

The lynmouth floods



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Case Study: Lynmouth

Lynmouth is a village in Devon, England, on the north edge of Exmoor. The village is on the converging point of the West Lyn and East Lyn rivers, in a gorge 700 feet (210 m) below Lynton, to which it is connected by the Lynton and Lynmouth Cliff Railway. The two villages are governed at local level by Lynton and Lynmouth Town Council. Lynmouth is rural area with not much corporate activity going on. It is in the coastal part of the United Kingdom Island, which makes it a large tourist attraction spot. People usually come to Lynmouth for Tourism and the activities they do are mainly horseback riding, fishing and boat rides.

Flood in 1952

On the 15th and 16th of August 1952, a storm of tropical started over in south-west England, precipitating 229 millimetres (9.0 in) of rain within 24 hours on a coastal area, Exmoor. It is thought that a cold front started a thunderstorm, and the storm worsened. An immediate surface run-off occurred and it caused a flash flood. Large amounts of floodwaters moved down the northern part, converging upon the village of Lynmouth; in particular, in the upper West Lyn valley, a dam was formed by fallen trees. This caused potential energy to form and after a while the water broke through the dam sending a huge wave of water and fragments down that river. Overnight, over 100 buildings were destroyed or seriously damaged along with 28 of the 31 bridges, and 38 cars were washed out to sea. In total, 34 people died, with a further 420 made homeless. Overall the rainstorm lasted about fourteen hours and 300 million gallons of rain precipitated.

Cause of the Flood

The small but steep sided drainage basin in which Lynmouth was situated increased the risk of flooding in the area. The steep sides encouraged greater surface runoff and combined with the small drainage basin size meant any water could reach the river fairly quickly. This was made worse by the high drainage density of the area due to the impermeable rocks of the area around Exmoor which formed the source of the river; again increasing the amount of surface runoff following rainfall. Prior to August 15th 1952 Lynmouth had received above average rainfall for 12 out of the first 14 days of the month meaning the soils were already saturated and the river levels high. On August 15th a heavy thunderstorm resulted in 200mm falling in 14 hours, one of the three heaviest rainfalls recorded in the UK. This heavy rain combined with the saturated ground and rapid surface runoff resulted in a huge volume of water flowing down the river. As Lynmouth is situated at the confluence of the East and West Lyn rivers the volume of water was increased further at this point and the was far beyond the capacity of the river channel causing the river to burst its banks. This resulted in devastating floods as the West Lyn which had been diverted during the construction of parts of Lynmouth retook its natural course, flowing straight through the village.

Prevention

Following the Lynmouth flood disaster, flood management plans were put in place to try and ensure such a disaster could not happen again by managing any excess rain water so that the River could handle it in the in the future.

A number of flood management strategies were put in place:

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- The mouth of the East Lyn was widened to increase capacity and allow water to quickly pass into the Bristol Channel
- The West Lyn was straightened to increase channel efficiency – straightening the channel reduces friction and increases velocity, enabling water to travel through the channel as quickly as possible making it more efficient in coping with flood waters;
- The West Lyn was not redirected, instead being allowed to follow its natural course
- Floodplain zoning was used to identify areas around the river most at risk from flooding. Building restrictions were then put in place with areas close to the river which are most prone to flooding being left as open spaces such as car parks.
- Bridges were made wider and taller to allow flood water to travel quickly beneath them and to reduce the likelihood of debris becoming trapped and acting like a dam as had happened in 1952; Embankments were built by the river to increase channel capacity and reduce the likelihood of flooding;
- More trees were planted upstream in the source area to try and reduce initial surface runoff through interception and the soaking up of water. Tree roots also help to improve infiltration by opening up the soil and slowing down the rate at which water reaches the ground;