**GCSE - Hydrographs in the River Culm catchment worksheet**

1. Use the data below to construct a hydrograph for the River Culm for 30/10/2008.

|  |  |
| --- | --- |
| **Hours** | **Discharge (cumecs)** |
| 0 | 2 |
| 5 | 5 |
| 10 | 20 |
| 15 | 100 |
| 20 | 137 |
| 25 | 60 |
| 30 | 30 |
| 35 | 18 |
| 40 | 15 |
| 45 | 10 |
| 50 | 8 |
| 55 | 7 |
| 60 | 5 |

Total rainfall: 48mm

1. Plot the data for the flood hydrograph onto graph paper, with hours on the X axis and river flow in cumecs on the Y axis.
2. Construct a separate Y axis for rainfall and draw a rainfall bar at 0 hours to represent 48mm.
3. Give your hydrograph a title and add these labels: *Rising limb, peak flow, falling limb.*
4. Draw a line to show the lag time and calculate the lag time in hours.
5. Describe why the hydrograph can be described as flashy.

--------------------------------------------------------------------------------------------------------------------------------------

2. Study the photos below showing floods on the River Culm at Stoke Canon and Hele (2012)

An aerial view of a city

Description automatically generated with medium confidence

**Stoke Canon Hele**

Describe how a sudden rise in river levels after a storm event might affect:

1. Farmers with crops or livestock on fields close to the river
2. Residents with houses near the river
3. The operation of the railway from London to Exeter which runs close to the river

Farmers:

----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Residents:

----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Railway:

----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

1. The river Culm often has a flashy response to rainfall, meaning that the hydrograph rises and falls quickly. Explain how each of the following can produce a flashy response in the River Culm catchment.

|  |  |
| --- | --- |
| **Factor** | **How it produces a flashy response** |
| Geology (rock type) |  |
| Slopes |  |
| Urban areas, such as Cullompton |  |
| Farming |  |

1. Explain how the development of a new garden village near Cullompton could increase the risk of flooding on the River Culm.

----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

1. Suggest how climate change might affect the future shape of the River Culm hydrograph.

--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------