

The Boscastle Flood 2004

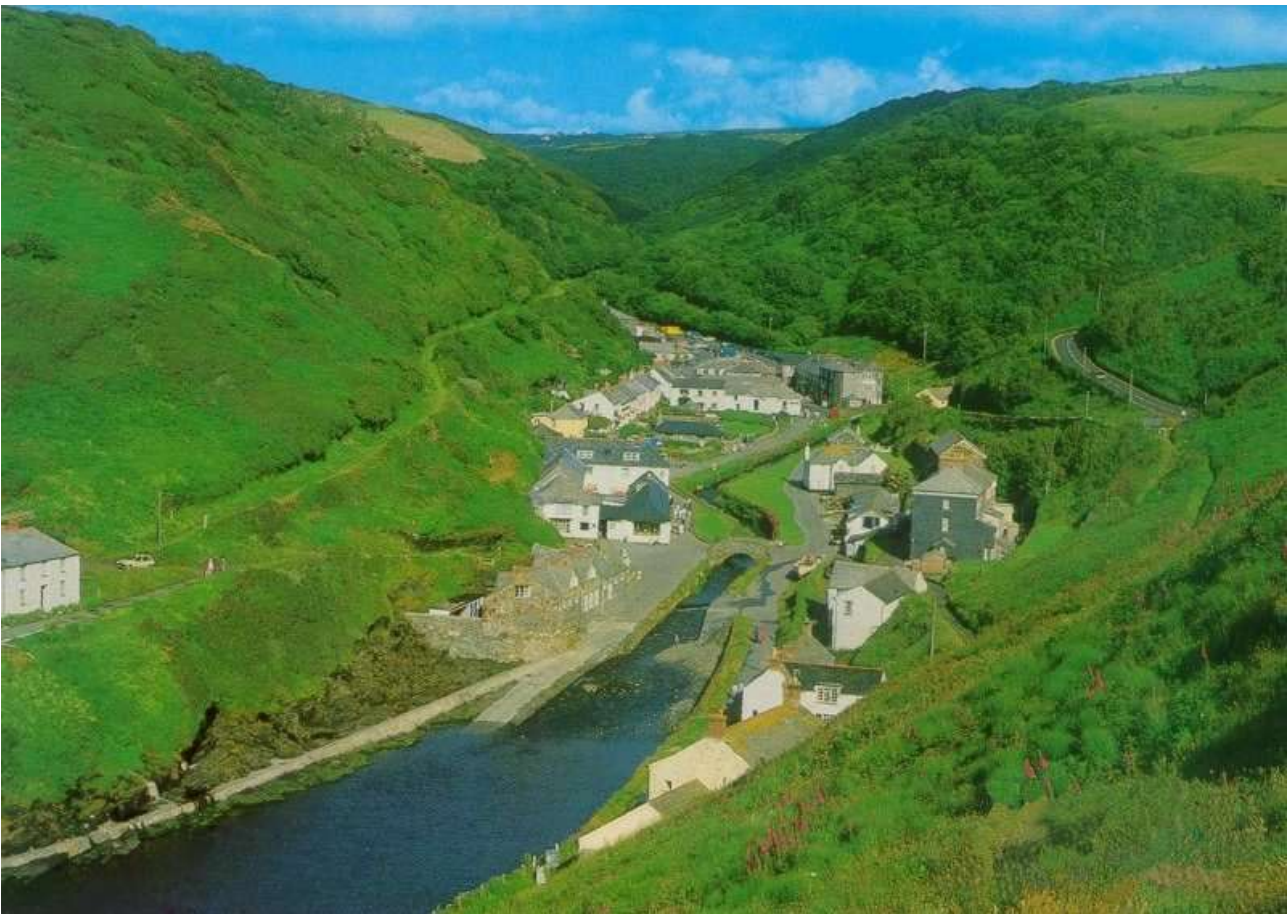
by Phil Bull

Causes of the Flood

Physical Causes

The flood took Boscastle entirely by surprise - it was a flash flood event & the village is not prone to regular annual flooding as many locations affected by extreme flooding events are. In fact, the village had never experienced such a flood, suggesting that the flood was the result of a combination of exceptional factors.

A major factor is the location of the village, within the Valency valley. The Valency is normally a quiet stream, which follows a very steep course down into the valley from the hills around. The valley's structure is likely one of the most major physical factors, as its steepness accelerated the rainwater falling on the hills above the valley greatly as it travelled down to the valley floor where Boscastle stands. As well as causing the water to travel extremely quickly down the valley sides, the shape of the valley concentrated rainwater from the surrounding area into a relatively narrow space descending towards the valley bottom. Not only did this cause an increase in run-off speed, but also an increase in discharge volume, which was later to prove devastating in the confined river channel flowing through the village itself, which simply couldn't hold enough water to prevent the flooding which occurred.

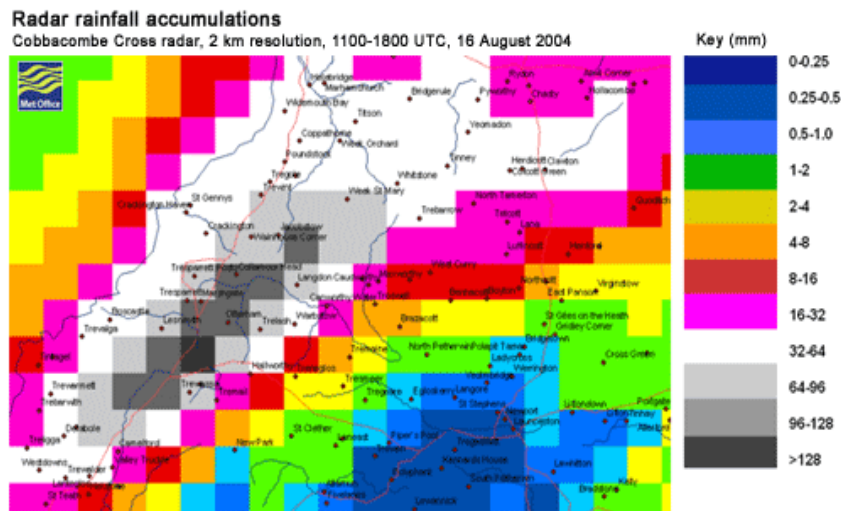


Boscastle - within the Valency Valley. Note the steep slopes & narrow river channel, which allowed massive amounts of water to flow into the same place all at once

The next major factor was the weather that day – arguably the *most* major factor. The entire South-West of the country had been battered with stormy weather over the days leading up to the flood on the 16th of August, and as a result the ground was saturated. The 16th was a very hot day, with clear skies in the morning & high temperatures for much of the day. The combination of high localised temperatures & the abundance of unabsorbed surface water, coupled with moist winds off the sea & the effects of the local relief (Bodmin Moor) caused a great deal of moist, warm air to travel upwards quickly.

“A line of thunderclouds rocketed over 10km high, their tops streaming into anvil shapes as high-level winds swept air away from the storm, helping suck more air from below.”

The formation of storm clouds was rapid & soon Boscastle was overshadowed by a menacing storm cloud. By early afternoon, the rain had started, and within a few hours a massive 5 inches of rain had fallen in Boscastle alone. When the flow in the valley was met by the water funnelled down from the moors through the steep valley (unhindered by soil absorption due to the saturation of the land), the sheer volume of water in such a small space at once caused the Valency to burst its banks & cause the exceptional level of damage in the village.



Met Office Radar Map – dark grey shows the area of highest rainfall, which is just east of Boscastle, on the moors behind the village

Human Causes

Human activity is hardly responsible in any way for the floods. They appear to have been a chance event, caused by an unfortunate configuration of wind & cloud patterns on the day. But the damage caused by the floods can be attributed partially to several human causes.

The first of these is the lack of any flood control system, in the form of either raised banks around the river channel or emergency drainage ditches to catch overflowed water. Had these measures have been in place, no doubt the flood waters would have been slowed & delayed, giving people more time to evacuate, although the damage caused by the flood would likely have been just as devastating.

Secondly, the sewer & drainage systems in Boscastle were old & had a small capacity. The sudden surge of water broke the system, preventing any controlled drainage from occurring in the village – the flood water simply took the route overland, causing more damage.



View from helicopter showing the extent of the flooding

Also, structures obstructing the course of the river increased the spread of the floodwater. The most obvious of these is the bridge in the centre of the village, under which cars &

vegetation became stuck. Because the flow of water was partially blocked, some water had to flow around the bridge, flooding properties further from the river channel than perhaps would have been had the obstruction not occurred.

The river Valency had never had a major flood, so the residents of Boscastle saw no need to prepare for such an event. The flash flood was a freak event, so it is difficult to place blame for the human conditions which intensified the damage which it caused, as no-one could have predicted the event in the first place. Compared to the natural causes however, the human effects are mostly insignificant.



The bridge in the centre of the village, under which debris became lodged, blocking off the channel & increasing the reach of the flood waters

Effects of the Flood

Short Term

The short term effects of the flooding were as follows:

- Roads were blocked off by the floodwater, making emergency access difficult except from the air. Even when rescue helicopters arrived, the valley was only big enough for two to operate at any one time, prolonging the operation & putting lives at risk from the still rising flood waters.
- Property was destroyed by debris such as entire trees & vehicles speeding down the valley at high speed, pulled out towards the sea by the raging torrent. Buildings were smashed, especially in the main street where the river channel flows.
- People were trapped in buildings by the floodwater & forced to seek refuge on the roofs of the buildings & await rescue. The danger of hypothermia, shock or even being swept away was great.
- People were left homeless for the night, so emergency accommodation had to be set up. Nearby hotels & guest houses were packed with tourists who had arrived in Boscastle in the morning & had lost their cars, so were unable to return to their accommodation elsewhere.
- A burst sewage main & damaged buildings made much of Boscastle inaccessible for health & safety reasons for at least a few days.



Cars & other vehicles were swept up by the floodwater & taken out to sea. Some collided with buildings, causing severe structural damage.

Long Term

- Floodwater damaged a great deal of properties. Possessions were lost, river water & a burst sewage main spoiled the ground floor of many houses & thousands of pounds worth of damage was done.
- Repairs had to be made after the damage. This was very time consuming & costly. Some buildings were beyond repair & their owners have had to consider rebuilding from scratch.
- The damage not only affected the residents, but also insurance companies. It is likely that home insurance will be much costlier in Boscastle from now on.
- Boscastle's main industry is tourism. The town was effectively closed to tourists after the flood, causing a massive loss of revenue. Tourist attractions such as the witchcraft museum were lost & tourists next season will be wary of visiting the town in case the floods are repeated. Boscastle may never recover its tourist industry fully & many small businesses could go out of business as a result.



The witchcraft museum & local shop, Boscastle's greatest tourism assets, were left beyond repair by the flood

Developments

Since August, the focus has been on the clean-up operation in Boscastle. The initial stages of the clean-up were to secure buildings damaged by the flooding, as these posed the most immediate risk to public safety. Building inspectors were called into the area & the entire centre of the village cordoned off from the public. The entire process of inspecting & securing buildings took several days, after which home owners were allowed to retrieve any possessions they could salvage.

The clean-up operation was then allowed to begin in earnest, with the infrastructural damage of roads, sewers & electricity, water & gas supplies being repaired. This allowed the owners of some of the relatively unaffected houses to return home & begin replacing furniture & redecorating, after inspecting the damage done to their property in full.

Buildings nearest the river channel remained deep in deposited silt & debris & were in some cases too damaged to salvage. The museum & a shop were the worst affected, the shop being hit directly by a tree, so demolition was the only option in this case.

The Environment Agency has had a great deal of input. Firstly, the entire region was inspected & the probability of a recurrence calculated. Estimates from various sources differ greatly, some predicting a repeat event in 2005 & some not expecting similar to happen for another 60-70 years.

In any case, the Environment Agency has recommended that construction in the area in the future should not include facilities for those most vulnerable to flash-flooding emergencies, such as the elderly & young children. Effectively, this means that the local council will reject any planning applications for residential homes or schools in the valley. The Environment Agency has also removed debris upstream & burned vegetation away from the river channel to prevent trees causing structural damage if swept downriver should another flood occur.

In terms of management & effectiveness, these measures are poor & arguably will not contain another flood.

The organisations most active in Boscastle are the insurance companies, who have had to manage redevelopments & assess damage in order to limit the massive costs incurred due to policy holders claiming for the damage caused. Due to the historical merit of several of the town's buildings, reconstruction work has been complicated by the need to find lost artefacts or reconstruct buildings using traditional materials & methods. The inherent lack of flood-resistance in these buildings is likely to cause problems if another flood occurs.



Removing rubble & debris was the principal concern once the flood waters had drained away, as many buildings were left inaccessible by their presence

The focus in Boscastle has been on repairing the damage & clearing up only – while the need of the community to return to some sort of normality as quickly as possible is obvious, the distinct lack of effective flood prevention measures, such as improving the maximum discharge volume capacity of the river channel or building flood barriers, means that Boscastle is unprepared for another flood, which could result in yet another disaster & even loss of life in later years.