

# Charnwood Borough Council Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables



<b>Site details</b>	<b>Site Code</b>	<b>PSH405</b>																						
	<b>Address</b>	Land west of the B591/Ingleberry Road and north of Iveshead Lane																						
	<b>Area</b>	9.29 ha																						
	<b>Current land use</b>	Greenfield																						
	<b>Proposed land use</b>	Residential																						
<b>Sources of flood risk</b>	<b>Topography</b>	<p>Contains Ordnance Survey data © Crown copyright and database right 2020. Contains public sector information licensed under the Open Government Licence v3.0.</p> <ul style="list-style-type: none"> <li>The site is generally flat with a slop from south west to north east.</li> <li>There are no existing buildings located within the site boundary.</li> <li>The ground slope across the site generally has a gradient of less than 5%.</li> </ul>																						
	<b>Existing drainage features</b>	There are no existing drainage features located at the proposed site.																						
	<b>Fluvial</b>	<table border="1"> <thead> <tr> <th colspan="4"><b>Proportion of site at risk</b></th> </tr> <tr> <th><b>FZ3b</b></th> <th><b>FZ3a</b></th> <th><b>FZ2</b></th> <th><b>FZ1</b></th> </tr> </thead> <tbody> <tr> <td>0%</td> <td>0%</td> <td>0%</td> <td>100%</td> </tr> <tr> <th colspan="4"><b>Highest zone of risk (Risk of Flooding from Rivers and Sea)</b></th> </tr> <tr> <td colspan="4">N/A</td> </tr> </tbody> </table> <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>				<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>				N/A		
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	<b>Proposed land use</b>	Residential		
		<p><b>Available data:</b> There is no Flood Zone mapping at the site as the site is not affected by fluvial flood risk.</p> <p><b>Flood characteristics:</b> The site is located within Flood Zone 1 and is therefore at a negligible risk of fluvial flooding. The site is at risk of surface water flooding.</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>
		1%	3%	24%
		Max depths (m)		
		0-0.15	0.15-0.3	0.3-0.6
		Max velocity (m/s)		
		1-2	1-2	>2
		<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> Surface water flows in the 1,000-year event enter the site from the south eastern corner and the south western corner from higher ground, flowing north and converging in the north-east of the site. The flow path is largely parallel to the B591 and is present in all events from close to the northern boundary. The depths are generally low.</p> <p>RoFfSW takes account of building footprints so the flood risk may be affected by existing buildings on the site. It also only considers flood risk where the hazard rating is greater than 0.575.</p>			
<b>Groundwater</b>	<p>The Areas Susceptible to Groundwater Flooding dataset shows the site is located within a 1 km grid square where &lt;25% of the area is predicted to be at risk of groundwater flooding.</p> <p>The AStGWF data should be used only in combination with other information, for example local data or historical data. It should not be used as sole evidence for any specific flood risk management, land use planning or other decisions at any scale. However, the data can help to identify areas for assessment at a local scale where finer resolution datasets exist. Ground investigations may be required at the site.</p>			

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	<b>Proposed land use</b>	Residential		
	<b>Reservoir</b>	The site is not shown to be at risk of reservoir flooding from the available <a href="#">online</a> maps.		
	<b>Flood history</b>	<p>There are no records of historic flooding at this site from the Environment Agency. No recorded historical flood incidents occurred within 1km of the proposed development site.</p> <p>Leicestershire County Council may hold additional records which are not available at this time. These records detail historical flood incidents from all sources, whereas the Environment Agency dataset only records incidents of fluvial, tidal or coastal flooding. 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>
		N/A	N/A	N/A
	This site is not protected by any formal flood defences.			
	<b>Residual risk</b>	There are no culverts or flood risk management features which pose a residual risk to the site.		
<b>Emergency planning</b>	<b>Flood warning</b>	The site is not situated within an Environment Agency Flood Warning or Flood Alert area.		
	<b>Access and egress</b>	Safe access and egress is available for the site via the B591 to the east and the smaller road to the south for all surface water events, but consideration is needed in the 1,000-year event where there are two flow paths splitting the site and meeting in the north-west.		

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<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>Climate change also needs to 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 extent provides an indication of the likely increase in extent of the more frequent events. This would require a detailed FRA to assess the site layout and design.</li> <li>Developers should consider SuDS strategies to reduce the impacts of climate change from surface water in a detailed site-specific FRA.</li> </ul>
<b>Requirements for drainage control and impact mitigation</b>	<b>Bedrock Geology</b>	The entire site's bedrock geology consists of the Wealden Group (mudstone, siltstone and sandstone).
	<b>Superficial Geology</b>	There are no superficial deposits at the site.
	<b>Soils</b>	Slowly permeable seasonally wet acid loamy and clayey soils
	<b>Source Protection Zone</b>	The site is not located within any Environment Agency designated Source Protection Zone.
	<b>Historic Landfill Site</b>	The site is not designated by the Environment Agency as previously being a landfill site however, there is one located directly next to the NW corner of the site.

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	<b>Broad scale assessment of possible SuDS</b>	<p>Implementation of SuDS at the site could provide opportunities to deliver multiple benefits including volume control, water quality, amenity and biodiversity. This could provide wider sustainability benefits to the site and surrounding area. Proposals to use SuDS techniques should be discussed with relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible constraints.</p> <p>Development at this site should not increase flood risk either on or off site. The design of the surface water management proposals should take into account the impacts of future climate change over the projected lifetime of the development.</p> <p>Proposed SuDS should be discussed with relevant stakeholders (LPA, LLFA and EA) at an early stage to understand possible opportunities and constraints.</p> <p>The following techniques are considered suitable for the site:</p> <ul style="list-style-type: none"> <li>• All forms of source control are likely to be suitable.</li> <li>• Infiltration likely to be suitable. Mapping suggests a low risk of ground water flooding however, site investigations should be carried out to assess potential for drainage by infiltration.</li> <li>• Mapping suggests that the site slopes are suitable for all forms of detention.</li> <li>• All filtration techniques are likely to be suitable. If the site has contamination issues; a liner will be required.</li> <li>• All forms of conveyance are likely to be suitable. Where the slopes are &gt;5% features should follow contours or utilise check dams to slow flows. If the site has contamination issues; a liner will be required.</li> </ul>
<b>NPPF and planning implications</b>	<b>Exception Test requirements</b>	<p>The Sequential Test must be satisfied based on fluvial and other sources of flood risk before the Exception test is applied.</p> <p>The Exception Test is not required as the site is not within Flood Zone 2 or 3 but a Flood Risk Assessment is still required. See below for further details on requirements for a Flood Risk Assessment and surface water issues to be considered.</p>

	<p style="text-align: center;"><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 for this site as development is greater than 1ha in size and is subject to other sources of flooding and the development may introduce a more vulnerable use. It will also be required where development sites: <ul style="list-style-type: none"> <li>◦ contain land which has been identified by the Environment Agency as having critical drainage problems; or</li> <li>◦ contain land identified in the strategic flood risk assessment as being at increased flood risk in future.</li> </ul> </li> <li>• Other sources of flooding must be considered as part of any site-specific Flood Risk Assessment, including surface water and groundwater.</li> <li>• Consideration should be given to the potential effects of climate change, particularly with respect to 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>• Where there is a reasonable likelihood of multiple sources of flood risk having significant impact in combination it is recommended that consideration is given to assessing the combined risks of these.</li> <li>• Any FRA should be carried out in line with the National Planning Policy Framework, Flood Risk and Coastal Change Planning Practice Guidance, Charnwood Council’s Local Plan policies and the LLFA’s SuDS guidance.</li> <li>• Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.</li> <li>• The development should be designed using a sequential approach. Development should be steered away from areas of 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 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</li> </ul>
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		<p>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 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>• New development must seek opportunities to reduce overall level of flood risk at the site, for example by: <ul style="list-style-type: none"> <li>○ Reducing volume and rate of runoff</li> <li>○ Relocating development to zones with lower flood risk</li> <li>○ Creating space for flooding.</li> </ul> </li> <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 areas of high surface water risk 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>• The site is in relatively close proximity to two sites permitted by the Environment Agency and therefore development at this location may be adversely affected by amenity issues associated with those sites. The sites are: Newhurst Recovery Facility and Morris Recycling Limited.</li> </ul>

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<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 71% of the site outside of the Risk of Flooding from Surface Water zones and therefore should be steered towards the north west and south west of 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> <li>• Consider access in the 1,000-year event which acts as a climate change indication, where the site is bisected.</li> </ul> <p>Refer to the 'detailed guidance for developers' section (above) 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 was the Environment Agency's Risk of Flooding from Surface Water mapping. More details regarding data used for this assessment can be found below.</p>		
<b>Flood Zones</b>	There is no Flood Zone data available at the site as there are no watercourses in proximity of the site.	
<b>Climate change</b>	Climate change was based on the 1,000-year surface water flood extent to serve as an indication of possible extents associated with the unmodelled watercourse which flows through the centre of the site.	
<b>Fluvial depth, velocity and hazard mapping</b>	There is no available fluvial data as there are no watercourses present. 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 the 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-year (high risk), 1 in 100-year (medium risk) and 1 in 1,000-year (low risk) events is taken from the Environment Agency's Risk of Flooding from Surface Water mapping.	