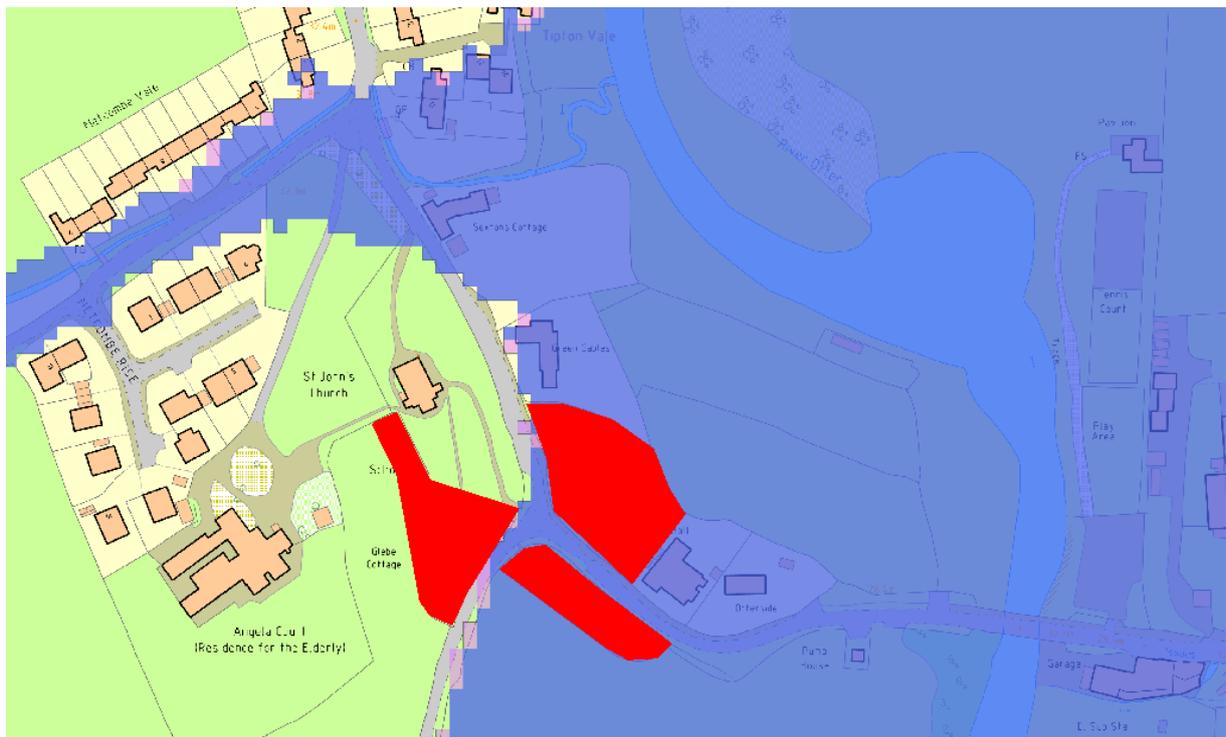


Flood Risk Assessment for Tipton St John Primary, Tipton St John, Devon.

Introduction:

Tipton St John Primary School occupies three parcels of land beside the road between Metcombe Vale and Tipton St John in East Devon, indicated in red on the map below. The area coloured blue indicates the extent of Flood Zone 3, “High Probability” of flooding, as shown on the Environment Agencies flood map.



While the western site is raised above most risks of flooding, importantly, all three sites are accessed to the north, south and between the sites, by the public highway that is at risk of frequent and deep flooding from both the River Otter and the Metcombe Stream.

The two lower school sites, a car park and school buildings, are both located on the floodplain of the River Otter and are liable to deep and frequent flooding from both the River Otter and the Metcombe Stream. Safe access and egress to and from the site is not possible on occasions as the public roads are flooded and no “safe refuge” exists on either of the lower sites.



Environment Agency Officer indicating depth of flooding on the school site following a locally intense thunderstorm.

The Metcombe Stream is a watercourse that drains an area of approximately 3km² of steeply rising predominantly agricultural land. This watercourse is particularly “flashy” in response to intense rainfall such as thunderstorms, for which the Environment Agency can give little or no satisfactory warning. Following prolonged or intense rainfall the Metcombe road can become flooded by deep and fast flowing waters. Such flooding prevents safe access to, and egress from, the higher site and floods the lower sites. The depth and velocity of floods waters in the Metcombe Road (typically 0.3 - 0.5m) during such events is regarded as “danger for most/danger for all” under the terms of guidance found in DEFRA R&D report FD 2320 (table 13.1) below.

Table 13.1 Danger to people for different combinations of depth and velocity

Velocity (m/s)	Depth of flooding (m)											
	0.05	0.10	0.20	0.30	0.40	0.50	0.60	0.80	1.00	1.50	2.00	2.50
0.00												
0.10												
0.25												
0.50												
1.00												
1.50												
2.00												
2.50												
3.00												
3.50												
4.00												
4.50												
5.00												

Key:
 Danger for some
 Danger for most
 Danger for all

The River Otter drains an area of over 180 sq km of largely agricultural land rising up into the Blackdown Hills and the East Devon Plateau. Flood risks associated with this river emanate from prolonged and intense rainfall, sometimes compounded by rapid snow melt and rain falling on frozen ground in the higher catchment. The Environment Agency offers a flood warning service for such river flooding but this does not remove all risk associated with river flooding of the lower school for a number of reasons. Importantly, not all warnings are received and some go unheeded. Often parents are unable to heed warnings and those that do cannot safely access the site during flood events. The inevitable flood damage to the fabric of the buildings cannot be avoided.



The hazards associated with river flooding such as above on the 7th July 2012 is compounded at Tipton St John by anxious parents trying to pick up young children along the flooded access roads serving both the upper and lower sites and the lack of a safe refuge on the lower school site.

Present and future flood risks:

Flooding of the Tipton St John Primary School, and the public road it relies upon, is unpredictable but the school has been affected by flooding on a regular, perhaps annual basis and has long been regarded as one of highest risk schools in Devon.

These risks are predicted to increase as peak rainfall and peak river flows increase as set out in the Technical Guidance to the National Planning and Policy Framework, Table 5, below.

Table 5: Recommended national precautionary sensitivity ranges for peak rainfall intensities, peak river flows, offshore wind speeds and wave heights

Parameter	1990 to 2025	2025 to 2055	2055 to 2085	2085 to 2115
Peak rainfall intensity	+5%	+10%	+20%	+30%
Peak river flow	+10%	+20%		
Offshore wind speed	+5%			+10%
Extreme wave height	+5%			+10%

This advocates a 10% increase in peak river flows be allowed for until the year 2025 and a 20% increase thereafter to 2055. Such increases will increase both the frequency and depth of flooding on the site significantly in the years ahead and increase the risk to life.

Conclusion:

Tipton St John Primary School is located on a split level site at Metcombe Vale. Both the higher and lower sites are directly affected by flooding from the Metcombe Stream and River Otter. The present risks flooding regime gives rise to life threatening flood risk to all users of both sites and these risks are predicted to increase due to the affects of climate change. It is important that every effort is made to relocate the school to a site that is located in Flood Zone 1, "Low Probability" of flooding, at the earliest opportunity.

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