

The Boscastle flood of 2004 – A case study of cause, effect and response

The flood on 16 August 2004 in Boscastle in Cornwall was the worst in local memory and an Environment Agency report concluded that it was among the most extreme ever experienced in Britain.

Previous floods have been recorded in Boscastle in 1847, 1957, 1958, 1963 and 1996 but the 2004 flood was significant as the peak flow was about 140 cumecs (m³/s) and the annual chance of this (or a greater) flood occurring, in any one year is about 1 in 400.

Student task

Using the template on page 2, place the following bullet points into the correct cause, effect or response:

- A drainage culvert was improved to allow more water to flow through.
- A new bridge was built.
- Approximately 200 mm of rain fell in 24 hours.
- Boscastle is at the confluence of three rivers.
- The shop was rebuilt.
- Buildings were flooded and/or destroyed.
- Buildings were searched.
- Cars, which had been swept away, were removed from the harbour.
- Cars, vans and caravans were washed into the sea.
- Debris was scattered over a large area.
- Helicopters rescued people from trees and roof tops.
- Loss of businesses.
- Loss of communications.
- Loss of habitat.
- Loss of income from tourism.
- Roads were cleared.
- The car park was raised and given a permeable surface.
- The drainage basin has areas of impermeable rock.
- The drainage basin has steep slopes.
- The flooding coincided with a high tide.
- The ground was saturated from previous rain storms i.e. a short lag time.
- The river was widened and lowered.
- Trees were removed from the river channel.
- Trees were uprooted.
- Two million tonnes of water flowed through Boscastle in one day.
- Water gauging stations were installed.

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The flood on 16 August 2004 in Boscastle in Cornwall was among the most extreme ever experienced in Britain. There was a combination of human and physical causes contributing to a series of effects and impacts. The responses to the flood were both short and long term.

Causes	
Effects	
Primary effects	Secondary effects
Responses	
N.B. There are different responses at different locations dependent on different advantages, disadvantages and costs. Some responses will involve hard rather than soft engineering.	
Short term responses	Long term responses

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Suggested answers

The flood on 16 August 2004 in Boscastle in Cornwall was among the most extreme ever experienced in Britain. There was a combination of human and physical causes contributing to a series of effects and impacts. The responses to the flood were both short and long term.

Causes	
<ul style="list-style-type: none">• Approximately 200 mm of rain fell in 24 hours.• The ground was saturated from previous rain storms i.e. a short lag time.• The drainage basin has steep slopes.• The drainage basin has areas of impermeable rock.• Boscastle is at the confluence of three rivers.• The flooding coincided with a high tide.	
Effects	
Primary effects	Secondary effects
<ul style="list-style-type: none">• Two million tonnes of water flowed through Boscastle in one day.• Cars, vans and caravans were washed into the sea.• Buildings were flooded and/or destroyed.• Trees were uprooted.• Debris was scattered over a large area.	<ul style="list-style-type: none">• Loss of income from tourism (economic impact).• Loss of businesses (economic impact).• Loss of habitat (environmental impact).• Loss of communications.
Responses	
The different responses are dependent on the different advantages, disadvantages and costs. The responses have involved both hard and soft engineering.	
Short term responses	Long term responses
<ul style="list-style-type: none">• Helicopters rescued people from trees and roof tops.• Buildings were searched.• Cars, which had been swept away, were removed from the harbour.• Trees were removed from the river channel.• Roads were cleared.	<ul style="list-style-type: none">• The shop was rebuilt.• The river was widened and lowered.• A drainage culvert was improved to allow more water to flow through.• The car park was raised and given a permeable surface.• A new bridge was built.• Water gauging stations were installed.

Extension tasks:

1. Students could be asked to provide additional information for each effect and response.
2. Students could be asked to construct a mind map for this case study.
3. Students could be asked to investigate the more recent 2007 flood in Boscastle.