

### River basin flooding, climate change and London

The following questions are designed for AS-level students studying river flooding or climate change hazards (Edexcel, AQA, OCR and WJEC). An example is included first of a question that scored full marks at AS-level. Read it carefully, and the examiner comment, before you answer the questions set.

Explain the human causes of river flooding (6 marks)

Urbanisation makes previously permeable soil surfaces impermeable. Surfaces like concrete and tarmac increase surface run-off and decrease the effectiveness of soil storage. The more ground that is covered by impermeable hard surfaces such as concrete or paving slabs, the less rainfall will soak into the ground and the more will run into drains. Also, these drains are effectively extending the river channel network, allowing water to reach the main channel faster. There will also be less transpiration without vegetation, which is a means of transmitting water back into the atmosphere without increasing run-off. All of this results in more water arriving quickly into a river channel during heavy rainfall, thereby increasing flood risk. Widespread flooding in the UK in 2000 (e.g. along the River Severn) was certainly made worse by floodplain building.

**Examiner comment**

"This is an excellent answer that scores full marks. The question asks for causes (plural) and the student has underlined each of the human causes they have identified to help the reader (but has not broken it down too far into simple bullets, which is not really to be encouraged at A-level). There is good use of proper terms like *permeable*, *run-off*, etc. And an example is offered, even though it is not explicitly asked for, which examiners always like to see. It's around the right length too – no more is needed."

1. With reference to a river you have studied, explain why flood risk has changed over time. (6 marks)

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**2. Explain the economic consequences that flooding of a major river like the Thames would bring. (6 marks)**

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