

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



<b>Site details</b>	<b>Site Code</b>	GTLAA08 / HS33			
	<b>Address</b>	Barbaraville			
	<b>Area</b>	0.62ha			
	<b>Current land use</b>	Predominantly brownfield			
	<b>Proposed land use</b>	Housing Site (Gypsy and Traveller)			
<b>Sources of flood risk</b>	<b>Existing drainage features</b>	An unnamed drain goes into culvert just upstream of the site, turning from a southerly to south-easterly direction under the site, until it re-emerges on the southern side of the A414. The drain flows in a south-easterly direction to join the River Lea approximately 350m from 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>Available data:</b> The site is not located within the Environment Agency's FZs 2 or 3 as the catchment is <3km <sup>2</sup> . Due to the potential risk from the unmodelled watercourse/ culvert, it will need to be modelled at the planning application stage, including an assessment of blockage to the culvert on the upstream boundary. The surface water mapping can provide an indication of risk for strategic purposes.			
	<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>	
		6%	18%	35%	
		<b>Max depths (m) (out of bank)</b>			
		0.30-0.60	0.30-0.60	0.90-1.20	
		<b>Max velocity (m/s) (out of bank)</b>			
		0.00-0.25	0.25-0.50 (negligible)	1.00-2.00 (negligible)	
<b>Max hazard rating (out of bank)</b>					
Danger for some	Danger for most	Danger for most			
<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 %). The % given are indicative only and more detailed work to refine this at a site-specific scale may be required.</i>					

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		<p><b>Description of surface water flow paths:</b></p> <p>Surface water flooding impacts the south-western portion of the site, with flooding in all return periods, following the topographic depression of the drain. Access routes from the eastern portion of the site have the potential to be restricted within the 1,000-year event only. There is some additional impact from the 100 and 1,000-year events along the whole southern boundary of the site.</p> <p>Looking at the 100-year surface water event in the interactive mapping, the hazard for this event is mainly 'Danger for some' with isolated areas of 'Danger for most', which is also the case in the 1,000-year event. The area of the deepest surface water is in the south-west of the site, where depths reach 0.30-0.60m. The velocities in the 30-year and 100-year events are fairly low, mainly 0.00-0.25m/s, with small, isolated areas of higher velocities in the 100-year event, There are some higher velocities in the 1,000-year event, in the south-west of the site along the south-eastern site boundary. Developers should steer development away from the west of the site where the risk is greatest.</p>		
	Reservoir	The site is not shown to be at risk of reservoir flooding from the available <a href="#">online</a> maps.		
	Flood history	The Environment Agency's historic flood map shows no history of flooding at the site.		
Flood risk management infrastructure	Defences	Defence Type	Standard of Protection	Condition
		-	-	-
	This site is not protected by any formal flood defences.			
	Residual risk	In a site-specific assessment (FRA), if a new hydraulic model is created to assess risk from the drain, it is recommended to test the impact of blockage, given the culvert entrance is just upstream of the site. A blockage could cause water to spill into the site.		
Emergency planning	Flood warning	The site is not covered by the EA's Flood Warning Service.		
	Access and egress	<p>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.</p> <p>There is flooding in all surface water events; however, there is dry access and egress available via the existing routeways and the A414 within the 30-year and 100-year events. The 1,000-year event intersects the site and covers the routeways.</p>		

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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 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> <li>The impacts of fluvial climate change should be tested using latest EA guidance if a detailed model of the drain is produced.</li> </ul>
<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 – Sussex White Chalk Formation (White Chalk)</li> <li>Superficial – Glacial Sand and Gravel</li> </ul> </li> <li>The site is located within a Source Protection Zone. As such, infiltration techniques should only be used where there are suitable levels of treatment, although it is possible that infiltration may not be permitted. Mapping suggests that there is a medium risk of groundwater flooding at this location, confirming infiltration techniques will unlikely be suitable. SuDS should be discussed with the LPA, LLFA and EA at an early stage to understand possible constraints.</li> <li>Most source control techniques are likely to be suitable. Mapping suggests that permeable paving may have to use non-infiltrating systems given the possible risk from groundwater.</li> <li>Detention options are unlikely to be feasible as mapping suggests mean site slopes are &gt; 5%. If this feature is feasible a liner maybe required to prevent the egress of groundwater.</li> <li>Filtration options are unlikely to be feasible as mapping suggests mean site slopes are &gt; 5%. Feasibility of options should be assessed as part of a site-specific assessment. If this feature is feasible, it should be located where the depth to the water table is &gt;1m.</li> <li>All forms of conveyance features are likely to be suitable. Where slopes are &gt;5%, features should follow contours or utilise check dams to slow flows.</li> <li>The site is not designated by the EA as previously being landfill.</li> <li>Developers should refer to Hertfordshire County Council's <a href="#">SuDS Design Guidance</a> and <a href="#">SuDS Policy Statement</a>, as well as the Level 1 SFRA, for information on suitable types of SuDS, the management train and opportunities and constraints in site master-planning.</li> </ul>

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<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 and Exception Test document (November 2019) provides the detail on how this has been undertaken and can be found on the Local Authority website.</p> <p>The Sequential Test will need to be passed before the Exception Test is applied. Caravans, mobile homes and park homes intended for permanent residential use are classed as 'highly vulnerable'.</p> <p>The Exception test will need to be applied if:</p> <ul style="list-style-type: none"> <li>• Highly vulnerable development is located in FZ2.</li> <li>• Change of land use at these sites (caravans, mobiles homes and park homes).</li> </ul> <p>Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b.</p> <p>This site is not located within the fluvial Flood Zones but there is surface water risk in the south-western portion of the site, which still needs to be taken into account, given the high vulnerability classification of the site use. The surface water risk needs to be accommodated and the proposed development should not exacerbate risk on site or elsewhere. The hazard rating should be used to determine safe access and egress. Best practice recommends development is steered away from areas of flood risk.</p>

**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. Other sources of flooding should also be considered.
- All sources of flooding, particularly the risk of surface water and groundwater flooding, should be considered as part of a site-specific flood risk assessment.
- Any FRA should be carried out in line with the National Planning Policy Framework; Flood Risk and Coastal Change Planning Practice Guidance; Welwyn Hatfield Council's Local Plan policies, and the LLFA's SUDS guidance and Policy Statement.
- Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage.
- 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.

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

- The surface water risk needs to be accommodated and development should not exacerbate risk on site or elsewhere.
- Given the vulnerable nature of development, consideration should be given to a sequential approach to site layout steering development away from areas at greatest risk.
- Due to the potential risk from the unmodelled watercourse/ culvert, it will need to be modelled at the planning application stage, including an assessment of blockage to the culvert on the upstream boundary. Due to the vulnerability of the development and the small size of the site compared with the number of pitches planned, flood modelling will need to be undertaken, which may affect the capacity of the site.
- 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, and given the site contains vulnerable properties, wider consideration may need to be given to the risk of the structures themselves being more affected.
- 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.
- New or re-development should adopt 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.
- Due to the vulnerable nature of this potential development, mitigation methods and site-specific SuDS should be considered at the FRA stage, which may result in a reduced capacity of the site.
- 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.

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		<ul style="list-style-type: none"> <li>• Developers should refer to Hertfordshire County Council's <a href="#">SuDS Design Guidance</a>, <a href="#">SuDS Policy Statement</a> and the Level 1 SFRA for information on SuDS.</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> </ul>
<b>Mapping Information</b>		
<b>Flood Zones</b>	There are no Flood Zones at this site, due to the presence of smaller drains. The impact of these drains may need to be assessed at site-specific assessment stage to confirm if any risk.	
<b>Climate change</b>	No Flood Zones or modelling at the site, hence no climate change outputs. Climate change should be considered at the site-specific assessment stage.	
<b>Fluvial depth, velocity and hazard mapping</b>	The impact of these drains may need to be assessed at site-specific assessment stage to confirm if any risk.	
<b>Surface Water</b>	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding. This dataset is not suitable for identifying whether an individual property will flood. It is based on the confidence in the modelling at that location; because of the way the mapping has been produced and is indicative, the maps are not appropriate to act as the 'sole evidence' for any specific planning or regulatory decision or assessment of risk in relation to flooding without further supporting studies or evidence. Please consult all layers and outputs provided on the RoFfSW mapping for further details.	
<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.	