic Flood Map data covers approximately just more than half of the proposed site, from the western boundary extending towards the centre of the site and covering a smaller area than the Flood Zone extents.</p> <p>The modelled defended 100-year extent affects approximately half of the site from the western boundary and extending towards the centre of the site. Maximum depth is identified as 0.40m in the north west corner of the site, and velocity 0.94m/s within the same area, in the lowest topographic region.</p> <p>The modelled 100-year +30% extent covers a slightly greater area towards the centre of the proposed site, extending from the north west corner. Maximum depth is identified as 0.46m and maximum velocities of 1.14m/s.</p> <p>During the 100-year modelled defended event, hazard is predominantly projected at a maximum threshold of 0.75-1.25 which presents a moderate risk, described as dangerous for some - a Flood Zone with deep or fast flowing water. Along the western boundary of the site during the 100-year event, hazard is projected at 1.25 - 2 which is a significant hazard and dangerous for most people. The 100-year +30% extent covers a greater area of the north west of the site, with a maximum hazard threshold 1.25-2 which is a significant hazard and dangerous for most people - a Flood Zone with deep and fast flowing water. This hazard is projected in the lowest topography of the site in the north west and along the western boundary.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	LIT008		
	Address	Land south of Tysoes Nursey and west of Cosby Road		
	Area	0.95 hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
	Surface Water	Proportion of site at risk (RoFfSW)		
		30-year	100-year	1,000-year
		4%	6%	24%
		Max depths (mm)		
		0.3-0.9m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		<0.25	<0.25	>0.25
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		
		<b>Description of surface water flow paths:</b> The site is affected by surface water flooding in all 3 events. The 30-year and 100-year events are localised areas of ponding to the north west of the site, where topography is lowest. The 1,000-year surface water extent matches closely with Flood Zone 3b, filling the lower area of topography on the western side of the site and interacting with the watercourse. Overall, there is little change in depths (300-900mm) and velocity (<0.25m/s) through the events. The deepest areas will be in the area of 30-year ponding in the lowest topography of the site, with shallower depths as the extent spreads away from here.		
		<b>Reservoir</b> The site is not shown to be at risk of reservoir flooding from the available online maps.		
		<b>Flood history</b> The western area of the proposed site is shown to be within the reaches of the Environment Agency's Historic Flood Map. This area is located within Flood Zone 2 and covers approximately just more than 50% of the proposed site area. There are no specific recorded incidents. The Lead Local Flood Authority should be contacted to obtain further details. Developers should contact the LLFA for more information on historic flooding.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT008</b>		
	<b>Address</b>	Land south of Tysoes Nursey and west of Cosby Road		
	<b>Area</b>	0.95 hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<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>	<p>There is no residual risk presented at this site. The site is near to a reservoir flooding extent located to the west of the site however this risk is approximately 500m further downstream therefore shouldn't affect the site.</p> <p>There is no anticipated fluvial risk however a site-specific FRA should be carried out.</p>		
<b>Emergency planning</b>	<b>Flood warning</b>	<p>The site is not covered by the Environment Agency's Flood Warning Service.</p> <p>The western area of the site is included within the Environment Agency's Flood Alert Service.</p>		
	<b>Access and egress</b>	<p>The site can be accessed by Cosby Road in all fluvial and surface water events, which runs south from Littlethorpe. Due to the unnamed watercourse which runs along the western boundary of the site, access should be steered to the east, where there is current road access.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT008</b>
	<b>Address</b>	Land south of Tysoes Nursey and west of Cosby Road
	<b>Area</b>	0.95 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the site from Cosby Brook, for the 100 year +20%, +30%, +50% climate change scenarios. These all cover an area similar to Fluvial Flood Zone 2; however, the extents are slightly smaller area compared to Flood Zone 2, but larger Flood Zone 3a. The modelled climate change data identifies no new flood path characteristics.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT008</b>
	<b>Address</b>	Land south of Tysoes Nursey and west of Cosby Road
	<b>Area</b>	0.95 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Alluvium, Clay, Silt and Sand.</li> <li>Superficial – Till – Diamicton.</li> </ul> </li> <li>The western half of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>At the eastern half of the site groundwater levels are indicated to be at or very near (within 0.025m) ground level and there is a risk of groundwater flooding at the surface during a 1% AEP event, which may flow to and pool within topographic low spots. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>The site is not located with an area of a Historic landfill site/s.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'. It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse to ensure flows are not exacerbated downstream within the catchment.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT008</b>
	<b>Address</b>	Land south of Tysoes Nursey and west of Cosby Road
	<b>Area</b>	0.95 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <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. Assessment for runoff should include allowance for climate change effects.</li> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>LIT008</b>
	<b>Address</b>	Land south of Tysoes Nursey and west of Cosby Road
	<b>Area</b>	0.95 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to the majority of the area of the site located within Flood Zone 1, therefore the eastern proportion of the proposed site.</li> <li>• Safe access and egress need to be considered as the site is inaccessible from the west due to the watercourse forming the boundary. Access is achievable to the east via Cosby Road.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and Tributaries model (Cosby Brook). The 20-year flood extent was used to derive Flood Zone 3b.	
<b>Climate change</b>	Climate change was based on the 2012 River Soar and Tributaries model (Cosby Brook), where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch.	
<b>Fluvial depth, velocity and hazard mapping</b>	There is Fluvial Depth, Velocity and Hazard data available from the Cobsy Brook model (2021 River Soar and Tributaries modelling). The 100-year and 100-year + climate change have been assessed.	
<b>Surface Water</b>	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.	
<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.	



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT009</b>			
	<b>Address</b>	Tysoes Nursery and 53 Cosby Road, Littlethorpe			
	<b>Area</b>	1.02 hectares			
	<b>Current land use</b>	Greenfield/Brownfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	The proposed site is located south west of Leicester, and due south of Littlethorpe. The site's western boundary is formed by the Cosby Brook. The site is located along Cosby Road which links Cosby and Littlethorpe and forms the eastern boundary of the site.			
	<b>Existing drainage features</b>	The Environment Agency's Detailed River Network shows drainage features along this site are associated with the Cosby Brook; this brook forms the western boundary of the site flowing north at the site, then immediately west from the site's north-western boundary, into the River Soar shortly downstream. The topography of the site identifies a westward slope towards the Cosby Brook, with the lowest topography adjacent to the brook.			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		45%	46%	58%	42%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		High			
		<i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>			

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	LIT009
	Address	Tysoes Nursery and 53 Cosby Road, Littlethorpe
	Area	1.02 hectares
	Current land use	Greenfield/Brownfield
	Proposed land use	Residential
		<p><b>Available data:</b> The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment. The site lies on the Cosby Brook model. The EA's Flood Map for Planning has been used to inform Flood Zones 2 and 3a (as this incorporates latest modelling) and Flood Zone 3b has been derived from the hydraulic model.</p> <p><b>Flood characteristics:</b> The modelled Flood Zone data for this site indicates that flood risk to this site is restricted through the river valley of the Cosby Brook which runs along the western boundary of the site. Fluvial Flood Zones 2, 3a and 3b are all present within the western lower-lying topographic extent of the site. Flood Zone 2 covers the greatest area covering approximately half of the site. Flood Zone 3a and Flood Zone 3b are a little smaller, but also very similar to Flood Zone 2's extents, covering approximately half of the site. The Historic Flood Map data covers approximately half of the proposed site. Overall, there is little difference between the Flood Zone extents; all are significantly flooding over a third of the site.</p> <p>The model defended 100-year extent affects the site with a maximum depth recorded at 2.86m, which extends from the western boundary to the centre of the site with maximum velocity of 1.15 m/s recorded at the western boundary of the site, adjacent to the Cosby Brook. The 100-year plus 30% has a recorded maximum depth of 3.13m located at within the central area of the site where the topography is at its lowest with a velocity of 1.46 m/s. The 100-year plus 50% has a recorded depth of 3.30 metres and a max velocity of 1.59 m/s.</p> <p>During the 100-year modelled defended event, hazard projected below 0.75m which is identified as a caution, with shallow flowing water or deep standing water. This is located within the lowest topography of the site. The 100 year +20% highlights between 0.75 and 1.25 on the southern boundary of the site which is defined as dangerous for some, Flood Zone with deep or fast flowing water, located at the lowest topography within the western half of the site. The 100 year +30% shows the site is exposed to between 1.25 and 2.00 on the hazard rating identified as dangerous for most people, located on the western boundary of the site with the lowest topography.</p>
		<b>Proportion of site at risk (RoFfSW)</b>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	LIT009		
	Address	Tysoes Nursery and 53 Cosby Road, Littlethorpe		
	Area	1.02 hectares		
	Current land use	Greenfield/Brownfield		
	Proposed land use	Residential		
	Surface Water	30-year	100-year	1,000-year
		7%	14%	42%
		Max depths (m)		
		0.3-0.9m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		<0.25 m/s	<0.25 m/s	>0.25 m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		
		<b>Description of surface water flow paths:</b> The site is affected by surface water flooding in all 3 events. The 30-year and 100-year events are localised areas of ponding of the site, where topography is lowest. The ponding within the site is located within close proximity to the Cosby Brook, but is isolated to the topographic depression in the centre of the site, adjacent to the Cosby Brook. The 1,000-year surface water extent matches closely with Flood Zone 3b, filling a wider area in the western half of the site and covering its entire width in places. The flow routes connect with surface water flow paths from Gurney Crescent, flowing down into the site. Within this site, there is little change in depths (300-900mm) and velocity (less than 0.25m/s) through the storm events. However, in the 1000-year event, max velocity is increases to over 0.25m/s. The deepest areas will be in the area of 30-year ponding in the lowest topography of the site; shallower depths are recorded away from the lowest topography.		
		<b>Reservoir</b> The site is not shown to be at risk of reservoir flooding from the available online maps		
		<b>Flood history</b> The site is shown to be within the reaches of the Environment Agency's Historic Flood Map, which covers the western third of the site similar to the Flood Zones. Developers should contact the LLFA for more information on historic flooding		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT009</b>		
	<b>Address</b>	Tysoes Nursery and 53 Cosby Road, Littlethorpe		
	<b>Area</b>	1.02 hectares		
	<b>Current land use</b>	Greenfield/Brownfield		
	<b>Proposed land use</b>	Residential		
<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 shown to have no implemented flood risk management infrastructure.		
	<b>Residual risk</b>	There is not anticipated to be any residual fluvial risk at this site, but a site specific SFRA should be carried out to confirm this.		
<b>Emergency planning</b>	<b>Flood warning</b>	The site is not covered by in the Environment Agency's Flood Warning System. The site is partially covered in the Environment Agency's Flood Alert system.		
	<b>Access and egress</b>	Access and egress in terms of road access via Cosby Road along the eastern boundary of the site, running north into Littlethorpe, in all fluvial and surface water events. Access and egress would only be gained to the site via the eastern boundary of the site due to the Cosby Brook running along the western boundary.		

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>LIT009</b>
	<b>Address</b>	Tysoes Nursery and 53 Cosby Road, Littlethorpe
	<b>Area</b>	1.02 hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the site from the Cosby Brook model, for the 100 year +20% +30% +50% climate change scenarios. These all cover an area similar to Fluvial Flood Zone 2; however, the extents are slightly smaller area compared to Flood Zone 2, but larger Flood Zone 3a. The modelled climate change data identifies no new flood path characteristics.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>LIT009</b>
	<b>Address</b>	Tysoes Nursery and 53 Cosby Road, Littlethorpe
	<b>Area</b>	1.02 hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Residential
<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 – Alluvium - Clay, silt, and sand (Northern portion of the site)</li> <li>Superficial - Till – Diamicton</li> </ul> </li> <li>At the eastern half of the site Groundwater levels are indicated to be at or very near (within 0.025m) ground level and there is a risk of groundwater flooding at the surface during a 1% AEP event, which may flow to and pool within topographic low spots. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>The western half of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>This site is not located within any historic landfill sites.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'. 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes along the southern and south-western boundaries, preserving these spaces as green infrastructure. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse to ensure flows are not exacerbated downstream within the catchment.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT009</b>
	<b>Address</b>	Tysoes Nursery and 53 Cosby Road, Littlethorpe
	<b>Area</b>	1.02 hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <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. Assessment for runoff should include allowance for climate change effects.</li> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>



# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>LIT009</b>
	<b>Address</b>	Tysoes Nursery and 53 Cosby Road, Littlethorpe
	<b>Area</b>	1.02 hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to the 42% of the site located within Flood Zone 1, therefore the eastern portion of the site. A large proportion of the site is located in Flood Zone 3b which will present challenges on where vulnerable development and SUDS can be placed.</li> <li>• Residential development should not be placed in Flood Zone 3.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Safe access and egress is available from the east via Cosby Road. Access should be steered away from the areas of highest risk to the west due to proximity to the Cosby Brook.</li> <li>• Space for green infrastructure should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and Tributaries model (Cosby Brook). The 20-year flood extent was used to derive Flood Zone 3b. Modelled data was used for the depth, velocity and hazard data derived from the Cosby Baseline model.	
<b>Climate change</b>	Climate change was based on the 2012 River Soar and Tributaries model (Cosby Brook), where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch.	

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT009</b>
	<b>Address</b>	Tysoes Nursery and 53 Cosby Road, Littlethorpe
	<b>Area</b>	1.02 hectares
	<b>Current land use</b>	Greenfield/Brownfield
	<b>Proposed land use</b>	Residential
<b>Fluvial depth, velocity and hazard mapping</b>		There is Fluvial Depth, Velocity and Hazard data available from the Cosby Brook model (2021 River Soar and Tributaries modelling). The 100-year and 100-year + climate change have been assessed.
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	LIT022			
	Address	Land south of Warwick Road and east of Cosby Road			
	Area	10.39 Hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The site is located south west of the city of Leicester and south east of the village of Littlethorpe. The site's northern border is adjacent to Warwick Road and is due west of the M1. The site is located east of Cosby Road. The River Soar is located 420 metres north of the site. The topography of the site has a 7-metre variation in topography from 64m AOD at the most northern portion of the site to 71m AOD at the most southern boundary of the site. The site is located within the floodplain of the River Soar.			
	Existing drainage features	The Environment Agency's Detailed River Network shows drainage features are associated with the River Soar located 420 metres north of the site. The western boundary of the site is located within 168 metres of an unnamed ordinary watercourse that is a tributary of the River Soar. The River Soar flows from west to east of the site. The River Soar and Whetstone Brook confluence is located 530 metres downstream of the site.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		0%	0%	10%	90%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		High			
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)			

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	LIT022		
	Address	Land south of Warwick Road and east of Cosby Road		
	Area	10.39 Hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<b>Available data:</b> The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment. The site lies on the River Soar model. The EA's Flood Map for Planning has been used to inform Flood Zones 2 and 3a (as this incorporates latest modelling) and Flood Zone 3b has been derived from the hydraulic model.		
		<b>Flood characteristics:</b> Flood Zone 2 is present within this site along the northern boundary of the site adjacent to Warwick Road. The modelled Flood Zone data for this site indicated flood risk to this site associated with the northern portion of the site adjacent to Warwick Road, which is due south of the River Soar floodplain. Flood Zone 2 is present within the northern portion of the site, though this is because only a small portion of 2D generalised modelling was available to display here. This does not mean that there is no risk along the remaining area of the site. Developers should investigate flood risk from this area of the site using a detailed hydraulic model, connecting to the River Soar model, to understand the impacts of flood risk and climate change at the site.		
	Surface Water	<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		9%	11%	18%
		Max depths (m)		
		0.3-0.9m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g., 100-year includes the 30-year %)</i>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT022</b>		
	<b>Address</b>	Land south of Warwick Road and east of Cosby Road		
	<b>Area</b>	10.39 Hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
		<p><b>Description of surface water flow paths:</b>  All three surface water flooding events are present across this site, though risk tends to be concentrated up in the northern end of the site, similar to where Flood Zone 2 ponds.  The 30-year event shows that there is a large area of ponding present at the most northern boundary of the site, extending 84 metres south into the site. On the north eastern boundary of the site, a surface water pond 111 metres in length extends south along the eastern boundary. 214 metres south of the northern boundary of the site, a surface water pond is located, extending 29 metres into the western boundary of the site.  The 100-year event identifies a growth of the surface water ponds located on the site. The surface water ponding at the northern boundary of the site increased in length by 16 metres, extending 100 metres into the site. Additionally, surface water ponding is located within the north-western boundary of the site. Within the centre of the site, a 40-metre-long surface water flow path is located. The 1,000-year surface water event bisects where a surface water branch extends westwards from the eastern boundary of the site. Overall, the depth and the velocity within the site remain consistent within the site, where depth is recorded at 300-900mm and velocity at &gt;0.25 m/s across all three flooding events.</p>		
	<b>Reservoir</b>	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	<b>Flood history</b>	The site is not located within the Historic Flood map, and there is no data on the site. Developers should contact the LLFA for more information on Historic Flooding.		
<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 shown to have any implemented flood risk management infrastructure.		
	<b>Residual risk</b>	The site is not deemed to have any residual flood risk.		
<b>Emergency planning</b>	<b>Flood warning</b>	<p>The northern most section of the proposed site (where Flood Zone 2 lies) is located within the Environment Agency's Flood Warning Area "River Soar at Littlethorpe and Narborough"  The site is included within the Environment Agency's Flood Alert Area "Upper Soar Catchment".</p>		

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>LIT022</b>
	<b>Address</b>	Land south of Warwick Road and east of Cosby Road
	<b>Area</b>	10.39 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
	<b>Access and egress</b>	<p>Site access should be permitted via the south west of the site through the use of Cosby Road. This is due to Cosby Road having very little impoundment from surface water events flooding events; however, at present there is no road access directly to Cosby Road. The 30-year and 100-year events present little to no risk to the south eastern portion of the site, which would permit a safe access/egress route but there are no existing roads here.</p> <p>Warwick Road is the most obvious access point; however, this is where both fluvial and surface water risk is highest, flowing over the road and ponding on the site side, so careful consideration is needed regarding how access can be gained to the site.</p>
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard and frequency of both fluvial and surface water flooding.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Detailed fluvial modelling is available at the site from River Soar and Tributaries model for the 100-year +20%, 30% and 50% climate change scenarios. However, this model is located north of the site and therefore there is no detailed information available at the site. In the absence of detailed modelling, Flood Zone 2 can be used as a proxy; this is only mapped for a portion of the site, and therefore climate change will need to be accounted for in detail in a site-specific FRA to understand risk to the site. In general, the floodplain topography is relatively confined, and it would be expected that climate change extents would also follow this floodplain.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>LIT022</b>
	<b>Address</b>	Land south of Warwick Road and east of Cosby Road
	<b>Area</b>	10.39 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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>Northern Half</li> <li>Bedrock – Triassic – Mudstone and Siltstone, Sandstone</li> <li>Superficial – Alluvium – Clay, Silt, Sand</li> <li>Southern</li> <li>Bedrock – Triassic – Mudstone and Siltstone, Sandstone</li> <li>Superficial – Diamicton – Diamicton</li> </ul> </li> <li>The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable' It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse 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</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT022</b>
	<b>Address</b>	Land south of Warwick Road and east of Cosby Road
	<b>Area</b>	10.39 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<p>impact flooding due to post-development runoff. Assessment for runoff should include allowance for climate change effects.</p> <ul style="list-style-type: none"> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development should be concentrated to the 90% of the site located within Flood Zone 1. The development should be steered to the southern portion of the site as this experience far less frequent fluvial and surface water flooding.</li> <li>• Safe access and egress should be directed to the south west of the site due to the lower risk of surface water and fluvial water impoundment of the surrounding access routes.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>LIT022</b>
	<b>Address</b>	Land south of Warwick Road and east of Cosby Road
	<b>Area</b>	10.39 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and Tributaries model (River Soar and Cosby Brook). The 20-year flood extent was used to derive Flood Zone 3b.	
<b>Climate change</b>	Climate change was based on the 2012 River Soar and Tributaries model (River Soar and Cosby Brook), where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch.	
<b>Fluvial depth, velocity and hazard mapping</b>	There is Fluvial Depth, Velocity and Hazard data available from the Soar and Cosby Brook model (2021 River Soar and Tributaries modelling) The 100 year and 100+ climate change has been assessed.	
<b>Surface Water</b>	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.	
<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.	

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	LIT023			
	Address	Land off Oak Road			
	Area	7.88 ha			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The site is located west of the village of Littlethorpe and south of Narborough. The site is 130 metres south of the River Soar that flows from west to east of the northern border of the site. The site is located 130m south of the confluence between the River Soar and the Cosby Brook 90 metres from the south western border of the site, a confluence of the Cosby Brook and an ordinary watercourse is located, flowing north to the River Soar. The Cosby Brook flows west, parallel to the southern border of the site, before turning north-west of the site to meet the Soar. The site is located at a topographic highpoint in the surrounding area, located 67m AOD, 4 metres higher than the surrounding floodplain located at 63m AOD. The topographic low point of the site is located at the most southern boundary at 64m AOD.			
	Existing drainage features	The Environment Agency's detailed river network shows that the sites existing drainage features are associated with the River Soar as well as the Cosby Brook and an unnamed ordinary watercourse. The River Soar flows from a west to east direction with the Cosby Brook flowing from south east to north and the unnamed ordinary watercourse flowing from the west to the confluence of the Cosby Brook. There are two culverts along the northern boundary of the site, one at the north west of the site boundary and one located north east of the site boundary.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		1%	1%	3%	97%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		High			
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g., FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)			

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	LIT023		
	Address	Land off Oak Road		
	Area	7.88 ha		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><b>Available data:</b> The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment. The site lies on the River Soar model at the confluence of the Soar and the Cosby Brook model. The EA's Flood Map for Planning has been used to inform Flood Zones 2 and 3a (as this incorporates latest modelling) and Flood Zone 3b has been derived from the hydraulic models.</p> <p><b>Flood characteristics:</b> The modelled Flood Zone data for this site shows that the site is surrounded by flood risk to the north, west and south, from the River Soar and Cosby Brook confluence and the wider floodplain connection of a large 'island' flow path from the Soar further upstream, which joins back with the flow paths near the site. The majority of the site is located in high ground, with just the most northerly and southerly boundaries located on the very outer extents of the Cosby Brook and Soar floodplains. Fluvial Flood Zones 2, 3a and 3b are all present within the northern and southern areas of the site but only marginally along the boundaries which form the outer reaches of the flood extents. The modelled defended 100-year extent affects the northern border of the site as well as the south-eastern border of the site. The maximum depth within the 100-year model is recorded at 0.27m, with a maximum velocity of 0.30m/s and combined hazard at a maximum threshold of 0.75-1.25, which presents a moderate risk, described as dangerous for some, with deep or fast flowing water all located at the most north easterly border of the site. The 100-year +30% climate change extent identifies a maximum depth of 0.45m, with a maximum velocity of 0.36m/s with a combined hazard of between 1.25-2.50 which presents a significant danger with deep fast flowing water present within the north-eastern boundary of the site. The 100-year +50% climate change event presents a maximum flood depth within the site at 0.51m, with a maximum velocity of 0.64m/s at the north-western border of the site.</p>		
	Surface Water	<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		<1%	1%	2%
		Max depths (m)		
		0.3-0.9m	0.3-0.9m	0.3-0.9m

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	LIT023		
	Address	Land off Oak Road		
	Area	7.88 ha		
	Current land use	Greenfield		
	Proposed land use	Residential		
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		
		<b>Description of surface water flow paths:</b> The site is affected by surface water flooding in all three events, but overall, this is very low. All 3 events are localised to the top of the hill in the centre of the site; other than this, the surface water risk largely follows the pattern of the Flood Zones in the lower topographic floodplains bordering or near the site. The 30-year event identifies an area of surface water ponding the in the centre of the site, 55 metres north-west of Beechwood Road. The area of ponding is 25 metres in length and 10 metres in width. Within the 100-year event, the surface water ponding increases in length by 5 metres and width by 6 metres. Furthermore, located at the north-eastern border of the site, an area of ponding ingresses the site, but the majority of the ponding is located along or outside the site boundary. The 1,000-year event spreads a little further but remains in this confined depression on top of the hill. Additionally, at the north-eastern boundary of the site, surface water enters site by 7 metres. Furthermore, the north-western boundary of the site sees surface water ingress 4 metres into the site. Overall, the change in surface water depth and velocity is identified between the 30 and 100-year events, where depth increase from <300mm to 300-900mm and velocity from <0.25 m/s to >0.25 m/s. Between the 100 and 1,000-year events, depth and velocity remained at these levels. The areas of surface water ponding are located within a topographic low point of 66m AOD surrounded by 67m AOD which allows the water to pond and settle within this low point. Overall, the velocity and depth remain fairly consistent across all three surface water events. With depth at 300-900mm and velocity >0.25 m/s across all three events.		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT023</b>		
	<b>Address</b>	Land off Oak Road		
	<b>Area</b>	7.88 ha		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
	<b>Flood history</b>	The northern, western, and southern boundaries of the proposed site are shown to be within the reaches of the Environment Agency's Flood Risk Map as it follows the Cosby Brook and River Soar around the site. There are no specific recorded incidents. The Lead Local Flood Authority should be contacted to obtain further details.		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
	<b>Residual risk</b>	This site is not shown to have any implemented flood risk management infrastructure.  Residual risk at the site is deemed low, but there is a potential risk from the following: If the two culverts located along the northern boundary of the site were to block, this could increase the flood depths and extents slightly in this zone of impoundment between these culverts and the site. It is unlikely to impact the site significantly as the risk to the site is located relatively higher topographically. The potential impacts should be considered in an FRA.		
<b>Emergency planning</b>	<b>Flood warning</b>	The northern area of the proposed site is shown to be within the reaches of the Environment Agency's Flood Warning Areas "River Soar at Littlethorpe and Narborough". The site is shown to be located within the Environment Agency's Flood Alert Area's map for "Upper Soar Catchment".		
	<b>Access and egress</b>	Access and egress from the site can be permitted via a pre-existing track way bisecting the site from east to west. This track also permits access to Lodge Farm and could be used to permit access and egress to both the northern and southern sections of the site. Access and egress should be avoided to the north, west and south, due to extensive flooding in the floodplain surrounding the site. The majority of Littlethorpe is located at higher elevation and out of fluvial and surface water flood risk areas, providing access to Cosby Road and Warwick Road.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT023</b>
	<b>Address</b>	Land off Oak Road
	<b>Area</b>	7.88 ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the site from River Soar and Cosby Brook Model, for the 100 year +20%, +30%, +50% climate change scenarios. These all cover an area similar to Fluvial Flood Zone 2; however, the extents are slightly smaller area compared to Flood Zone 2. The modelled climate change data identifies no new flood path characteristics.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT023</b>
	<b>Address</b>	Land off Oak Road
	<b>Area</b>	7.88 ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Triassic Rocks, Mudstone, Siltstone and Sandstone.</li> <li>Superficial – Alluvium Class – Clay, Silt and Sand</li> </ul> </li> <li>At most of the site groundwater levels are indicated to be at or very near (within 0.025m) ground level and there is a risk of groundwater flooding at the surface during a 1% AEP event, which may flow to and pool within topographic low spots. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>At the most of the northern half of the site, groundwater levels are indicated to be less than 1m below ground level during a 1% AEP event. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>The southernmost and northernmost edges of the site are not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT023</b>
	<b>Address</b>	Land off Oak Road
	<b>Area</b>	7.88 ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>Residential development is classified as 'More Vulnerable'. It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. 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> </ul> <p>More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b.</p>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse 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</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT023</b>
	<b>Address</b>	Land off Oak Road
	<b>Area</b>	7.88 ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<p>impact flooding due to post-development runoff. Assessment for runoff should include allowance for climate change effects.</p> <ul style="list-style-type: none"> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> </ul> <p>Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>LIT023</b>
	<b>Address</b>	Land off Oak Road
	<b>Area</b>	7.88 ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to 97% of the site located within Flood Zone 1. It is recommended that the development on this site is directed away from the northern and southern boundaries where the Flood Zones encroach into the site; however, the majority of the site is raised and outside the area of flood risk.</li> <li>• Surface water flooding is minimal within the site, with a flow path along the northern boundary. Surface water ponding in the centre of the site is located within a topographic low amidst topographic highs within the site.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and Tributaries model (River Soar and Cosby Brook). The 20-year flood extent was used to derive Flood Zone 3b.	
<b>Climate change</b>	Climate change was based on the 2012 River Soar and Tributaries model (River Soar and Cosby Brook), where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch.	
<b>Fluvial depth, velocity and hazard mapping</b>	There is Fluvial Depth, Velocity and Hazard data available from the Soar and Cosby Brook model (2021 River Soar and Tributaries modelling) The 100 year and 100+ climate change has been assessed.	
<b>Surface Water</b>	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.	

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LIT023</b>
	<b>Address</b>	Land off Oak Road
	<b>Area</b>	7.88 ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LUB002</b>			
	<b>Address</b>	Land at Desford Road / Beggar's Lane			
	<b>Area</b>	45.25 Hectares			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	The site is located north of Enderby and south-west of Lubbethorpe. The site is located between Desford Road and Beggars Lane. The site is west of a confluence of two unnamed ordinary watercourses. The sites topography identifies a 20-metre difference between the highest area and the lowest areas of the site. A topographic high of 99.67m AOD at the western perimeter of the site with a topographic low of 79.88m AOD at the eastern border of the site.			
	<b>Existing drainage features</b>	The Environment Agency's Detailed River Network shows that the existing drainage features associated with this site is that of an unnamed ordinary watercourse, located at the eastern perimeter of the site. A culvert is located underneath Beggars Road, on the eastern perimeter of the site.			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		0%	0%	0%	100%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		Low			
		<i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>			

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	LUB002		
	Address	Land at Desford Road / Beggar's Lane		
	Area	45.25 Hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><b>Available data:</b> The Environment Agency's Flood Zone mapping has been used in this assessment.</p> <p><b>Flood characteristics:</b> The modelled Flood Zone data for this site indicates that the site is located solely within Flood Zone 1. The site is not at risk of flooding in the 1000-year event.</p> <p>As there is no detailed hydraulic modelling available for the ordinary watercourse on this site, there is no depth, velocity, or hazard information. The risk of surface water flooding can be used to give an indication of the risk from ordinary watercourses and suggests that the topographic depression running through the site is at risk of fluvial flooding in all modelled events. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest next to the channel, where topography is lowest. Depths and velocities would likely reduce the further away from the channel were land rises. Hazard would therefore be highest in the immediate vicinity of the channel.</p>		
	Surface Water	<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		3%	5%	10%
		Max depths (m)		
		0.3-0.9m	>0.9m	>0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i></p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	LUB002
	Address	Land at Desford Road / Beggar's Lane
	Area	45.25 Hectares
	Current land use	Greenfield
	Proposed land use	Residential
		<p><b>Description of surface water flow paths:</b></p> <p>The site is affected by all three modelled surface water flooding events.</p> <p>In the 30-year surface water event, a flow path bisects the northern area of the site from west to east, following the topographic depression. At the very eastern perimeter of the site, the surface water is pools within the topographic low point at Beggars lane, before flowing across Beggars lane towards the ordinary watercourse. Two surface water ponds are located within the northern portion of the site, one along the northern boundary of the site, 17 metres in length and the other in the northern central area of the site, 36 metres in length. Another surface water pond 25 metres across is located in the centre of the site. Depths in the flow path remain below 0.3m with depths of 0.3m-0.6m in the areas of ponding. Velocities within the flow are greater than 0.25m/s.</p> <p>In the 100-year surface water flooding event several new areas of ponding form along the northern border of the site. the existing areas of ponding expand slightly. The main flow path does not increase significantly in extent and depths remain below 0.3m with velocities greater than 0.25m/s. Depths in the ponding areas remain largely between 0.3-0.6m with depths of over 0.9m in isolated areas.</p> <p>in the 1000-year event two additional surface water branches develop, flowing from the northern boundary of the site, converging and then flowing into the main surface water channel in the centre of the site.</p> <p>Two additional surface water branches also form in the south of the site, flowing north from the south eastern area of the site and converging with the main surface water flow. An area of surface water ponding forms in the west of the site, extending 67 metres from north to south. In the north western corner of the site, surface water from Desford Road flows into the site. Depths in the main flow are largely between 0.3 and 0.6m with depths of over 0.9m present in the largest areas of ponding, particularly adjacent Beggars lane. Velocities are greater than 0.5m.</p>
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.
	Flood history	The site is shown to not be within the reaches of the Environment Agency's Historic Flood Maps.



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LUB002</b>		
	<b>Address</b>	Land at Desford Road / Beggar's Lane		
	<b>Area</b>	45.25 Hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not shown to have any implemented flood risk management infrastructure.		
	<b>Residual risk</b>	<p>Residual risk at the site is deemed low, but there is a potential risk from the following:</p> <p>A culvert located along the eastern boundary of the site could pose a potential flood risk as, if the culvert were to become blocked, this may cause the water to overflow onto Beggars Lane and into the site. This has the potential to increase the depth, velocity, and area of the surface water flooding in this area.</p>		
<b>Emergency planning</b>	<b>Flood warning</b>	<p>The site is not included within an Environment Agency Flood Warning Area.</p> <p>The site is not included within an Environment Agency Flood Alert Area.</p>		
	<b>Access and egress</b>	<p>Access to the north western area of the site can be achieved via Desford Road and the north eastern by Beggars Lane. Desford Road is affected by surface water flooding across all three-surface water events, which could impede access. Along the Beggars Lane, access can be permitted to the north eastern portion of the site, however, further north of the site, the road is affected by surface water flooding. Access to the southern portion of the site can also be established via Beggars Lane and Desford Road. Access to the southern area of the site is made challenging by the eastern border of the site flooding during the 1000-year event as surface water branching extends across Beggars Road, which could impede access and egress.</p> <p>Establishing an effective access and egress routes is made challenging due to the site being bisected at two points by the Surface Water flooding events. The 30, 100 and 1000-year surface water flooding events bisect the site from west to east across the site and additional flows cross the site in the 100-year event. Developers will need to demonstrate safe access and egress in the 100-year event accounting for climate change and raising of access routes must not impeded surface water flows.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LUB002</b>
	<b>Address</b>	Land at Desford Road / Beggar's Lane
	<b>Area</b>	45.25 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding</li> <li>There is no detailed fluvial modelling available at this site.. A detailed modelling study should test the latest published climate change allowances, which may refine risk in the centre of the site.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40 % event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This suggests that the site is highly sensitive to increases in runoff as a result of climate change. This would require a detailed FRA to access the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LUB002</b>
	<b>Address</b>	Land at Desford Road / Beggar's Lane
	<b>Area</b>	45.25 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Triassic Rocks – Sandstone, Siltstone, Mudstone.</li> <li>Superficial – Till - Diamicton</li> </ul> </li> <li>The majority of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>There is a small band running west-east through the site where groundwater levels are indicated to be at or very near (within 0.025m) ground level and there is a risk of groundwater flooding at the surface during a 1% AEP event, which may flow to and pool within topographic low spots. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LUB002</b>
	<b>Address</b>	Land at Desford Road / Beggar's Lane
	<b>Area</b>	45.25 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'</p> <p>It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site.</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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required as the site is greater than 1 haectare.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A detailed hydraulic model at Flood Risk Assessment stage, to confirm flood risk.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and surface water events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LUB002</b>
	<b>Address</b>	Land at Desford Road / Beggar's Lane
	<b>Area</b>	45.25 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space. The existing surface water flow path running through the centre of the site should be incorporated into SuDS using green infrastructure and should form the backbone of any SuDS proposal.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>LUB002</b>
	<b>Address</b>	Land at Desford Road / Beggar's Lane
	<b>Area</b>	45.25 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>As the site is greater than 1 ha, a detailed FRA will be required.</li> <li>Access and egress are demonstrated during the 100-year fluvial and surface water events accounting for climate change. Particular consideration should be given to siting of access routes with regards to surface water risk and the site is bisected by a significant surface water flow path which also affects nearby roads. Raising of access routes must not impede surface water flows.</li> <li>The site extents include a Main River (in culvert), where an easement of 8m is required from either side of the bank. In this site, the culvert runs under the eastern boundary, so an 8-10m easement area will be required from the channel. Developers will be required to apply for a permit and ensure the activity being carried out over this easement would not increase flood risk.</li> <li>The significant surface water flow through the site is integrated into SuDS using blue-green infrastructure.</li> <li>If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
<p>The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>LUB002</b>
	<b>Address</b>	Land at Desford Road / Beggar's Lane
	<b>Area</b>	45.25 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.
<b>Climate change</b>		Climate change was based on Flood Zone 2 to serve as an indication of possible extents. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.
<b>Fluvial depth, velocity and hazard mapping</b>		There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping has been used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.



# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	NAR008			
	Address	Land of Leicester Road			
	Area	3.20 hectares			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The site is located due south of Leicester Road, east of the M1 motorway. Due south of the site is the Birmingham to Leicester railway line. The site is located due east of Narborough. The River Soar is located due east of the site which flows north east from the site, with the River Sence shortly converging from the east downstream of Blaby Road. There are pond features located in this confluence area the site lies in the upper Soar catchment.			
	Existing drainage features	The Environment Agency's Detailed River Network shows drainage features at this site are associated with the River Soar which is located due west of the site. Additionally, an unnamed ordinary watercourse is present along the site's southern boundary: this originates from west of the M1 motorway, where it flows through a culvert, reappearing at the site's south-western edge. This then takes a 90-degree angle north along the site's eastern boundary and into the Soar. The Grand Union Canal is located downstream of the site.			
	Fluvial	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		<1%	<1%	5%	95%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		High			
		<i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>			

		<p><b>Available data:</b></p> <p>The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment. The site lies on the River Soar Model. The EA's Flood Map for Planning has been used to inform Flood Zones 2 and 3a (as this incorporates latest modelling) and Flood Zone 3b has been derived from the hydraulic model.</p> <p><b>Flood characteristics:</b></p> <p>The modelled Flood Zone data for this site indicates that flood risk to this site is restricted to the river valley of the River Soar. The River Soar flows adjacent to the eastern border of the site. Fluvial Flood Zone 2 and 3a are all present within this site but are confined to the eastern boundary of the site as this is the outer limit of the fluvial floodplain.</p> <p>Fluvial Flood Zone 2 covers approximately 5% of the site, confined to the north eastern corner of the site, located at the area of lowest topography.</p> <p>Flood Zone 3a only just clips the north-eastern boundary on its outer extent. Fluvial Flood Zone 3b is shown to have no flooding effect on the site.</p> <p>There are two topographic features in the floodplain which will have an impact on the flood extents from the Soar: the railway line to the south, which impounds flow upstream, and the Blaby Road, downstream of the site, which only overtops in Flood Zone 2.</p> <p>An unnamed ordinary watercourse is present along the site's southern boundary: this originates from west of the M1 motorway, where it flows through a culvert, reappearing at the site's south-western edge. This then takes a 90-degree angle north along the site's eastern boundary and into the Soar. Risk from this drain is deemed to be low but there is no available information.</p> <p>The modelled defended 100-year extent affects the site with a maximum depth recorded at 0.17m at the north eastern boundary of the site, which covers approximately 1% of the site.</p> <p>The maximum velocity at this site in the 100-year event is 0.015m/s.</p> <p>The 100 year +30% climate change event covers slightly more land along the north eastern boundary of the site with a maximum depth of 0.11m and a maximum velocity of 0.02m/s. The 100-year +50% climate change extent covers a greater extent and maximum depth of 0.31m with a maximum velocity of 0.17m/s identified on the north-eastern boundary of the site.</p> <p>During the 100-year +30 modelled defended event, hazard is projected at a maximum threshold of &lt;0.75 which is categorised as low/ 'caution' with shallow flowing water or deep standing water identified on the north-eastern boundary of the site.</p>																					
	Surface Water	<table border="1"> <thead> <tr> <th colspan="3"><b>Proportion of site at risk (RoFfSW)</b></th> </tr> <tr> <th><b>30-year</b></th> <th><b>100-year</b></th> <th><b>1,000-year</b></th> </tr> </thead> <tbody> <tr> <td>7%</td> <td>18%</td> <td>35%</td> </tr> <tr> <td colspan="3">Max depths (m)</td> </tr> <tr> <td>0.3-0.9m</td> <td>0.3-0.9m</td> <td>0.3-0.9m</td> </tr> <tr> <td colspan="3">Max velocity (m/s)</td> </tr> <tr> <td>&gt;0.25 m/s</td> <td>&gt;0.25 m/s</td> <td>&gt;0.25 m/s</td> </tr> </tbody> </table> <p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i></p> <p><b>Description of surface water flow paths:</b></p> <p>The site is affected by surface water flooding in all 3 events, primarily formed of a flow path from the west, where 2 flow paths</p>	<b>Proportion of site at risk (RoFfSW)</b>			<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>	7%	18%	35%	Max depths (m)			0.3-0.9m	0.3-0.9m	0.3-0.9m	Max velocity (m/s)			>0.25 m/s	>0.25 m/s	>0.25 m/s
<b>Proportion of site at risk (RoFfSW)</b>																							
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Max velocity (m/s)																							
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>NAR008</b>
	<b>Address</b>	Land of Leicester Road
	<b>Area</b>	3.20 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<p>converge around the motorway, forming a single path through the site to the east, joining the Soar floodplain.</p> <p>The 30-year event is characterised by areas of ponding towards the western corner of the site boundary flowing towards the centre of the site. Additionally, the eastern corner of the site boundary has a large area of ponding. Around the Soar, the 30-year event largely follows the channel itself.</p> <p>The 100-year flooding event bisects the site from the western corner to the eastern corner of the site. The flow path at its greatest width is measured at 36m, which is significant, and development should be steered away from this flow path.</p> <p>The 1,000-year event covers 35% of the site and bisect the site from west to east.</p> <p>All events show a maximum depth of between 0.3-0.9m and velocities of &gt;0.25m/s. .</p>
	<b>Reservoir</b>	<p>The site is shown to be at risk of reservoir flooding from the Mallory Park Reservoir.</p> <p>Reservoir risk overall is deemed low, but this should be assessed in a site-specific Flood Risk Assessment.</p>
	<b>Flood history</b>	<p>The site is shown not to be within the reaches of the Environment Agency's Historic Flood Map. The Lead Local Flood Authority should be contacted to obtain further details on historic flooding near the site.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>NAR008</b>		
	<b>Address</b>	Land of Leicester Road		
	<b>Area</b>	3.20 hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
	<b>Residual risk</b>	<p>Residual risk at the site is deemed low, but there is a potential risk from the following:  The small unnamed watercourse which flows along the site's southern and eastern boundaries appears to enter a culvert on the eastern edge.  If Blaby Road was to block at the River Soar structure downstream of the site, this could increase flood depths and extents slightly in this zone of impoundment between the railway line and Blaby Road. It is unlikely to impact the site significantly as the risk to the site is already the outer edge of the wide floodplain extents and the structure may be a suitable size, but it could increase risk in the north-eastern corner if depths or extents were to increase slightly.  The potential impacts should be considered in a FRA.</p>		
<b>Emergency planning</b>	<b>Flood warning</b>	<p>This site is incorporated in the Environment Agency's Flood Alert Service.  This site is incorporated in the Environment Agency's Flood Warning Service.</p>		
	<b>Access and egress</b>	<p>Access and egress at this site are only possible via Leicester Road running along the western boundary of the site. Access and egress from Leicester Road can be affected by surface water flooding across all surface water extents. Leicester Road under passing the M1 is identified to pond significantly across all three events and flow along Leicester Road in the south-west corner of the site, preventing access for both residents and emergency services. Access is possible along Leicester Road from the site to the north. No vehicle access is currently viable via the northern boundary of the site as the site borders a resident area on Abbey Road, unless provisions were made. The eastern boundary of the site is also not a viable option for access and egress due to bordering the ordinary watercourse and the Soar floodplain.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>NAR008</b>
	<b>Address</b>	Land of Leicester Road
	<b>Area</b>	3.20 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the site from the 1D-2D River Soar and Tributaries modelling for the 100 year +20%, +30%, +50% climate change scenarios. These all cover an area similar to Fluvial Flood Zone 2; however, the extents are slightly smaller compared to Flood Zone 2. The modelled climate change data identifies no new flood flow path characteristics.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events, which is shown to bisect the site quite significantly. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>NAR008</b>
	<b>Address</b>	Land of Leicester Road
	<b>Area</b>	3.20 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Till - Diamicton</li> </ul> </li> <li>The majority and eastern half of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>At the western half of the site groundwater levels are indicated to be between 0.5 and 5m below ground level and there is a risk of flooding to subsurface assets and below ground development such as basements. Groundwater monitoring is recommended to determine the seasonal variability of groundwater levels, as this may affect the design of the surface water drainage system.</li> <li>Towards the middle of the site, groundwater levels are indicated to be less than 1m below ground level, or very near (within 0.025m) ground level during a 1% AEP event. Closer to the ground level, water may flow to and pool within topographic low spots. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>This site is not located in an area of historic landfill site/s.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>NAR008</b>
	<b>Address</b>	Land of Leicester Road
	<b>Area</b>	3.20 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'</p> <p>It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site, but that consideration is also given to the large surface water flow path which bisects the site.</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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Flood risk from the small ordinary watercourse along the site's southern and eastern boundaries should be investigated in a site-specific FRA. This may require a hydraulic model.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>NAR008</b>
	<b>Address</b>	Land of Leicester Road
	<b>Area</b>	3.20 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <li>On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>NAR008</b>
	<b>Address</b>	Land of Leicester Road
	<b>Area</b>	3.20 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to 95% of the site located within Flood Zone 1. Therefore, the western portion of the site. A small area within the north eastern area of the site is located within Flood Zone 3 and so development should be avoided here.</li> <li>• Residential development should be avoided in Flood Zone 3 and steered away to the lowest risk areas in the site.</li> <li>• Surface water flood risk presents development challenges as there is a large flow conveyance route bisecting the site from west to east in the 100-year and 1,000-year events. Development should ideally be steered away from here or mitigated, to prevent displacement of water elsewhere.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Safe access and egress need to be considered as the site is inaccessible from the east due to the proximity of the River Soar. Access to the site can be permitted via Leicester Road located on the north western boundary of the site and steered north away from surface water flooding around the motorway.</li> <li>• Space for green infrastructure should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning. This is based on the 2012 River Soar and Tributaries model (River Soar). The 20-year flood extent was used to derive Flood Zone 3b.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>NAR008</b>
	<b>Address</b>	Land of Leicester Road
	<b>Area</b>	3.20 hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate change</b>		Climate change was based on the 2012 River Soar and Tributaries model (River Soar), where the 100-year was uplifted by +20%, +30% and +50% for the 2080's epoch.
<b>Fluvial depth, velocity and hazard mapping</b>		There is Fluvial Depth, Velocity and Hazard data available from the River Soar model (2021 River Soar and Tributaries modelling). The 100-year and 100-year + climate change have been assessed.
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>NAR019</b>			
	<b>Address</b>	Land west of Narborough, north of Huncote Road			
	<b>Area</b>	6.13 Hectares			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	The site is located west of Narborough and east of Huncote. The site shares its western border with an unnamed ordinary watercourse which converges with the River Soar 215 metres south of the site. The southern boundary of the site borders Huncote Road. The topography of the site shows a westerly sloping site towards the flood plain of the unnamed ordinary watercourse. A topographic high exists northeast of the site, the highest elevation being 82m AOD in the north-eastern corner of the site. Lower elevations of 67m AOD exist towards the southwest nearing the unnamed watercourse.			
	<b>Existing drainage features</b>	The Environment Agency's Detailed River Network shows drainage features are associated with the unnamed ordinary watercourse which flows from the north to the south of the site, towards the confluence with the River Soar. A culvert is located below Huncote road at the southwestern border of the site.			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		0%	5%	5%	95%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		High			
		<i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g., FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>			

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	NAR019		
	Address	Land west of Narborough, north of Huncote Road		
	Area	6.13 Hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<b>Available data:</b> The Environment Agency's Flood Zone mapping has been used in this assessment. This is based on 2D generalised modelling. There is no detailed modelling available.		
		<b>Flood characteristics:</b> The Flood Zone Data for this site indicates flood risk through this site is restricted by the river channel of the unnamed ordinary watercourse located at the western border of the site, flowing from the north to the south of the site. Due to the topography of the site, with the higher ground to the east, the western border of the site will be adversely affected by impacts of flooding events. Fluvial Flood Zones 2 and 3a are present within this site and are all confined to a similar area within the site along the western boundary. Fluvial Flood Zone 2 extends 38 metres west into the site at the southwestern border of the site. As there is no detailed hydraulic model available at this site, there is no Flood Zone 3b, depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest next to the channel, where the topography is lowest. Depths and velocities would likely reduce the further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.		
	Surface Water	<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		9%	13%	21%
		Max depths (m)		
		>0.9m	>0.9m	>0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	NAR019
	Address	Land west of Narborough, north of Huncote Road
	Area	6.13 Hectares
	Current land use	Greenfield
	Proposed land use	Residential
		<p><b>Description of surface water flow paths:</b></p> <p>The site is affected by surface water flooding in all 3 events, more so than fluvial risk. Due to the topography of the site, the western border of the site will be more adversely affected by impacts of surface water flooding events where land is lower at the floodplain of the ordinary watercourse.</p> <p>The 30-year event covers 9% of the site and is located along the western boundary of the site, where the lowest topography of the site is identified. There is an area of ponding located at the south western boundary of the site, located by the culvert under Huncote Road.</p> <p>The 100-year event covers approximately 13% of the site. The 100-year event shows a surface water branch extending 150 metres along the southern boundary of the site from the raised ground around the edge of Narborough. Additionally, the 100-year event identifies surface water overflowing the culvert beneath Huncote road into the River Soar floodplain.</p> <p>The 1,000-year event covers approximately 21% of the site. A larger surface water branch extends west along the southern boundary for 150 metres, from the raised ground around the edge of Narborough.</p> <p>Across all three surface water events, the depth of the surface water is above 900mm and the velocity of surface water is over 0.25 m/s.</p>
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.
	Flood history	The site is not located within the Historic Flood map, therefore, there is no data on the site. The Lead Local Flood Authority should be contacted to obtain further details.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>NAR019</b>		
	<b>Address</b>	Land west of Narborough, north of Huncote Road		
	<b>Area</b>	6.13 Hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not protected by formal flood defences.		
	<b>Residual risk</b>	Residual risk at the site is deemed low due to the lower topography and ponding already at the south-western boundary, but there is a potential risk from the following culvert at Huncote Road: If the culvert were to become blocked, this could cause flood water to build up in the southern area of the site, increasing flood depths and extents slightly within the south western area of the site corner if depths or extents were to increase slightly. The potential impacts should be considered in an FRA.		
<b>Emergency planning</b>	<b>Flood warning</b>	The site is incorporated within the Environment Agency's Flood Warning Area "River Soar at Croft". This site is incorporated within the Environment Agency's Flood Alert Area "Upper Soar Catchment".		
	<b>Access and egress</b>	Access and egress from the site would be viable via the south eastern corner of the site from Huncote Road. As the site is bisected by the 1,000-year Risk of Surface Water Flooding event, challenges to accessing and egressing from the northern and western portions of the site are presented. Access should be avoided to the west where the unnamed watercourse fluvial and surface water risk is greatest.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>NAR019</b>
	<b>Address</b>	Land west of Narborough, north of Huncote Road
	<b>Area</b>	6.13 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and therefore Flood Zone 2 has been used as a conservative indication of flood risk from climate change. This extends across the western boundary of the site western boundary of the site, encompassing the lower incline ground. A detailed modelling study should test the latest published climate change allowances, which may refine risk in the western area of the site.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA</p>



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>NAR019</b>
	<b>Address</b>	Land west of Narborough, north of Huncote Road
	<b>Area</b>	6.13 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Triassic Rocks, Mudstone, Siltstone and Sandstone.</li> <li>Superficial – Alluvium Class – Clay, Silt and Sand</li> </ul> </li> <li>The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>Residential development is classified as 'More Vulnerable'. It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• A detailed hydraulic model may be required at the site for a FRA assessment, using channel survey to confirm Flood Zone 3b, climate change extents and depths, velocities, and hazard. The site lies just outside of detailed model coverage.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>NAR019</b>
	<b>Address</b>	Land west of Narborough, north of Huncote Road
	<b>Area</b>	6.13 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <li>On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>NAR019</b>
	<b>Address</b>	Land west of Narborough, north of Huncote Road
	<b>Area</b>	6.13 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to 95% of the site located within Flood Zone 1, therefore, the eastern portion of the site is where development should be focussed on for future development.</li> <li>• A detailed hydraulic model may be required at site-specific stage to confirm the extent of risk along the western edge of the site.</li> <li>• Safe access and egress from the site can be obtained from the south-eastern border of the site via Huncote Road.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> <li>• Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.
<b>Climate change</b>		Climate change was based on Flood Zone 2 to serve as an indication of possible extents. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>NAR019</b>
	<b>Address</b>	Land west of Narborough, north of Huncote Road
	<b>Area</b>	6.13 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Fluvial depth, velocity and hazard mapping</b>		There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping can be used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage.
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	STO025			
	Address	Land south of Broughton Road			
	Area	8.85 ha			
	Current land use	Greenfield			
	Proposed land use	Residential			
Sources of flood risk	Location of site within catchment	The site is located to the south west of Leicester, in the south east of Stoney Stanton, a large village in the Blaby district. The northern boundary of the site lies adjacent to Broughton Road. The Site is bound to the south and west by Sapcote Road and Stoney Cove and greenfield land to the east. The north west of the site is bound by an unnamed ordinary watercourse which is a tributary to the River Soar, in the Upper Soar catchment. The unnamed watercourse converges with the River Soar 1.5km to the north east of the site.			
	Existing drainage features	The Environment Agency’s Detailed River Network shows drainage features at this site are associated with the unnamed ordinary watercourse along the western boundary, which is a tributary to the River Soar. A large lake, Stoney Cove, is located 50m to the south, upslope of the site.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		0%	0%	0%	100%
		Highest zone of risk (Risk of Flooding from Rivers and Sea)			
		Very Low			
		The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)			
		Available data: The Environment Agency’s Flood Zone mapping has been used in this assessment. Flood characteristics: The modelled Flood Zone data for this site indicates that the site is located solely within Flood Zone 1. The site is not shown to be at risk of flooding in the 1000-year event, although the site may be at risk from the unmodelled ordinary watercourse. There is no detailed hydraulic modelling available for the ordinary for the ordinary watercourse on this site, therefore there is no depth, velocity, or hazard information. This should be investigated at site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest nearest the channel, where topography is lowest. Depths and velocities would likely reduce the further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.			

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	STO025		
	Address	Land south of Broughton Road		
	Area	8.85 ha		
	Current land use	Greenfield		
	Proposed land use	Residential		
	Surface Water	Proportion of site at risk (RoFfSW)		
		30-year	100-year	1,000-year
		15%	21%	27%
		Max depths (mm)		
		0.3-0.9m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)		
		Description of surface water flow paths:		
		The site is affected by surface water flooding in all 3 modelled events.		
		In the 30-year event a significant flow path forms in the north of the site, in the area of lowest topography. The flow path interacts with the watercourse to the west of the site, flowing in a north easterly direction. The flood extent is greatest at the northern boundary, where water backs up behind the road.		
		No new flow paths form during the 100-year event, although the extent of the risk is greater.		
		In the 1,000-year event a new surface water flow path forms flowing from the north east of the site into the main flow path at the northern boundary. This flow path bisects the north eastern corner of the site from the east to northwest of the area. The 1,000-year surface water event covers a total area of 27% of the site, predominantly in the west of the site.		
		Overall, depths in all three events are 0.3-0.9m with velocities greater than 0.25m/s) throughout the events. The deepest areas will be in the flow paths in the lowest topography of the site, with shallower depths as the extents spread away from here.		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	The site is not shown to be within the reaches of the Environment Agency's Historic Flood Map. The Lead Local Flood Authority should be contacted to obtain further details.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>STO025</b>		
	<b>Address</b>	Land south of Broughton Road		
	<b>Area</b>	8.85 ha		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not protected by any formal flood defences.		
	<b>Residual risk</b>	There is no residual risk presented at this site. There is no anticipated fluvial flood risk however a site-specific FRA should be carried out.		
<b>Emergency planning</b>	<b>Flood warning</b>	The site is not within an Environment Agency Flood Alert Area. The site is not within an Environment Agency Flood Warning Area		
	<b>Access and egress</b>	Access to the site can be established via Broughton Road to the north of the site. The northern corner of the site is affected by surface water flooding during all events however the depths are projected to be between 300-900mm, further investigation will be required to ensure access and egress is not impeded. Sapcote Road can provide access to the south of the site, however, is also affected during all 3 surface water events. Site-specific investigations should be carried out to further understand the impact of surface water flooding. Access should be steered away from the western extent of the site where surface water flood risk is at its greatest.		
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and the site is not within the vicinity of flood zones. Detailed modelling of the ordinary water course on the north boundary of the site should include the latest published climate change allowances.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>		



# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>STO025</b>
	<b>Address</b>	Land south of Broughton Road
	<b>Area</b>	8.85 ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Mercia Mudstone group - Mudstone</li> <li>Superficial – Western extent – Alluvium – Clay, Silt, Sand and Gravel. Eastern extent – Thrussington member – Diamicton.</li> </ul> </li> <li>The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied. As the entire site is within Flood Zone 1, the exception test is not required. Residential development is classified as 'More Vulnerable'.</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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required as the development is greater than one hectare.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model will be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents along the western boundary, using channel topographic survey.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance; Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures to reduce surface water flood risk downstream of the site.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes preserving these spaces as green infrastructure. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and surface water events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk and raising of access routes should not impede surface water flows.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>STO025</b>
	<b>Address</b>	Land south of Broughton Road
	<b>Area</b>	8.85 ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <li>On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse, and permeable paving.</li> <li>Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>The existing surface water flow in the north of the site should be incorporated into SuDS using blue-green infrastructure.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>STO025</b>
	<b>Address</b>	Land south of Broughton Road
	<b>Area</b>	8.85 ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>Development on the site is likely to be possible if:</p> <ul style="list-style-type: none"> <li>• Development is limited to the area of the site not at-risk from surface water flooding, therefore avoiding the western boundary of the proposed site.</li> <li>• Safe access and egress can be demonstrated during the 100-year event, accounting for climate change. Consideration will need to be given to the significant surface water flows on site. .</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Detailed modelling is undertaken of the unnamed watercourse on the northern boundary as part of a site-specific FRA to inform the risk to the site and residents of the site are not shown to be at risk.</li> <li>• The significant surface water flow across the north of the site is integrated into SuDS using green infrastructure.</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.
<b>Climate change</b>		Climate change was based on Flood Zone 2 to serve as an indication of possible extents. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>STO025</b>
	<b>Address</b>	Land south of Broughton Road
	<b>Area</b>	8.85 ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Fluvial depth, velocity and hazard mapping</b>		There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping has been used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage; the EA are currently updating the Rothley Brook with more detailed modelling; developers should contact the EA to ascertain the latest data for FRAs.
<b>Surface Water</b>		The Environment Agency's Risk of Flooding from Surface Water dataset has been used to define areas at risk from surface water flooding.
<b>Surface water depth, velocity and hazard mapping</b>		The surface water depth, velocity, and hazard mapping for the 1 in 30, 100 and 1000-year events (considered to be medium risk) is taken Environment Agency's Risk of Flooding from Surface Water dataset.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>STO029</b>			
	<b>Address</b>	Revised land west of Stoney Stanton			
	<b>Area</b>	285.59			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	<p>The site is located to the south west of Leicester, to the west of Stoney Stanton. The site is bound to the west by the M69, to the south west corner is Junction 2. The southern boundary is adjacent to Hinckley Road (B4669), and the north is bound by the Birmingham-Leicester railway line. The eastern boundary is adjacent to the existing village of Stoney Stanton which is predominantly residential. The site is bisected by Station Road which runs through the northern proportion of the site and has links to the centre of Stoney Stanton.</p> <p>A tributary of the Thurlaston Brook which runs a northerly direction and converges with Thurlaston Brook approximately 5km to the north east of the site. Thurlaston Brook is a tributary in the Upper Soar catchment which converges with the River Soar a further 3km downstream, north east of the d site.</p> <p>There is a small unnamed ordinary watercourse that passes through the south west corner of the site. This tributary links with the River Soar to the east of the site.</p>			
		<p>The Environment Agency's Detailed River Network shows drainage features at this site are associated with the unnamed watercourses that are tributaries to the River Soar. The channels are in the south east of the site, and to the west of the M69 less than 100m from the site boundary.</p>			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		0%	0%	0%	100%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		Very Low			
		<p><i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i></p>			

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	STO029		
	Address	Revised land west of Stoney Stanton		
	Area	285.59		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<b>Available data:</b> The environment Agency's Flood Zone mapping has been used in this assessment.		
		<b>Flood characteristics:</b> The modelled Flood Zone data indicates that there is no fluvial flood risk present at this site. 100% of the site is classified within Flood Zone 1.		
	Surface Water	As there is no detailed hydraulic modelling available at this site, there is no depth, velocity, or hazard information. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest nearest the channel, where topography is lowest. Depths and velocities would likely reduce the further away from the channel where the land rises. Hazard would therefore be highest in the immediate vicinity of the channels.		
		<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		1%	2%	9%
		Max depths (mm)		
		<0.3m	<0.3m	0.3-0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	STO029
	Address	Revised land west of Stoney Stanton
	Area	285.59
	Current land use	Greenfield
	Proposed land use	Residential
		<p><b>Description of surface water flow paths:</b></p> <p>The site is affected by surface water flooding in all 3 modelled events.</p> <p>During the 30-year event surface water flow paths are focussed in areas nearest to the watercourses. In the south east of the site there is a flow path which interacts with the unnamed watercourse, extending approximately 400m from the south of the site to the east boundary. There is some surface water flooding present along the western boundary, which is associated with the Thurlaston Brook tributary, or as areas of localised ponding. Along the eastern boundary and Station Road surface water flow paths are present, particularly to the south of Station Road. Depths in the flow paths are generally below 0.3m with velocities greater than 0.25m/s. The surface water ponding along the western boundary is deeper, greater than 0.9m deep.</p> <p>The 100-year event covers a greater extent of the site in comparison to the 30-year event, although no new flow paths are projected. Depths in the flows remain below 0.3m, with the deeper ponding on the western boundary. The part of the site north of Station Road remains unaffected.</p> <p>The 1,000-year surface water extent covers 9% of the site, and given the size of the site this is a considerable area. There are areas of small localised ponding throughout the site, particularly in the area north of station road. Significant flow paths flow from the centre of the southern portion towards station road, along the southern boundary toward the south east corner and along the western boundary flowing north. The south west corner of the site is projected to have a significant increase to the flow path along the western boundary, and there are 2 new flow paths originating from the north of the site which will flow in a northerly direction out the site boundary to areas of lower topography.</p> <p>There is a marked increase in depth for the 1,000-year event with depths of 0.3-0.6m present across most of the flows and depths over 0.9m in areas of ponding. Velocities across the flow remains greater than 0.25m/s. The deepest areas will be in the areas of 30-year ponding in the lowest topography of the site, with shallower depths as extents spread away from here.</p>
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>STO029</b>		
	<b>Address</b>	Revised land west of Stoney Stanton		
	<b>Area</b>	285.59		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
	<b>Flood history</b>	The site is not shown to be within the reaches of the Environment Agency's Historic Flood Map. The Lead Local Flood Authority should be contacted to obtain further details.		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not protected by any formal flood defences.		
	<b>Residual risk</b>	There is no residual risk presented at this site.		
<b>Emergency planning</b>	<b>Flood warning</b>	The site is not covered by modelled data in the Environment Agency's Flood Warning or Alert services.		
	<b>Access and egress</b>	<p>The site can be accessed from the southern boundary via Hinckley Road during all surface water events. Stanton Lane leads off of Hinckley Road and links with Station Road and can be used to achieve access to the site via the south east of the site. Stanton Lane is affected by surface water flooding in the south west of the site vicinity and depths are projected to be between 300mm and 900mm.</p> <p>Access to the site is not possible via the northern boundary due to the obstruction of the railway line. Access to the northern extent of the site can be achieved via Station Road although further investigation into the depths of surface water should be carried out.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>STO029</b>
	<b>Address</b>	Revised land west of Stoney Stanton
	<b>Area</b>	285.59
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and the site is not located near present day Flood Zones. A detailed modelling study should test the 2080s climate change allowances, to assess the risk to the site.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. There is a significant increase in the extent of flooding between the 100 and 1000-year events, suggesting the site is highly sensitive to increased runoff as a result of climate change. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>STO029</b>
	<b>Address</b>	Revised land west of Stoney Stanton
	<b>Area</b>	285.59
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Mercia Mudstone Group - Mudstone</li> <li>Superficial – Predominantly Thrussington Member – Diamcton. West of the site – Bosworth Clay member – Clay and Silt.</li> </ul> </li> <li>The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable' and Employment development is classified as 'Less Vulnerable'. For mixed use developments, the highest level of vulnerability should be considered.</p> <p>It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site.</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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <li>• At the planning application stage, a site-specific Flood Risk Assessment will be required as the site is greater than 1 ha.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Detailed hydraulic modelling will be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, and climate change extents along the western and south eastern, using channel topographic survey.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance; Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of surface water flow routes along the western and south-eastern boundaries, preserving these spaces as green infrastructure. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• As a significant new development with significant surface water risk, any proposal should be accompanied by an overall Surface Water Management Masterplan and Strategy (SWMMS) which should cover: <ul style="list-style-type: none"> <li>○ How the cumulative effects of potential peak rates and volumes of water from development sites would impact on peak flows, duration of flooding and timing of flood peaks on receiving watercourses. This should be used to develop and implement appropriate drainage sub catchments and specific runoff rate and volume requirements for each phase of the development.</li> <li>○ The risk of flooding from all sources, including for rainfall events greater than the design standard of the surface water drainage system should be taken into account to ensure there is no flood risk to new properties and that exceedance flows in extreme events are safely routed around those properties.</li> </ul> </li> </ul>
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		<ul style="list-style-type: none"> <li>○ The consideration of how SuDS, natural flood management techniques, green infrastructure and green-blue corridors can be designed into the development master plan to facilitate drainage flood risk management and ensure wider benefits such as biodiversity, amenity, water quality and recreation are realised.</li> <li>○ Based on the above, a Drainage Phasing Plan should be developed, based on the SuDS train method (considering firstly how water can be infiltrated/stored at a plot level, then conveyed through the site and any regional storage needs at a settlement level).</li> <li>○ The provision of drainage during the building phase shall be based on the Drainage Phasing Plan to ensure adequate drainage is provided and implemented throughout the development life.</li> <li>○ The LLFA, Environment Agency and LPA should be consulted during the development of the Surface Water Management Masterplan and Strategy.</li> </ul> <ul style="list-style-type: none"> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>• All development should adopt source control of SuDS techniques to reduce the risk of frequent low impact flooding due to post development run off.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse, and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development. The significant surface water flows in the centre and south of the site should be incorporated into SuDS using green infrastructure.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>STO029</b>
	<b>Address</b>	Revised land west of Stoney Stanton
	<b>Area</b>	285.59
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <li>Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>Safe access and egress need to be considered during surface water flooding. Access is not possible from the northern boundary therefore access should be via Hinckley Road, and via Station road which bisects the site and provides access to both the north and south of the site.</li> <li>As a significant new development with significant surface water risk, any proposal should be accompanied by an overall Surface Water Management Masterplan and Strategy (SWMMS)</li> <li>If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>Space for green areas should be considered in the areas of highest flood risk.</li> <li>The significant surface water flows in the south and centre of the site are incorporated into SuDS using Green infrastructure.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
<p>The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.</p>		
<b>Flood Zones</b>		<p>Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling in this area as there is no detailed hydraulic model available. It is recommended that a more detailed hydraulic model is constructed at the site-specific Flood Risk Assessment stage, to confirm flood risk.</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>STO029</b>
	<b>Address</b>	Revised land west of Stoney Stanton
	<b>Area</b>	285.59
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate change</b>		Detailed hydraulic modelling was not available for this site and the site is not located near flood zones. It is recommended that the latest EA's climate change allowances are modelled in a detailed hydraulic model as part of a site-specific Flood Risk Assessment.
<b>Fluvial depth, velocity and hazard mapping</b>		There is no available fluvial modelling data; therefore, the Risk of Flooding from Surface Water mapping has been used as this represents the floodplains of small watercourses. This should be explored further at site-specific stage
<b>Surface Water</b>		The Environment Agency's Risk of Flooding from Surface Water dataset has been used to define areas at risk from surface water flooding.
<b>Surface water depth, velocity and hazard mapping</b>		The surface water depth, velocity and hazard mapping for the 1 in 30, 100 and 1000-year events is taken Environment Agency's Risk of Flooding from Surface Water dataset.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE019</b>			
	<b>Address</b>	JC Remedial, The Nook			
	<b>Area</b>	0.18 Hectares			
	<b>Current land use</b>	Brownfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	The proposed site is located within the village of Whetstone; the site is situated 81 metres north-east of the Whetstone Brook. King Street forms the western border of the site and The Nook forms the southern border of the site. The site is located within the Whetstone Brook floodplain, and due to this, the topography of the site is relatively flat. The lowest elevation of the site is located in the south-eastern corner, at 65.5m AOD and the highest elevation in the north-western corner of the site at 66.5m AOD. There is a 0.4 metre variance in elevation from the southern to the northern border of the site.			
	<b>Existing drainage features</b>	The Environment Agency's Detailed River Network shows drainage features are associated with the Whetstone Brook, located to the south west of the site. The Whetstone Brook flows in a westerly direction and is located 81 metres from the site boundary.			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		0%	6%	44%	56%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		High			
		<i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>			



		<p><b>Available data:</b></p> <p>The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment. The site lies on the Whetstone Brook model. The EA's Flood Map for Planning has been used to inform Flood Zones 2 and 3a (as this incorporates latest modelling) and Flood Zone 3b has been derived from the hydraulic model.</p> <p><b>Flood characteristics:</b></p> <p>The modelled Flood Zone Data for this site indicates flood risk through this site is on the outer extent of the Whetstone Brook floodplain; the Whetstone Brook located 81 metres south-west of the proposed site.</p> <p>Fluvial Flood Zones 2 and 3a are present within this site, Flood Zone 3b is not present within this site as it is largely in-bank.</p> <p>Fluvial Flood Zone 3a affects the southern and western boundaries of the site; however, the coverage along these boundaries is considerably less than observed in FZ2. FZ3a extends 35 metres along the southern border of the site, 20 metres less than in FZ2. Additionally, FZ3a extends 13 metres north along the western boundary of the site.</p> <p>Fluvial Flood Zone 2 covers 44% of the site area and affects the southern as western boundaries of the site. FZ2 flood water covers the whole western boundary, with flood water extending 40 metres north up the western site border. Along the southern border, flood water extends 55 metres east. Flood Zone 2 in this area forms an out of bank flow path loop, re-joining with the river south of Anna's Way and Avon Drive.</p> <p>The 100-year modelled event identifies maximum flood depth within the site to be 0.054m at the southern border of the site, with a maximum velocity of 0.002m/s also located at the southern border of the site, so shallow and slow give the outer extremity of the floodplain here. A maximum combined hazard threshold of between 0.75-1.25 'danger for some'.</p> <p>The 100 +30% climate change modelled event identifies a maximum depth of 0.283m within the south-western corner of the site. The maximum velocity within this site is 0.012m/s also located in the south-western corner of the site with a maximum combined hazard threshold of between 0.75-1.25, classified as 'danger for some'.</p> <p>The 100 +50% climate change modelled event identifies as maximum depth of 0.32m in the south-western corner of the site with a maximum velocity of 0.039m/s. The maximum combined hazard threshold is measured between 1.25-2.00, 'danger for most' along the western and southern boundaries of the site.</p>		
		<p><b>Proportion of site at risk (RoFfSW)</b></p>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		<1%	<1%	9%
		Max depths (m)		
		<0.3m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g., 100-year includes the 30-year %)</i></p>		
		<p><b>Description of surface water flow paths:</b></p> <p>The 30-year surface water event is located along the western border of the site but does not ingress into the site. This is ponding along the junction.</p>		
	Surface Water			

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE019</b>		
	<b>Address</b>	JC Remedial, The Nook		
	<b>Area</b>	0.18 Hectares		
	<b>Current land use</b>	Brownfield		
	<b>Proposed land use</b>	Residential		
		<p>The 100-year event, much like the 30-year event is located along the western boundary of the site. This forms 2 flow paths down The Nook and King Street meeting at the junctions and flowing towards the channel.</p> <p>The 1,000-year event enters the site from The Nook along the southern boundary of the site. Surface water ingresses 10.5 metres along the southern border of the site. The south-eastern, eastern, and northern borders of the site are unaffected by surface water flooding. The 1,000-year event follows a similar pattern to FZ2, whereby it forms a loop around Anna's Way.</p> <p>Across the three surface water events, the depth of surface water increases from &lt;300mm in the 30-year event to 300-900mm for both the 100-year and 1000-year event. Across the three events, the velocity of the surface water remained above 0.25m/s.</p>		
	<b>Reservoir</b>	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	<b>Flood history</b>	<p>This site is not shown to be within the reaches of the Environment Agency's Historic Flood Map.</p> <p>Developers should contact the LLFA for more information on historic flooding.</p>		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not shown to be located downstream of an Environment Agency Embankment.		
	<b>Residual risk</b>	Residual risk at the site is deemed low; there are culvert's on the Whetstone Brook nearby (The Dicken, Bridge Way), but the site is situated away and elevated, with only the outer extremes of the flood extents reaching the site. If flood water were to overtop the embankment along the eastern bank of brook, this could lead to a greater increase flood depth and velocity within the site.		
<b>Emergency planning</b>	<b>Flood warning</b>	The southern half of the site is incorporated within the Environment Agency's Flood Warning Area "Whetstone Brook at Whetstone" and the Flood Alert Area "Upper Soar Catchment".		

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>WHE019</b>
	<b>Address</b>	JC Remedial, The Nook
	<b>Area</b>	0.18 Hectares
	<b>Current land use</b>	Brownfield
	<b>Proposed land use</b>	Residential
	<b>Access and egress</b>	<p>Access and egress from the site can be permitted from King Street along the west of the site and The Nook along the southern boundary. Access from the northbound direction of High Street cannot be permitted due to the flood water inundating the road, so access to the south should be avoided.</p> <p>The 30-year surface water event can permit access to the site as both King Street and The Nook roads are not impounded by surface water. The 100 and 1,000-year events identify that both The Nook and King Street are inundated by surface water flooding, which prevent the safe ingress and egress for residents and emergency services. Access should again be steered north but being aware of surface water risk flow paths in the higher order events.</p>
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the site from Whetstone Brook Model, for the 100 year +20%, +30%, +50% climate change scenarios. These all cover the southern area of the site, similar to Fluvial Flood Zone 2; however, the extents are slightly smaller area compared to Flood Zone 2, but larger than Flood Zone 3a. The modelled climate change data identifies no new flood path characteristics.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE019</b>
	<b>Address</b>	JC Remedial, The Nook
	<b>Area</b>	0.18 Hectares
	<b>Current land use</b>	Brownfield
	<b>Proposed land use</b>	Residential
<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 – Triassic Rocks – Mudstone, Siltstone, Sandstone</li> <li>Superficial – Till - Diamicton</li> </ul> </li> <li>The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied. Residential development is classified as 'More Vulnerable' It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site. 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes along the western and southern boundaries of the site. These areas should be preserved as green spaces. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE019</b>
	<b>Address</b>	JC Remedial, The Nook
	<b>Area</b>	0.18 Hectares
	<b>Current land use</b>	Brownfield
	<b>Proposed land use</b>	Residential
		<ul style="list-style-type: none"> <li>• On site attenuation schemes would need to be tested against the watercourse 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. Assessment for runoff should include allowance for climate change effects.</li> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>WHE019</b>
	<b>Address</b>	JC Remedial, The Nook
	<b>Area</b>	0.18 Hectares
	<b>Current land use</b>	Brownfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to 56% of the site located within Flood Zone 1. It is recommended to steer development towards the northern portion of the site where the risk from fluvial and surface water flooding is low.</li> <li>• Access and egress should be obtained from King Street and The Nook as these two roads are unaffected across the 30 and 100-year surface water event and FZ3a and FZ3b but directed north away from the highest area of flood risk at their junction.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> <li>• Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and Tributaries model (Whetstone Brook). The 20-year flood extent was used to derive Flood Zone 3b.
<b>Climate change</b>		Climate change was based on the 2012 River Soar and Tributaries model (Whetstone Brook), where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch.
<b>Fluvial depth, velocity and hazard mapping</b>		There is Fluvial Depth, Velocity and Hazard data available from the Whetstone Brook model (2021 River Soar and Tributaries modelling) The 100 year and 100+ climate change has been assessed.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE019</b>
	<b>Address</b>	JC Remedial, The Nook
	<b>Area</b>	0.18 Hectares
	<b>Current land use</b>	Brownfield
	<b>Proposed land use</b>	Residential
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE027</b>			
	<b>Address</b>	Whetstone Pastures			
	<b>Area</b>	448.84 Hectares			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	The site is located south-west of Countesthorpe and south of Whetstone. The site is located within the floodplain of the Whetstone Brook. The site identifies a 30-metre variation from the lowest elevation within the site (79m AOD) to the highest elevation within the site (109m AOD). The Whetstone Brook bisects the site from the south to the north through the centre of the site. The western portion of the site is bisected by the M1 motorway from north to south of the site. The confluence of the Whetstone Brook and an unnamed ordinary watercourse is located at the southern portion of the site.			
	<b>Existing drainage features</b>	The Environment Agency's Detailed River Network shows drainage features associated with the Whetstone Brook which flows south to north through the site. An unnamed ordinary watercourse is also associated with this site, this flows from the south-west of the site and confluences with the Whetstone Brook, 350m north of Whetstone Gorse Cottages. There are four culverts within the site associated with the Whetstone Brook and its tributaries.			
	<b>Fluvial</b>	<b>Proportion of site at risk</b>			
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>	<b>FZ1</b>
		0%	5%	6%	94%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		High			
		<i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>			

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	WHE027		
	Address	Whetstone Pastures		
	Area	448.84 Hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><b>Available data:</b> The Environment Agency's Flood Map for Planning has been used in this assessment. The EA's 2012 1D-2D River Soar and Tributaries modelling (Whetstone Brook) commences further downstream of the site, and therefore the site is covered by only 2D generalised data</p> <p><b>Flood characteristics:</b> The Flood Zone data for this site indicates flood risk through this site is restricted to the floodplain of the Whetstone Brook, located within the centre of the site. Fluvial Flood Zone 2 and 3a are present within this site, but no detailed Flood Zone 3b due to detailed modelling commencing further north, so Flood Zone 3a is used as an indication.</p> <p>As the modelling is generalised, it may be conservative, and a more detailed model may refine risk. An example is where water is shown to flow over the large, raised embankment along the northern boundary, which in reality it would not; it would pond against this and enter a culvert through it.</p> <p>The greatest area of FZ2 coverage is located within the south of the site where the Whetstone Brook and an unnamed ordinary watercourse converge at the site boundary, approximately 225m wide. The remaining risk downstream is between 50m and 190m wide in the vicinity of the floodplain.</p> <p>As there is no detailed hydraulic model available at this site, there is no depth, velocity, or hazard information. Though there is no fluvial depth, velocity, or hazard data, this does not mean that there is no risk along the remaining portion of the brook, there is just no data available. This should be investigated at the site-specific FRA stage, using a detailed hydraulic model. It can be assumed that depths would be highest next to the channel, where the topography is lowest. Depths and velocities would likely reduce the further away from the channel where land rises. Hazard would therefore be highest in the immediate vicinity of the channel.</p>		
	Surface Water	Proportion of site at risk (RoFfSW)		
		30-year	100-year	1,000-year
		6%	9%	19%
		Max depths (m)		
		0.3-0.9m	0.3-0.9m	0.3-0.9m

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	WHE027		
	Address	Whetstone Pastures		
	Area	448.84 Hectares		
	Current land use	Greenfield		
	Proposed land use	Residential		
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g., 100-year includes the 30-year %)</i>		
		<b>Description of surface water flow paths:</b> All three surface water events are identified within this site and is much more significant than the fluvial flood risk. The 30-year surface water event covers 6% of the site, with most of the site area coverage located along the Whetstone Brook floodplain and flow paths from the south-east and south-west flowing north along lower topography to meet the floodplain. The ordinary watercourse to the west of the Whetstone Brook identifies a surface water flow path flowing from the south-west of the site to the confluence of the Whetstone Brook. The western most area of the site identifies small areas of surface water ponding; these are located along the northbound M1 boundary, though surface water risk in this land parcel is generally very low in all events. The centre of the site shows small areas of surface water ponding within topographic low points within in the northern portion of the site. The eastern portion of the site similarly identifies small areas of surface water ponding. At the southernmost portion of the site, four surface water ponds are located west of the Whetstone Brook. The 100-year surface water flood event is very similar in extent to the 30-year event, just spreading slightly wider along the Whetstone Brook floodplain and new small flow paths emerging. The 1,000-year event identifies a development in both the size and amount of surface water ponds and flow paths leading to the main surface water flow path in the centre of the site. There is a surface water flow path flowing north out of the site. The centre of the site is interlaid with multiple surface water flow paths and surface water ponds. This event is generally wider than the lower order events. Overall, the surface water depth remains consistent throughout all three surface water events, remaining between 300-900mm in depth. Similarly, the surface water max velocity is consistent across all three food events, with velocity recorded at over 0.25 m/s.		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE027</b>		
	<b>Address</b>	Whetstone Pastures		
	<b>Area</b>	448.84 Hectares		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
	<b>Flood history</b>	The site is not located within the Historic Flood map, therefore, there is no data on the site. The Lead Local Flood Authority should be contacted to obtain further details.		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not shown to have any implemented flood risk management structures.		
	<b>Residual risk</b>	There are several culverts located through the site, e.g., Main Street, 2 small unnamed roads off Whetstone Gorse Lane, and the large embankment at the north of the site. If the 4 culverts located within the site were to block, this could increase flood depths and extents slightly in this zone of impoundment upstream. The potential impacts should be considered in an FRA.		
<b>Emergency planning</b>	<b>Flood warning</b>	The site is not incorporated within the Environment Agency's Flood Warning Areas. This site is not incorporated within the Environment Agency's Flood Alerts Area.		
	<b>Access and egress</b>	The site is bisected north to south by the M1 in the western reaches of the site. The site is also bisected towards the eastern boundary of the site by Main Street, from south-west to north-east. Lutterworth Road presents a potential access route to the site as it permits access to both the western and east portion of the site, this is possible as the road bridges the M1. Furthermore, Lutterworth Road is not affected by surface water flooding across all 3 surface water events and is not affected by Flood Zones 2, 3a and 3b. To permit access to the eastern portion of the site, Willoughby Road could be used as a potential route, though away to the north is preferred given two surface water flow paths crossing near the south. Whetstone Gorse Lane is suitable north of the surface water flow route, leading to Lutterworth Road, but should be avoided in the area where all 3 surface water events cross the road.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE027</b>
	<b>Address</b>	Whetstone Pastures
	<b>Area</b>	448.84 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard and frequency of both fluvial and surface water flooding.</li> <li>There is no detailed fluvial modelling available at the site, and therefore Flood Zone 2 has been used as a conservative indication of flood risk from climate change. This extends across the western third of the site encompassing the lower incline ground. A detailed modelling study should test the latest published climate change allowances, which may refine risk in the north-western site of the site.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

<p><b>Requirements for drainage control and impact mitigation</b></p>	<p><b>Broad scale assessment of possible SuDS</b></p>	<ul style="list-style-type: none"> <li>• Geology at the site consists of: <ul style="list-style-type: none"> <li>◦ Bedrock – Triassic Rocks – Mudstone, Siltstone and Sandstone and the Lias Group – Mudstone, Siltstone, Limestone, Sandstone</li> <li>◦ Superficial – Alluvium – Clay, Silt and Sand and Till - Diamicton</li> </ul> </li> <li>• The majority of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>• Along the tributary there is an area where groundwater levels are indicated to be at or very near (within 0.025m) ground level and there is a risk of groundwater flooding at the surface during a 1% AEP event, which may flow to and pool within topographic low spots. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>• To the west of the site a small area of groundwater levels are indicated to be less than 1m to 0.5-5m below ground level during a 1% AEP event. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>• The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>• The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<p><b>NPPF and planning implications</b></p>	<p><b>Exception Test requirements</b></p>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable'</p> <p>It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site.</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> </ul>
	<p><b>Requirements and guidance for site-specific Flood</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> </ul>

	<p><b>Risk Assessment</b></p>	<ul style="list-style-type: none"> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• A more detailed hydraulic model may be required at Flood Risk Assessment stage, to confirm flood risk and flow paths, FZ3b and climate change extents from the unmodelled drains along the southern/ western boundaries, using channel topographic survey.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse 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> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE027</b>
	<b>Address</b>	Whetstone Pastures
	<b>Area</b>	448.84 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<p>Assessment for runoff should include allowance for climate change effects.</p> <ul style="list-style-type: none"> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>



# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	WHE027
	Address	Whetstone Pastures
	Area	448.84 Hectares
	Current land use	Greenfield
	Proposed land use	Residential
Key messages		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>Development is limited to the 94% of the site located within Flood Zone 1. It is recommended that the development is steered towards the areas of higher elevation on the eastern and western areas within the site away from the Whetstone Brook floodplain and larger surface water flow paths.</li> <li>Access and egress to the site should be obtained via Lutterworth Lane to the west of the site, that would allow for access to the western portion of the site. Lutterworth Lane would also permit access to the Centre of the site as the road bridges over the M1, permitting access to the site. Furthermore, this access road is not affected by surface water flooding. Additionally, the access can be permitted via Main street to the eastern portion of the site. However, flood mitigation measures should be considered when looking at the effects of surface water flooding on potential ingress and egress routes to the site.</li> <li>If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>Space for green areas should be considered in the areas of highest flood risk.</li> <li>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
Mapping Information		
<p>The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.</p>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE027</b>
	<b>Address</b>	Whetstone Pastures
	<b>Area</b>	448.84 Hectares
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on 2D generalised modelling as the 2012 River Soar and Tributaries model (Whetstone Brook) commences further downstream of the site. A more detailed model may be required at FRA stage.
<b>Climate change</b>		Climate change was based on Flood Zone 2 as the 2012 River Soar and Tributaries model (Whetstone Brook) commences further downstream of the site. A more detailed model may be required at FRA stage.
<b>Fluvial depth, velocity and hazard mapping</b>		There is no fluvial Depth, Velocity and Hazard data available as the Whetstone Brook model (2012 River Soar and Tributaries modelling) commences further north of the site.
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE031</b>			
	<b>Address</b>	Land south of Whetstone			
	<b>Area</b>	54.92			
	<b>Current land use</b>	Greenfield			
	<b>Proposed land use</b>	Residential			
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	The site is located south of Whetstone and east of Cosby. The Whetstone Brook forms the eastern boundary of the site's far eastern land parcels that flows south to north along the site. 30 metres north of the north-eastern section of the site, an unnamed ordinary drain flows east towards the Whetstone Brook. The site is bisected by Springwell Lane from north to south with Countesthorpe Road running along the southern boundary of the site from west to east. The A426 forms the eastern boundary of the site running from north to south. The western boundary of the site is formed by the M1. Additionally, within the eastern portion of the site, a small unnamed ordinary watercourse is located, flowing west to east of the site.			
	<b>Existing drainage features</b>	The Environment Agency's Detailed River Network shows drainage features at this site are associated with the Whetstone Brook that flows south to north of the site. Additionally, along the north eastern border of the site, a small unnamed ordinary watercourse flows 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>
		2%	3%	4%	96%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>			
		High			
		<i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>			

		<b>Available data:</b> The Environment Agency’s 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment. The site lies on the Whetstone Brook model. The EA’s Flood Map for Planning has been used to inform Flood Zones 2 and 3a (as this incorporates latest modelling) and Flood Zone 3b has been derived from the hydraulic model.		
		<b>Flood characteristics:</b> The modelled Flood Zone Data for this site indicates flood risk through this site is restricted along the channel’s floodplain of the Whetstone Brook located at the eastern border of the site, flowing from the south of the site to the north of the site. Across all three Flood Zones, the flooding is confined to the topographic low points within the site, located within the floodplain of the Whetstone Brook. Flood Zone 3b is located in the north-eastern corner of the site. Flood Zone 3a is also concentrated on the north-eastern border of the site, extending slightly further down the eastern boundary Fluvial Flood Zone 2 follows the same pattern as Flood Zone 3a but extends further into the site at the north-eastern end. The modelled defended 100-year extent affects the most eastern border of the site. The maximum depth is recorded 33m west of the Whetstone Brook at 0.39m with a maximum recorded velocity of 0.69 m/s with maximum hazard threshold of between 1.25-2.00 which is identified to be a significant hazard, a Flood Zone with deep and fast flowing water. The modelled 100+ 30% climate change event similarly affects the most eastern border of the site, with of the with a maximum depth of 0.44m recorded at 65 metres west of the site boundary and a maximum velocity of 1.03 m/s located in the north-eastern corner of the site. The maximum threshold of the hazard is between 1.25 and 2.00 which is identified to be a significant hazard, a Flood Zone with deep and fast flowing water and is located within the middle of the most western portion of the site. The modelled 100 +50% climate change event identifies the maximum depth recorded within the site to be 0.5 metres in depth, recorded in the centre of the most eastern area of the site. Similarly, the maximum recorded velocity is located at the northern boundary of the site, 48metres west of the Whetstone Brook and is recorded at 1.15 m/s. The maximum hazard threshold is shown to be between 0.75 and 1.25 along the Whetstone Brook along the eastern boundary of the site.		
		<b>Proportion of site at risk (RoFfSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		2%	3%	11%
		Max depths (m)		
		0.3-0.9m	0.3-0.9m	0.3-0.9m
		Max velocity (m/s)		
		>0.25 m/s	>0.25 m/s	>0.25 m/s
		<i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i>		
		<b>Description of surface water flow paths:</b> The site is affected by surface water flooding in all three events. The risk is more prominent in the parcels east of Springwell Lane. The 30-year event shows five areas of surface water ponding within the western half of the site, the largest of which is located at the junction between Springwell Lane and Countesthorpe Road and is		
		Surface Water		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE031</b>		
	<b>Address</b>	Land south of Whetstone		
	<b>Area</b>	54.92		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
		<p>98 metres in length with the smallest surface water pond 16 metres in length. The eastern portion of the proposed site contains seven large surface water ponds, with the largest surface water pond 88 metres in length. The surface water gravitates towards the Whetstone Brook floodplain in the north-eastern portion of the site. The 100-year event identifies a surface water branch extending from the south-eastern corner of the site, flowing 236 metres from the middle of the land parcel to the floodplain. The northern boundary of the site identifies an increase in surface water branch length into the site, from 7 metres to 56 metres into the site. Additionally, a new flood branch extends from the Countesthorpe Road, Springwell Lane crossroad, north-east into the site.</p> <p>The 1,000-year surface water event sees a joining of these initial flow paths and areas of ponding, via a large flow path from the south-west beyond Countesthorpe Road, north-east into the site towards the Whetstone Brook. There is also another flow path running parallel with the northern boundary from west to east into the Whetstone Brook floodplain. Across the three surface water events, the depth of the surface water remains consistent, recorded at 300-900mm, which is similarly identified in the surface water velocity which is recorded to be &gt;0.25m/s.</p>		
	<b>Reservoir</b>	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	<b>Flood history</b>	The site is not located within the Historic Flood map, and there is no data on the site. Developers should contact the LLFA for more information on historic flooding		
<b>Flood risk management infrastructure</b>	<b>Defences</b>	<b>Defence Type</b>	<b>Standard of Protection</b>	<b>Condition</b>
		-	-	-
		The site is not formally protected by flood defences.		
	<b>Residual risk</b>	There is a residual flood risk from the culvert at the A426 on the far eastern side of the site. However, this risk is deemed low as the A426 road over the culvert is raised, and therefore if it were to block, water would pond on the upstream side against the embanked road. The potential impacts should be considered in an FRA.		
<b>Emergency planning</b>	<b>Flood warning</b>	The site is not incorporated within the Environment Agency's Flood Warning Areas – this commences shortly downstream of the site. This site is not incorporated within the Environment Agency's Flood Alerts Area – this commences shortly downstream of the site.		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE031</b>
	<b>Address</b>	Land south of Whetstone
	<b>Area</b>	54.92
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
	<b>Access and egress</b>	<p>The site is bisected by Springwell Lane from north to south with Countesthorpe Road running along the southern boundary of the site from west to east. The A426 forms the eastern boundary of the site running from north to south. The western boundary is formed by the M1.</p> <p>There are various areas of significant ponding either side of these roads, but the roads are raised, hence surface water flooding only affects these in localised areas in the 100-year and 1,000-year events, e.g., around the Countesthorpe/ Springwell Lane junction and Springwell Lane at the very northern boundary where another flow path crosses. Depths are likely to be shallow over the roads, given the deeper ponding upstream of these.</p>
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the site from River Soar and Whetstone Brook Model, for the 100 year +20%, +30%, +50% climate change scenarios. These all cover an area similar to Fluvial Flood Zone 2; however, the extents are slightly smaller area compared to Flood Zone 2, but larger Flood Zone 3a. The modelled climate change data identifies no new flood path characteristics.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA</p>

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE031</b>
	<b>Address</b>	Land south of Whetstone
	<b>Area</b>	54.92
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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>Western Site <ul style="list-style-type: none"> <li>Bedrock – Triassic Rocks – Mudstone, Siltstone, Sandstone</li> <li>Superficial – Till - Diamicton</li> </ul> </li> <li>Eastern Site <ul style="list-style-type: none"> <li>Bedrock - Triassic Rocks – Mudstone, Siltstone, Sandstone</li> <li>Superficial – Till - Diamicton</li> </ul> </li> </ul> </li> <li>The site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable' It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site.</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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> <li>• Development in FZ3b should be avoided unless appropriate use can be demonstrated in line with NPPF.</li> <li>• Development in FZ3 may require floodplain compensation and this should be confirmed with the EA at FRA stage.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity and hazard outputs. Raising of access routes must not impact on surface water flow routes.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse 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</li> </ul>
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# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE031</b>
	<b>Address</b>	Land south of Whetstone
	<b>Area</b>	54.92
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
		<p>impact flooding due to post-development runoff. Assessment for runoff should include allowance for climate change effects.</p> <ul style="list-style-type: none"> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>WHE031</b>
	<b>Address</b>	Land south of Whetstone
	<b>Area</b>	54.92
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Key messages</b>		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to 96% of the site located within Flood Zone 1. It is recommended to steer the development west away from the Whetstone Brook floodplain. Even safer would be west of Springwell Lane; this is where the site is least affected by the fluvial and surface water flooding and could permit safest access and egress from the site.</li> <li>• The majority of the surface water is located within the south eastern area of the site as well as along the north eastern boundary of the site adjacent to the Whetstone Brook. A large overland flow path in the 1,000-year event splits part of the eastern parcel of the site.</li> <li>• Access and egress can be permitted from Countesthorpe Road to the south of the site as well as Springwell Lane from the north of the site. Flood mitigation measures should be considered when looking at the effect of surface water on potential ingress and egress routes.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another).</li> <li>• Space for green areas should be considered in the areas of highest flood risk.</li> <li>• Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
<b>Mapping Information</b>		
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>		Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and Tributaries model (Whetstone Brook). The 20-year flood extent was used to derive Flood Zone 3b.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE031</b>
	<b>Address</b>	Land south of Whetstone
	<b>Area</b>	54.92
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>Climate change</b>		Climate change was based on the 2012 River Soar and Tributaries model (Whetstone Brook), where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch.
<b>Fluvial depth, velocity and hazard mapping</b>		There is Fluvial Depth, Velocity and Hazard data available from the Whetstone Brook model (2021 River Soar and Tributaries modelling) The 100 year and 100+ climate change has been assessed.
<b>Surface Water</b>		The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.
<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.

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE032</b>		
	<b>Address</b>	Warwick Road, Whetstone		
	<b>Area</b>	0.64ha		
	<b>Current land use</b>	Greenfield		
	<b>Proposed land use</b>	Residential		
<b>Sources of flood risk</b>	<b>Location of site within catchment</b>	The site is located to the south of Leicester, in the west of Whetstone village. The site is bound to the south by Warwick Road which links nearby with the A426. To the north of the site is Whetstone Brook, which confluences with the upper catchment of the River Soar approximately 700m further downstream, to the north west of the site. Along the western boundary is a woodland area situated in an area of higher topography than the site. The east of the site is bound by a footpath which runs adjacent to Warwick Road sports ground. South of the site is a commercial estate, and to the north and east are residential developments.		
	<b>Existing drainage features</b>	The Environment Agency's Detailed River network shows drainage features are associated with Whetstone Brook which flows in a westerly direction, along the northern boundary of the site. This watercourse confluences with the River Soar approximately 700m to the north west of the site.		
	<b>Fluvial</b>	<b>Proportion of site at risk</b>		
		<b>FZ3b</b>	<b>FZ3a</b>	<b>FZ2</b>
		0%	0%	16%
		<b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b>		
		Medium		
		<i>The % Flood Zones quoted show the % of the site at flood risk from that particular Flood Zone/event, including the percentage of the site at flood risk at a higher risk zone, e.g. FZ2 includes the FZ3 %. FZ1 is the remaining area outside FZ2 (FZ2 + FZ1 = 100%)</i>		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



Site details	Site Code	WHE032		
	Address	Warwick Road, Whetstone		
	Area	0.64ha		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<p><b>Available data:</b> The Environment Agency's 2012 1D-2D River Soar and Tributaries modelling has been used to inform this assessment. The site lies on the Whetstone Brook model. The EA's Flood Map for Planning has been used to inform Flood Zones 2 and 3a (as this incorporates latest modelling) and Flood Zone 3b has been derived from the hydraulic model.</p> <p><b>Flood characteristics:</b> The modelled Flood Zone data for this site indicates that flood risk to this site is confined to the river channel of the Whetstone Brook which runs in a westerly direction to the north of the site boundary. Flood Zone 2 is present within the north of the site, covering 16% of the land. This is where water is out of bank and impounds against the large embankment immediately west of the site. Flood Zones 3a and 3b are not present within the site boundary and remain in-bank.</p> <p>The modelled defended 100-year extent does not extend over the site boundary therefore is not shown to have any effect on the site. The 100-year +30% climate change extent covers a very small area within the north of the site, projecting maximum depths of 0.19m and maximum velocities of 0.07m/s. Hazard is projected at a maximum threshold of &lt;0.75 presenting a low risk. This means that caution should be taken as this area is a flood zone with shallow flowing water or deep standing water.</p>		
	Surface Water	<b>Proportion of site at risk (RoFFSW)</b>		
		<b>30-year</b>	<b>100-year</b>	<b>1,000-year</b>
		0%	0%	9%
		Max depths (m)		
		N/A	N/A	0.3-0.9m
		Max velocity (m/s)		
		N/A	N/A	>0.25 m/s
		<p><i>The % SW extents quoted show the % of the site at surface water risk from that particular event, including the percentage of the site at flood risk at a higher risk zone (e.g. 100-year includes the 30-year %)</i></p>		

# Blaby District Council Level 2 Strategic Flood Risk Assessment

## Detailed Site Summary Tables



Site details	Site Code	WHE032		
	Address	Warwick Road, Whetstone		
	Area	0.64ha		
	Current land use	Greenfield		
	Proposed land use	Residential		
		<b>Description of surface water flow paths:</b> The site is affected by surface water during the 1,000-year event only. During the 1,000-year event surface water poses a risk to the north of the site, closest to the watercourse, although the extent covers less area than Flood Zone 2. The flood depth during the 1,000-year event is projected at 300-900mm and velocities >0.25m/s. Surface water flow paths are projected to flow in a northerly direction towards Whetstone Brook and lower topographic areas. The pattern very much matches those of the Flood Zones.		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available online maps.		
	Flood history	The northern vicinity of the proposed site is shown to be within the reaches of the Environment Agency's Historic Flood Map. Historic flooding lies within Flood Zone 2 and covers approximately 50% of the proposed site. There are no specific recorded incidents. The Lead Local Flood Authority should be contacted to obtain further details.		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
		The site is not protected by any formal flood defences.		
	Residual risk	There is residual risk present from the culvert underneath the embankment at the northern end of the site, where flood water in the more extreme events already ponds against. A blockage here could cause additional flood depths and hazard at the site, though risk is anticipated to be low given the likely size of the structure and already widespread extents here. A site-specific FRA should be carried out to confirm risk.		
Emergency planning	Flood warning	The north of the site is within the Environment Agency's Flood Warning and Flood Alert areas. Flood Warning – Whetstone Brook at Whetstone including areas around Dicken Bridge and Dog and Gun Lane (034FWFBWHETSTNE). Flood Alert – “Upper Soar Catchment” - River Soar in Leicestershire including tributaries from Sharnford to the River Wreake confluence at Syston (034WAF402).		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE032</b>
	<b>Address</b>	Warwick Road, Whetstone
	<b>Area</b>	0.64ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
	<b>Access and egress</b>	The site can be accessed by Warwick Road along the southern boundary and is largely not affected by fluvial or surface water flood events, though there is some 1,000-year surface water risk crossing to the east where flow paths flow north towards the Brook. West along Warwick Road is preferred to east, given risk in the vicinity. The northern boundary is impacted by fluvial and surface water flooding during the 1,000-year event and is bound by the Whetstone Brook therefore access is not possible.
<b>Climate Change</b>	<b>Implications for the site</b>	<ul style="list-style-type: none"> <li>Increased storm intensities due to climate change may increase the extent, depth, velocity, hazard, and frequency of both fluvial and surface water flooding.</li> <li>Detailed fluvial modelling is available at the site from Whetstone Brook for the 100 year +20%, +30%, +50% climate change scenarios. The extents cover a similar area to Flood Zone 3a, although the 100 year +50% scenario covers an extent closer to that of Flood Zone 2.</li> <li>Comparing the flood extents of Flood Zone 3b (20-year) to Flood Zone 3a (100-year) could act as a suitable proxy for the potential increase on the functional floodplain from climate change.</li> <li>Climate change should also be considered for surface water events; at the site-specific stage, the 100-year +40% event is considered as part of surface water drainage strategies, or surface water modelling.</li> <li>The current day 1,000-year surface water flooding extent provides an indication of the likely increase in extent of the more frequent surface water events. This would require a detailed FRA to assess the site layout and design.</li> </ul> <p>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</p>

# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>WHE032</b>
	<b>Address</b>	Warwick Road, Whetstone
	<b>Area</b>	0.64ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<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 – Branscombe Mudstone Formation – Mudstone.</li> <li>Superficial – None recorded.</li> </ul> </li> <li>The majority of the site is not considered to be susceptible to groundwater flooding, due to the nature of the local geological conditions. This should be confirmed through additional site investigation work.</li> <li>There is a triangle at the north of the site where groundwater levels where groundwater levels are indicated to be less than 1m below ground level during a 1% AEP event. Detention and attenuation features should be designed to prevent groundwater ingress from impacting hydraulic capacity and structural integrity. Additional site investigation work may be required to support the detailed design of the drainage system. This may include groundwater monitoring to demonstrate that a sufficient unsaturated zone has been provided above the highest occurring groundwater level. Below ground development such as basements are not appropriate at this site.</li> <li>The site is not designated by the Environment Agency as previously being a landfill site.</li> <li>The site is not located within any Environment Agency designated Source Protection Zone.</li> </ul>



# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE032</b>
	<b>Address</b>	Warwick Road, Whetstone
	<b>Area</b>	0.64ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Local Authority have carried out the Sequential Test in line with national guidance. The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>Residential development is classified as 'More Vulnerable' and Employment development is classified as 'Less Vulnerable'. For mixed use developments, the highest level of vulnerability should be considered.</p> <p>It is recommended that proposed development will be sequentially located within Flood Zone 1 areas of the site.</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 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> </ul>

	<p><b>Requirements and guidance for site-specific Flood Risk Assessment</b></p>	<p><b>Flood Risk Assessment:</b></p> <ul style="list-style-type: none"> <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.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• All sources of flooding, particularly the risk of fluvial, surface water and groundwater flooding, should be considered as part of a site-specific Flood Risk Assessment.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance; Blaby District Council's Local Plan policies and the LLFA's SuDS guidance.</li> <li>• Consideration should be given to the potential effects of climate change, including surface water. Proposals should consider the opportunity to include measures that provide for a reduction in the predicted surface water flood risk at existing development.</li> <li>• Flood risk needs to be considered for the lifetime of the development, accounting for climate change.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of fluvial flood risk and surface water flow routes along the southern and south-western boundaries, preserving these spaces as green infrastructure. Development must be in line with Table 3: flood risk vulnerability and flood zone compatibility of the NPPG.</li> </ul> <p><b>Guidance for site design and making development safe:</b></p> <ul style="list-style-type: none"> <li>• The developer will need to show, through an FRA, that future users of the development will not be placed in danger from flood hazards throughout its lifetime. It is for the applicant to show that the development meets the objectives of the NPPF's policy on flood risk. For example, how the operation of any mitigation measures can be safeguarded and maintained effectively through the lifetime of the development. (Para 048 Flood Risk and Coastal Change PPG).</li> <li>• Safe access and egress will need to be demonstrated in the 1 in 100-year plus climate change fluvial and rainfall events, using the depth, velocity, and hazard outputs. Raising of access routes must not impact on surface water flow routes. Consideration should be given to the siting of access points with respect to areas of surface water flood risk.</li> <li>• Resilience measures will be required if buildings are situated in the flood risk area. Raising Finished Floor Levels above the design event may remove the need for resilience measures.</li> <li>• The risk from surface water flow routes should be quantified as part of a site-specific FRA, including a drainage strategy, to ensure that runoff from the development is not increased by placing development across any ephemeral surface water flow routes. A drainage strategy should help inform site layout and design to ensure there is no increase in runoff beyond the current greenfield rates.</li> <li>• On site attenuation schemes would need to be tested against the watercourse 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</li> </ul>
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# Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables



Site details	Site Code	WHE032
	Address	Warwick Road, Whetstone
	Area	0.64ha
	Current land use	Greenfield
	Proposed land use	Residential
		<p>impact flooding due to post-development runoff. Assessment for runoff should include allowance for climate change effects.</p> <ul style="list-style-type: none"> <li>• Betterment on the existing site runoff rate should be sought to ensure that there is no increase in surface water flood risk elsewhere. Ideally, surface water runoff should be fully attenuated to the greenfield rate.</li> <li>• All development should adopt source control SuDS techniques to reduce the risk of frequent low impact flooding due to post development runoff.</li> <li>• SuDS should be designed to deliver multiple benefits including water quality, biodiversity, amenity, green infrastructure etc. Example features include swales, attenuation features, green roofs, rainwater capture and reuse, and permeable paving.</li> <li>• Green infrastructure should be considered within the mitigation measures for surface water runoff from potential development and consider using Flood Zones 2 and 3 as public open space.</li> <li>• Efforts should be made to limit runoff to greenfield rates and discharge rates from the site should not increase downstream flood risk.</li> </ul>
Key messages		<p>The flood risk element of the Exception Test is likely to be passed if:</p> <ul style="list-style-type: none"> <li>• Development is limited to most of the area of the site located within Flood Zone 1, therefore the southern proportion of the proposed site.</li> <li>• If flood mitigation measures are implemented then they are tested to ensure that they will not displace water elsewhere (for example, if land is raised to permit development on one area, compensatory flood storage will be required in another.</li> <li>• Space for green areas should be considered in the areas of highest flood risk, i.e. the north of the site.</li> </ul> <p>Refer to the detailed 'guidance for developers' section for further information on the measures that are appropriate for this site</p>
Mapping Information		

# **Blaby District Council Level 2 Strategic Flood Risk Assessment Detailed Site Summary Tables**



<b>Site details</b>	<b>Site Code</b>	<b>WHE032</b>
	<b>Address</b>	Warwick Road, Whetstone
	<b>Area</b>	0.64ha
	<b>Current land use</b>	Greenfield
	<b>Proposed land use</b>	Residential
The key datasets used to make planning recommendations regarding this site were the Environment Agency's Flood Map for Planning and the Risk of Flooding from Surface Water map. More details regarding data used for this assessment can be found below.		
<b>Flood Zones</b>	Flood Zones 2 and 3 have been taken from the Environment Agency's Flood Map for Planning; this is based on the 2012 River Soar and tributaries model (Whetstone Brook). The 20-year flood extent was used to derive Flood Zone 3b.	
<b>Climate change</b>	Climate change was based on the 2012 River Soar and tributaries model (Whetstone Brook), where the 100-year was uplifted by +20%, +30% and +50% for the 2080s epoch.	
<b>Fluvial depth, velocity and hazard mapping</b>	There is Fluvial, Depth, Velocity and Hazard data available from the Whetstone Brook model (2012 River Soar and Tributaries modelling). The 100-year and 100-year + climate change have been assessed.	
<b>Surface Water</b>	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.	
<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.	