

Flood Investigation Report

Site:
Tisbury

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| Date of flood events: | 20 October 2021, 31 October 2021 |
| Date flood event was reported to WC: | Early November 2021 |
| Investigating Officer (s): | Richard Williams |
| Date of investigation: | Ongoing from date of reporting |

1. Details of the Flood Event

Reason for investigation:

Two Storm events caused flooding to multiple properties in the village and surrounding area.

The primary event was the 20 October, with a lesser event following on 31 October

Location:

Tisbury – Located towards the head of the River Nadder in South Wiltshire, after the junction of the River Sem and the River Nadder, which flows through the village itself.

Identified source(s):

Combination of both pluvial (Rain), and fluvial (River) flooding – resulting from the catchment area in storm conditions.

Cause/pathway:

Fluvial Flooding – This followed the course of the River Nadder through the village. There are several properties along the river which are directly threatened in flood due to their historical proximity to the course.

Pluvial Flooding – This is the channelled rainwater flowing off the adjacent hillsides naturally gravity. It will find its own path of least resistance before ultimately joining the river or similar larger watercourse.

The night of 20 October 2021 featured a large storm that moved up southwest England. The EA classified it as a Yellow storm event, indicating there would be areas of risk, but minimal risk to life. The storm itself on a wider area was typified by heavy rain and high wind, but it contained smaller pockets of high intensity, short duration rainfall. Whilst the pluvial flooding didn't directly affect properties in Tisbury, localised pockets of extreme rainfall upstream on top of the baseline heavy rain caused surge flows into the river and accentuated the already surcharged river levels.

The Environment Agency supplied the following comments:

In an email:

- “I am not at all convinced with the return periods that we have been given for the events. The highest intensity of the rainfall totals did not land in our rain gauge network and therefore the return period is lacking the dramatic impact that we all witnessed on this event.
The Nadder achieved the highest recorded level on the 20th/21st event. Interestingly our surveyor has been out and recorded a level against the scheme that match the model outlines from 150 year return period.”

From the EA report on the storm event:

- Other locations than those analysed here may have experienced more intense and extreme rainfall. There is also uncertainty in the raw data and frequency analysis methods. Therefore, this analysis should only be interpreted to indicate that the rainfall events were in some locations exceptional and rare.

It is considered that the river-based flooding was in excess of the predicted 1% AEP return period storm event, as supported by the EA's survey for the area. However, the local high intensity rainfall that caused the known pluvial flooding to properties upstream, required the 0.1% AEP storm event to correlate the known course of surface water received. As a result, it is the combined flows from both sources which drive the flooding that occurred. The base heavy storm rainfall caused the river to flow at bank capacity, but with the localised intense rainfall pockets flowing overland into the Nadder, causing it to come out of bank further.

Extent of flooding:

Broadly, the flooding from the River Nadder followed the limits of the EA's 'Flood Zone 3' extents, which is generated by out of bank flows from the Nadder itself

Separately, and contributing to, surface water flows from the surrounding higher land flowed onto the highway, and then used the highway as conduit under gravity. The intensity of the rainfall overwhelmed the existing highway drainage system. Because of the locational nature of the rainfall, although parts of it followed the flood paths identified by the EA 1 in 1000 surface water flood maps, this was not consistent across the area affected.

History of flooding:

The EA River level monitoring station in Tisbury recorded its highest peak river level for the 24 years of operation on the night of 20 October 2021. The measurement exceeded the previous highest peak (November 2000) by nearly 0.5m. The river level in Tisbury is affected by a larger catchment, being fed by the Sem river and surrounding land, it does give a broad indication as to the severity of the event on the 20 October.

By comparison, the rainfall on the 31 October generated a water level which was 13th on the highest recorded list, and was over a metre lower than that of the 20 Oct. From that it is felt that the event of the 20th was exceptional.

Council Records (Including ex District Council) have mentions of property flooding in the parish in several years, including (but not exclusively) 2008, 2003, 1983, 1979, and back to 1904.

There is a likelihood of property flooding historically in the parish, given the proximity of some of the buildings to the watercourse, however accessible records do not reflect this as some incidents are unreported.

2. Outcome of the Investigation

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| Risk Management Authority: | Wiltshire Council/Environment Agency |
| Flood Risk Management Function: | Land Drainage Act 1991 |
| Date of notification: | |

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| Method of notification: | |
| Actions/proposed action in response: | <p>Cleaning of Highway drainage system undertaken. System found to be working, although overwhelmed by rain events in both storms as expected.</p> <p>Site inspections undertaken to village, determine causes of flooding to affected properties</p> <p>Large scale maps provided to note down flow-paths and flooding extent limits – these are kept and updated by the Flood Action group formed within the community.</p> <p>Because of the dispersed nature of the affected properties, and the uncommon nature of some of the surface water flooding, there is no scheme that can reduce risk to the village as a whole. Thus chiefly the defence is undertaken by the individual ‘at risk’ properties themselves.</p> <p>However, the following should be investigated or led by the community:</p> <ul style="list-style-type: none"> • The Parish Council and Flood Action group should remain signed up for the EA ‘Early Warning’ alert service • Landowners with ditches or other watercourses on their land should clear and maintain their systems to add flood storage capacity and confidence in operation. • Affected properties should seek professional independent advice with regards Property Flood Resilience, to minimise impact in the future. • The EA are continuing their update of the flood risk model to the area, and are considering options for area defence to be tested on the updated model. |

3. Additional Comments:

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| Date completed: | 15/10/22 |
| Completed by: | Richard Williams |
| Verified by: | |