

# Cockermouth Flood Risk Management

## Questions and Answers

November 2011

### **What is this work all about and what are you doing?**

We are currently designing new flood defences as part of a possible new flood risk management scheme, which could reduce the risk of flooding to approximately 360 homes and 55 businesses in the town. By working closely with the Cockermouth Flood Action Group and the local community we have been able to address concerns and come up with a preferred option to further reduce flood risk. This includes raising sections of the flood walls and embankments along the River Cocker and River Derwent through the centre of the town. For further details on our proposals, please visit our website at [www.environment-agency.gov.uk/cockermouth](http://www.environment-agency.gov.uk/cockermouth).

### **Where are you now?**

We are now carrying out the detailed design for our proposals. It's really important we work with the community whilst doing this so we can address any issues or concerns and we will therefore continue to work with you on our designs especially those directly impacted – such as those living next to the flood walls and embankments. We will consider all views on how the finished defences should look.

### **How much is the scheme likely to cost and who will pay for it?**

The Environment Agency originally estimated the scheme to cost approximately £5.3 million, but have now reduced this to £4.4 million by making £900,000 savings through design and construction costs.

Funding still needs to be secured before the Cockermouth Flood Risk Management Scheme can be built, and so far Cockermouth Flood Action Group, Cumbria Flood Foundation, and the local community (through voting to pay additional council tax) have committed to making a contribution. The Environment Agency are continuing to work with Cockermouth Flood Action Group, Cumbria County Council and other partners such as Allerdale Borough Council and Cockermouth Chamber of Trade, to secure additional contributions from local businesses. We will find out about Defra's indicative allocation of Flood Defence Grant In Aid by the end of February 2012.

### **What are the next steps and when will construction start?**

We hope to have completed the detailed design and have all the necessary planning permissions in place by April 2012. This will allow us to start construction, providing funding for the scheme is secured.

### **What are the preliminary works you are planning on starting at Waterloo Street and Graves Mill?**

We have proposed some limited preliminary works in the gardens behind properties on Waterloo Street which we would like to start during early 2012 prior to the start of the main scheme. These works would provide protection to residents of Waterloo Street and some vulnerable residents at Graves Mill. We continue to work with the affected residents who are supportive of our plans.

### **Will a flood risk management scheme protecting Cockermouth, just push the problem downstream and make the flood risk worse for people on the right bank of the Derwent?**

All designs we produce for flood risk management schemes need to ensure that we don't transfer the flood risk to other areas. In our plans for Cockermouth, we have checked that all the raised defences don't push more water onto Derwentside Gardens or onto Gote Road. We know this because the standard of protection we are proposing along the River Cocker and downstream of the River Derwent

confluence, is less than, or equal to, the standard of protection currently provided to the Gote and Derwentside Gardens.

### **Does the Environment Agency remove gravel from rivers?**

We regularly monitor the river bed levels in urban areas where gravel accumulation occurs, however, we only remove gravel where we need to maintain the required level of flood protection. In Cockermouth, controlling river bed levels through gravel management forms an important part of our river maintenance plan. For further information please see the Environment Agency information sheet "Our approach to river maintenance in Cumbria".

### **If you want to reduce flood risk further, why can't you just remove more gravel from the rivers?**

The required standard of flood protection cannot be achieved solely by the removal of gravel and deepening the river channel. For example, to achieve the additional channel capacity required by dredging alone, river modelling has indicated that the entire width of the river bed over a two kilometre stretch of the River Derwent would need to be dredged to between a one and two metre depth. The River Cocker would also need to be deepened by approximately one metre over a distance of 700 metres up to Cocker Bridge. This equates to the removal of approximately 215,000 tonnes of gravel on the River Derwent and 30,000 tonnes on the River Cocker. Using the same principle, to contain the November 2009 peak flood flow, the river bed would have to be dredged to approximately 3.5m in depth over a distance of eight kilometres. This equates to the removal of approximately two million tonnes of gravel.

Dredging the rivers to the levels in either of the two scenarios above would require significant work to demonstrate that it was technically feasible to ensure that bridge foundations, river retaining walls and river banks would remain structurally stable and it is highly unlikely that such options would ever be economically or environmentally sustainable. For further information, please see the Environment Agency information sheet "Our approach to river maintenance."

### **Did gravel build up in the channels cause or contribute to the flooding of Cockermouth town?**

In November 2009, West Cumbria was subject to unprecedented and record rainfall, which fell on already saturated ground. The river levels were so high and the flooding was so significant, that any removal of additional gravel above our routine maintenance programme would not have prevented the flooding.

The flood of November 2009 deposited a large quantity of gravel in the river channel near Gote Bridge. In response, we carried out emergency works to remove 12,000 tonnes of gravel, plants and debris from the river in January 2010. We also took this opportunity to remove more gravel than had been present before the flood and maintain the channel capacity. This additional work was done to help us reduce flood risk following the significant increase in our 100 year flow estimates following the flood.

### **Did blockages of bridges in Cockermouth make the 2009 floods worse?**

The flooding in November 2009 resulted because of record levels of rainfall. The flooding was going to occur regardless of bridge blockages or build up of gravel within the channel. Blockages of bridges in Cockermouth can, however, make flooding worse. As we cannot guarantee that bridges will never block, we have included some blockage at several of the bridges in the river models being used to design the flood risk management scheme.

### **Will any future works cause major disruption to the town?**

Any amount of construction work causes some disruption due to construction vehicles travelling to and from the site. However, we always work hard to ensure that disruption from construction work is kept to a minimum. It is important to remember that this is still early stages and construction of a flood risk management scheme is not guaranteed at this stage. We will however, keep you informed as to how our proposals are progressing.

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08708 506 506

incident hotline  
0800 80 70 60

floodline  
0845 988 1188

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### **What would the impact be if both the South Street footbridge and the Waterloo bridge were removed or raised?**

We have carried out a study to show the impact of the river flows if the two bridges were removed - both individually and together. The results show that the height of the maximum river levels would drop, particularly at the Waterloo Bridge area, where the peak level dropped by 537mm. Maximum river levels dropped by 410mm at South Street footbridge and 165mm at the old railway bridge.

Removal of the bridges was not considered a viable option to help reduce flood risk to the town because they currently provide connectivity between communities, are permissive rights of ways and have historic connotations for the area. South Street footbridge also is part of the Coast-to-Coast Sustrans cycle route. The option of raising the bridges out of the floodplain during a flood event was considered, but decided not viable. This was due to the high cost and the extensive structural works needed to protect the bridge against upstream debris impact during high flows when the bridge deck would need to be raised.

### **If the flood defences are raised, higher flows will be carried down the river - does this mean there a greater risk of defences failing?**

The flood defences will be designed to take the additional loading from the increased flow and structural assessments will be completed on all defences providing flood alleviation. Where existing defences are likely to be weakened by the increased flows, strengthening works will be completed. Inspections of existing defences have already been completed and where strengthening works are needed, have been included in our proposals.

The emergency works to repair flood defences following the 2009 floods, included works to the foundations of the existing defences. This allows us to carry out future works to raise the height of defences, without impacting on the structural integrity.

### **Why doesn't the Environment Agency manage the vegetation on the right bank of the River Cocker (opposite Rubby Banks Road) as this will increase river capacity?**

Managing vegetation on the river banks will be part of the future maintenance management plan. The trees will be assessed and any that are likely to fall into the river causing blockages at the downstream bridges will be removed. From a hydraulic modelling perspective, the vegetation has little effect on the channel capacity and long grass will flatten during periods of high flow. We want to avoid turning the river into a canal and a healthy wildlife-rich river relies on natural banks. Whilst the area in question is relatively small, grass cutting here would further degrade the River Cocker and deter otters, herons and fish. The river would lose some of its wildlife and amenity qualities.

### **Is it possible to widen the River Cocker on the right bank (opposite Rubby Banks Road) as this will increase the channel capacity?**

Widening the channel in this one area will have minimal impact on the river levels as flows will still need to go through the constraint of the footbridges downstream. Therefore the cost of channel widening will not reduce water levels sufficiently to make a huge difference to the height of flood walls. Another thing to consider is that when river channels are widened, the speed of water flow is reduced. This leads to more sediment being deposited which in turn reduces the area available for river flows. Any increase in the area available for river flows gained from widening the channel, would soon be lost due to gravel deposition.

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### **What affect will there be on Bitterbeck when the River Cocker is in flood? Will Market Place flood more?**

We have completed modelling to check the extent of flood risk area when in flood and with the new flood defences in place. The proposed flood risk management scheme will not increase the frequency of flooding from Bitterbeck or affect the extent of the area at flood risk.

### **Why do the results from the modelling show that the standard of protection is low when flooding from the River Cocker has only occurred once?**

In determining standards of flood protection, the most up to date records of recent flooding need to be used. The 2009 flood provided new rainfall data which had significant implications on the hydrology and the flood levels.

Return period flows are estimated using a flood frequency curve which uses existing data to forecast higher return periods where data from flooding may not exist or is limited. Where data is available, particularly for high levels of flooding (such as that Cumbria experienced in 2009), the information provides a valuable opportunity for checking that forecast return periods developed from using low flood return period data, are accurate.

In the case of Cockermouth, the 2009 data influenced the flood frequency curve by recording higher flows for the 100 year return period, thereby reducing the standard of protection that was originally determined from earlier data.

### **Is surface water flooding a big concern in Cockermouth town?**

Flooding can also occur from surface water when the drainage systems are overwhelmed and are unable to outfall into the river due to high river levels. We continue to work with Cockermouth Flood Action Group, United Utilities, Cumbria Highways and other partners to reduce the risk of surface water flooding.

### **What caused the November 2009 floods?**

The amount of rainfall that fell over two days on top of the saturated catchment caused rivers to swell, many to record levels, overwhelming the floodplains in Cumbria. In Cockermouth, approximately one month's worth of rainfall fell in the space of 24 hours and the impacts were worsened by flows peaking in both the River Cocker and the River Derwent at similar times.

The management of Thirlmere Reservoir and Crummock Water made no difference to the severity of flooding in Cockermouth.

Gravel removal alone would not have prevented the flooding that occurred.

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