Wiltshire Council
Where everybody matters

Flood Investigation Report

Site:
Donhead St Andrew

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:
Donhead St Andrew – Located upstream of Tisbury in South Wiltshire, and near the origin of 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 parish. There are several properties, especially the old mills along the river which are directly threatened by the river in flood due to their intentional 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. It is believed that the pluvial flooding received by the village was a result of a combination of one of these exceptional rainfall pockets coupled with the local topography.

The Environment Agency supplied the following comments:
In an email:

2. "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.
3. 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 behind Court Street that match the model outlines from 150 year return period."

From the EA report on the storm event:

4. 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 of the predicted 150year 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 does not match the 100-year event on the EA's surface water risk mapping and requires the 1000-year return period storm event mapping 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.

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 floodpaths identified by the EA 1 in 1000 surface water flood maps, this was not consistent across the area affected.

History of flooding:

Although not a direct reference, the EA river level monitoring station in Tisbury, approximately 3 miles downstream of Donhead St Andrew 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. While 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 (ex-District Council) have mention of property flooding in the parish in 1982, and highway flooding in 1978/9, but there are no other reported events. There does not seem to be reported issues following the November 2000 event, which generated the second highest river level in Tisbury (as noted above).

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.

5. Outcome of the Investigation

Risk Management Authority:	Wiltshire Council

Flood Risk Management Function:	Land Drainage Act 1991
Date of notification:	
Method of notification:	
Actions/proposed action in response:	CCTV survey of Highway drainage system undertaken. System found to be working, although overwhelmed by rain events in both storms as expected. Age related defects were discovered but did not compromise the system's function within required limits. A programme of repairs and improvements is underway to aid safety of the highway and users. Site inspections undertaken to visit affected properties, determine causes of flooding to them. Large scale maps provided to note down flowpaths and flooding extent limits – these are kept and updated by the Flood Action group formed within the community. 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. However, the following should be investigated or led by the community: 6. The Parish Council and Flood Action group should sign up for the EA 'Early Warning' alert service. 7. The owners of the various historic mills, and pinch points along the river with flow control devices need to assess and co-ordinate their actions in stormy conditions. Storage and slowing of the storm surge along the main river channel route helps both the local and downstream communities in reducing risk. 8. Properties affected by surface water run off should assess changes to their landscaping to help steer water flow away from the properties. 9. Landowners with ditches or other watercourses on their land should clear and maintain their systems to add flood storage capacity and confidence in operation. 10. The Flood Action group have been working the Cranbourne Chase ANOB Trust to assess and restore watermeadows along the path of the river, and this work should be continued. 11. Affected properties should seek professional independent advice with regards Property Flood Resilience, to minimise impact in the future.

12. Additional Comments:

Date completed:	15/09/22
Completed by:	Richard Williams
Verified by:	

13.