

Mapping

Tewkesbury Borough Strategic Flood Risk Assessment Level 2 Detailed Site Summary Tables



Site details	Site Code	Winchcombe Site 6			
	Area	7.89 hectares			
	Current land use	Greenfield			
	Proposed land use	Housing			
Sources of flood risk	Existing drainage features	An unnamed ordinary watercourse flows west to east along the northern site boundary. Another unnamed drain lies approximately 50m west of the south-western corner of the boundary and becomes culverted south of the boundary.			
	Fluvial	Proportion of site at risk			
		FZ3b	FZ3a	FZ2	FZ1
		1%	2%	2%	98%
	Flood risk to the site stems from the unnamed watercourse that flows along the northern site boundary. The very northern boundary area is within FZ3b. Extents increase slightly in FZ3a and FZ2, most noticeably in the north-west corner of the site.				
	Surface Water	Proportion of site at risk (RoFfSW)			
		30-year	100-year	1,000-year	
<1%		<1%	2%		
Surface water flooding in all events is largely restricted to the channel of the unnamed watercourse to the north of the site and its immediate vicinity. In the 1,000-year event the surface water flows in the channel increase slightly and an isolated case of ponding develops along Harvey's Lane where the site boundary has been extended. There also is the potential for surface water flooding in the 30, 100 and 1,000-year events to extend from the unnamed drain to the south-west of the site. The extents do not currently reach the site boundary.					
Reservoir	The site is not shown to be at risk of reservoir flooding.				
Flood history	The Environment Agency's historic flood map does not show the site as having flooded in the past. The site is however within 20m of a flood incident recorded by Gloucestershire County Council in their Flood Data Register. The incident was described as overland flow taking place on 25/11/2012. There is no indication however of it directly affecting 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	There is potential for the culvert to the south of the southern boundary to block and cause flood water to encroach into the southern site boundary. The potential for this should be considered at site-specific assessment level as it has not been possible to model this small drain using 2D generalised techniques.				
Flood warning	The site is not covered by the Environment Agency's Flood Warning Service.				

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Emergency planning	Access and egress	Dry access and egress from the site via Harvey's Lane is available in the 30-year and 100-year event but lost in the 1,000-year. Surface water flooding begins to have a significant effect on surrounding road network in the 100-year event.		
Climate Change	Climate change allowances for '2080s'	River Basin District	Higher Central	Upper End
		Severn	35%	70%
	% of site at risk		2%	3%
	Implications for the site	Climate change extents increase slightly when compared against FZ3a. The upper allowance is comparable with FZ2. As the site is affected by surface water flooding from the 30-year event along the northern edge of boundary, and along the unnamed drain south-west of the boundary, climate change may also increase the extent, depth and frequency of surface water flooding within the site.		
Requirements for drainage control and impact mitigation	Broad scale assessment of possible SuDS	<ul style="list-style-type: none"> Geology at the site consists of: <ul style="list-style-type: none"> Bedrock – Mudstone, siltstone, limestone and sandstone Superficial – No deposits The site is not located within Groundwater Source Protection Zone. Source control techniques are likely to be suitable for this site. Mapping suggest groundwater flooding is unlikely to be an issue at the site, as such infiltration techniques may be suitable. Detention features may be feasible providing site slopes are <5% at the location of the detention feature. Filtration systems are probably suitable providing site slopes are <5% and the depth to the water table is >1m. If the site has contamination issues, then a liner will be required. All forms of conveyance features are likely to be suitable. Where slopes are >5%, features should follow contours or utilise check dams to slow flows. The site is not designated by the Environment Agency as previously being a landfill site. 		
NPPF and planning implications	Exception Test requirements	<p>The Sequential Test will need to be passed before the Exception Test is applied.</p> <p>The Exception Test will need to be applied if:</p> <ul style="list-style-type: none"> More Vulnerable and Essential Infrastructure development is located in FZ3a and for Highly Vulnerable development located in FZ2. Highly Vulnerable infrastructure should not be permitted within FZ3a and FZ3b. More Vulnerable and Less Vulnerable Infrastructure should not be permitted within FZ3b. Essential Infrastructure in Flood Zone 3b will require the Exception Test. 		

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	Requirements and guidance for site-specific Flood Risk Assessment	<ul style="list-style-type: none"> • 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. • Consultation with the Local Authority, Local Lead Flood Authority and the Environment Agency should be undertaken at an early stage. • Resilience measures will be required if buildings are situated in the flood risk area along the northern site boundary. Raising Finished Floor Levels above the design event may remove the need for resilience measures. • Onsite attenuation schemes would need to be tested against the hydrograph of the unnamed watercourse to the north of the site to ensure flows are not exacerbated downstream within the catchment. • Developers should ensure that the greenfield run off rate to be used for the design of Attenuation Storage for all storms up to a 1% (1 in 100) annual probability plus 70% allowance for climate change, shall be the 1 in 1-year greenfield runoff rate calculated by using ReFH2 for the whole catchment. • 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. • Assess the flood risk posed by the unnamed ordinary watercourses to the north of the site and to the south-west of the site. • As 2D generalised modelling techniques provide a high-level indication of flood risk, developers should confirm the flood risk to the site by undertaking detailed hydraulic modelling using channel topographic survey. • Assessment for runoff should include allowance for climate change effects. • Safe access and egress will need to be demonstrated. • New development must seek opportunities to reduce overall level of flood risk at the site, for example by: <ul style="list-style-type: none"> ○ Reducing volume and rate of runoff ○ Relocating development to zones with lower flood risk ○ Creating space for flooding. • 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.

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Flood Zones	Flood Zones 2, 3a and 3b are based on generalised 2D modelling techniques for the purposes of the SFRA. The mapping provides a strategic assessment of flood risk – developers should undertake detailed modelling of climate change allowances as part of a site-specific FRA.	
Climate change	The climate change allowances for the '2080's were modelled using generalised 2D modelling techniques for the purposes of the SFRA. The mapping provides a strategic assessment of climate change risk – developers should undertake detailed modelling of climate change allowances as part of a site-specific FRA.	
Surface Water	The Risk of Flooding from Surface Water has been used to define areas at risk from surface water flooding.	
Depth, velocity and hazard mapping	Depth, velocity and hazard mapping for the 1 in 100-year event (Flood Zone 3a) have been taken from 2d generalised modelling techniques.	
Reservoir	The Environment Agency's online 'Long term flood risk information, Flood risk from reservoirs, Extent of flooding' viewer was used to define areas at risk from reservoirs.	