

# KENDAL TOWN COUNCIL

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## **FLOODING RELATED QUESTIONS ARISING FROM THE DECEMBER 2015 KENDAL FLOODS**

I am writing on behalf of Kendal Town Council with questions relating to the December 2015 flooding of the town. The questions below will be addressed to all the appropriate responsible bodies although not all may be applicable to your organisation. We would ask that our questions be considered and responded to in writing as well as being taken into account in any investigation and resilience reporting which you may undertake. We may then wish to invite you or a representative to attend a Council meeting to further discuss your responses. To facilitate the addressing of such a serious event we would ask for your response **by the end of April 2016**.

### **Pre-amble**

Whilst the questions here reflect recent events, we are concerned that they form the basis of future flood resilience especially as most, if not all, now accept that exceptional storm events are likely to occur with increased severity and frequency.

Unfortunately with this pattern of uncertainty we can expect a higher frequency of such extreme weather conditions, and flooding could doubtless become both more severe and more frequent.

In building up the appropriate level of future resilience we need to map out past and recent events in order to assess as accurately as possible our future vulnerabilities, and would ask the authorities to include the Town Council in both the collection of information about the floods and considering potential solutions. In order to facilitate this, **please send a map showing which areas of Kendal are recorded by you as being flooded** so that individual Ward Councillors can add any additional ones if necessary.

Additionally we really would wish to raise a question about flood warnings. There was an anticipated flooding incident several weeks before the flooding of 5<sup>th</sup> December which generated a well-co-ordinated response with an appropriate level of warnings given. Luckily there was no flooding on that occasion. But there was no such co-ordinated series of warnings on 5 December when high rainfall

was widely predicted. **We would like an explanation as to why these warnings did not take place.**

### **Environment Agency Response**

In Cumbria Flood warnings are based on forecasts. Due to the speed Cumbrian rivers respond to rainfall, the flood forecast is heavily reliant on the rainfall forecast from the Met Office in order to give people enough notice to prepare.

In November the forecast was showing that there was a likelihood that Kendal would be at risk from severe flooding based on the forecast rainfall and the location it was due to fall. Because of the speed that rivers were responding to the rainfall, we took a pro-active decision with partners that should severe flooding happen, as was forecast, it was better to ensure people were aware of this and could take necessary measures in daylight hours. On this occasion however, the rainfall totals were not as expected and fell in a different location.

The forecasts received prior to the 5<sup>th</sup> December flood event showed rainfall was going to be heavier over the North of Cumbria. However, when the rain came it became apparent the whole county was likely to be affected. Warnings were issued for Kendal and Burneside early morning on the 5<sup>th</sup> December for the areas at immediate risk. The situation escalated very quickly across the county and many warnings were issued - 112 across the county in a 25 hour period.

Flood warnings are based on river levels and currently do not provide a flood warning from other sources of flooding. In addition, some properties in Kendal flooded that were outside of the EA's Flood Warning Areas, and therefore would very likely not have been registered to receive flood warnings. As is normal procedure after any major flood event, the EA are reviewing what improvements can be made to the flood warning service across Cumbria following the December flooding.

A diagram of responsibility chains within your organisation and between the responsible bodies would be useful for us to understand lines of communication now and for any future event. **Please could you supply such a diagram.**

### **Flooding Questions**

1. Give precise details as to why all individual areas in Kendal flooded, distinguishing which areas had not flooded before, the flood source and what were the precise reasons for all of them flooding in December 2015? This should also show areas flooded in the last ten years, including Highgate, for example, and distinguish between waters derived from the river, from groundwater coming off the nearby hills, rainfall within urban developments, or from sewers.

### **Environment Agency Response**

The Environment Agency (EA) is in the process of producing a Flood Investigation Report that provides a detailed overview of the flood event. Vast amounts of information gathered from the flood event is being collated and reviewed to inform the production of the report. All risk management authorities will provide input to this report so that all sources of flood risk are accounted for. The report will cover all areas affected by flooding in Kendal

and will make specific recommendations for managing flood risk in Kendal going forward.

Once the risk management authorities have completed the report it will be published on the Cumbria County Council (CCC) website, where stakeholders can view the report and provide feedback as part of a consultation process. The report will also be presented at a public meeting as part of this consultation process.

Maps are also being produced that will illustrate the extent of flooding experienced, flow routing and sources of flooding in specific areas. The Environment Agency are currently updating their hydraulic model for the River Kent catchment, which will provide further context on the magnitude of the flood event and use information gathered from the flood event to improve our understanding of flood risk in Kendal and the Kent catchment.

2. In addition, give details of areas of subsidence which occurred as a result of the heavy rainfall and associated water flows and explanations as to why this occurred. Attention is drawn to the situation which occurred at the junction of Bellingham Rd, Wattsfield Rd and Stonecross Green where houses suffered subsidence rather than flooding. Significantly the properties appear to be 1960's "infill" with insurance companies investigating the possibility of "fines" being washed from "made" ground.

### **SLDC Response**

SLDC gathers intelligence on such occurrences through its work as Building Control Authority. Intelligence is gathered through direct reports of dangerous structures, building control applications direct to the Council and through the notifications of building works other (Private Sector) building inspectors are required to provide to the authority. The only property, suffering risk of subsidence due to flood damage to foundations that the Building Control Service are aware of is a property opposite Castle Dairy on Wildman Street. This site is stabilised and awaiting repair. The Service have visited and undertaken property surveys on reported flood hit properties to address any subsidence including the Old Auction Mart. The surveys confirmed that no structural risks were present.

With regard to the Bellingham Road, Wattsfield Road area, the Building Control Service has not received any information nor applications for underpinning of foundations as would be expected if subsidence had occurred to an extent that remedial works are being implemented. The Service is aware that there are some properties that have been affected by subsidence in the Bellingham road/Wattsfield rd area some years ago. It would be very difficult assess the cause of any further movement as being due to the rains in December.

3. Which areas were flooded because of poor maintenance (the non-clearing of drains/culverts etc.)? Why was this allowed to happen? What will be done to ensure it will not happen again? In particular there are major questions at the Mart development in Sandylands where there is a suspicion that drains have been filled in and this needs to be investigated.

## **Environment Agency Response**

The Environment Agency have an annual maintenance programme for designated 'main rivers' in Kendal, which includes the Rivers Kent, Mint, Stock Beck & Tributaries, Natland Mill Beck and Blind Beck. Furthermore, the EA also undertake reactive maintenance when any channel clearance or asset repair is required to manage flood risk that may fall outside of our programmed work.

Following the December flood event the EA have undertaken inspections along all main rivers in Kendal, and also have further detailed inspections scheduled. Emergency repairs to EA assets have been completed, with further works programmed for the summer months. Gravel removal has been undertaken as detailed below in response to question 4.

4. Was the gravel cleared from the River Kent on a regular maintenance basis and what part did this play in the flooding?

## **Environment Agency Response**

The Environment Agency annually monitors gravel levels through Kendal as part of their maintenance programme. The EA survey key gravel accumulation sites through Kendal each spring (after winter high flows) to determine whether gravel removal is required. If removal is required, the EA remove the gravel during the summer months when river flows are low and to minimise impacts on the river environment.

Through hydraulic modelling the EA determine 'trigger levels' that, when reached, mean that gravel removal is required in order to maintain the required standard of protection to Kendal. The spring 2015 gravel survey indicated that these trigger levels had not been reached, so as a result gravel removal was not undertaken in the summer.

Following the flooding in December, which transported a significant amount of gravel and sediment into Kendal, the EA have removed around 20,000 tonnes of gravel from the River Kent in Kendal as part of their emergency works programme. The EA are also currently undertaking assessments of gravel shoals at New Road, Aynam Road and Dockray Hall to determine whether removal works in these locations is required. In addition, the EA have just gained approval to remove debris from all bridge abutments through Kendal – this work will be done during May.

As the hydraulic modelling for the River Kent catchment is currently being updated, the EA will be reviewing the current trigger level thresholds for Kendal to ensure that they are accurate based upon information gathered during the recent flood event.

5. What part did Bird's Park Reservoir and its water collection systems play in flooding on the east side of Kendal?

### **United Utilities Response**

Birds Park Reservoir is owned by United Utilities, but is not operational and is not part of the water supply system. It made no contribution to the flooding, but may have provided some attenuation.

### **Environment Agency Response**

The EA will investigate options for upstream storage as part of their appraisal of options to manage flood risk in Kendal, which will include an appraisal of Birds Park Reservoir to determine whether it could be beneficial in managing flood risk.

6. Huge ponds and run-offs already appear behind Ullswater Road, Whitbarrow Close, Grizedale Avenue and the top of Oak Tree Road. What account is being taken of these?

### **Environment Agency Response**

The EA and CCC are aware of issues in these locations and will address these as part of the Flood Investigation Report. Some reports from local residents in these locations have already been provided, however any further information that can be provided will further assist in developing our understanding of issues in these locations. The EA, CCC and SLDC are meeting with the Sandylands Residents Association on 11<sup>th</sup> May to further develop our understanding of the flooding mechanisms in this area.

7. Did work carried out/not carried out by the railway authorities (c.f. Parkside Road and above Stock Beck and its 'tributaries', for example) affect flooding. To what extent do agencies work with the former to manage flood risk within the urban area?

### **Environment Agency Response**

Network Rail are not a risk management authority, however the EA and CCC are working in partnership with Network Rail to identify areas of resilience. This includes understanding current drainage systems in relation to flood risk and working with Network Rail when investigating options to manage flood risk going forward.

The railway embankment in Kendal acted as a barrier to flow in the December flood event and therefore the EA will be discussing flood risk in Kendal in relation to Network Rail infrastructure as part of the appraisal of options to manage flood risk in Kendal. Recommendations relating to options to manage flood risk in Kendal will be included within the Flood Investigation Report.

8. There are well known areas of development which apparently flooded and/or caused flooding elsewhere. Upper Sandylands (Rydal Road area) is one recently built example. Were there any others? Why did their drainage systems not handle the rainfall, and can their SUDs/attenuation tanks

provide any assistance when the ground is already saturated in long periods of high rainfall.

### **United Utilities Response**

Kendal experienced a 1 in 400 year storm event on December 5. The severity of the storm overwhelmed the surface water drainage and sewer systems in the area. No public sewer or drainage system could have coped with the sheer volume of water falling in such a short space

The Sandylands estate is, also, in relatively close proximity to the River Kent, which burst its banks in numerous locations. This resulted in a lack of free discharge into the river for any surface water flows. Therefore, the Highways drainage systems weren't able to release excess water back into the river, as they would do normally, which meant that they continued to back up.

9. Which properties were affected by water coming up into them from underground? For example, properties on Lound Street, Queen Katherine Street and Aynam Road have flooded 3 times within 11 years (2004, 2009 and 2015), with water coming up through the floors. (Prior to this period there was very little indication of this sort of flooding.) Even tanked out properties have suffered. The survey in 2009 indicated that the size of the waste water pipes was inadequate. When will this situation be reviewed? And who is liable for ensuring that such pipes are adequate?

### **United Utilities Response**

United Utilities are, still, verifying the results from the flooding that occurred on Aynam Road, therefore, a detailed response on the causes of the flooding will be provided in the Section 19 Report, to be issued by the Environment Agency. However, no incidents of sewer flooding were reported to United Utilities in the Aynam Rd, Lound St or Queen Katherine St areas, for events of the 5<sup>th</sup> December 2016. The properties in the Aynam road area have cellars, which would have been susceptible to ground water infiltration, due to the exceptionally high water table and which would have resulted in flooding into the substructures of the properties.

10. Why, with no discernible difference in height along Shap and Appleby Roads and along others such as Mintdale, have some properties flooded to a depth of two feet and others not at all?

### **Environment Agency Response**

Minor changes in height can cause significant changes to flood flow routes. Such changes in elevation may only be subtle and not discernible to the naked eye, however this can be the difference between some properties flooding and others not. The EA have undertaken extensive data collection following the flood event and have produced maps which show the flood event outline and main flow routes. These maps were shared with Councillors at the 13<sup>th</sup> April meeting and are available on request from the Environment Agency.

11. Why was so much of the flood water contaminated with foul waste?

### **United Utilities Response**

Due to the scale of the storm event, there were many areas that suffered from contamination, largely due to overland flows and groundwater infiltration.

12. There was major flooding at the Waste Water Treatment Plant. Were pipes crossing a footpath pumping water into the River Kent? Was any of this water contaminated? How will the WWT plant be flood-proofed in the future?

### **United Utilities Response**

The Kendal Waste treatment works suffered significant damage, including the Final Effluent Outfall pipe, which is set under the river bed and was completely destroyed and exposed. Currently, the temporary pipework crosses the public footpath, but will be buried underground, with the footpath being reopened by the end of May 2016. United Utilities are working with the Environment Agency to minimise any environmental impact.

It is not feasible for United Utilities to make any site completely “flood proof”. On flood resilience we follow a risk based approach, that is, we prioritise flood risk reduction at sites with the highest probability of flooding and the highest consequence of failure. Historically our flood protection expenditure has tended to be weighted towards water facilities as the consequence of failure to customers tends to be greater.

In response to the events over the winter we are reviewing the resilience of our systems and services and considering whether further action is needed. This will include a reassessment of the probability of flooding given the recent frequency of extreme events and assessing whether any changes to our consequence assessment is required given what we have learned from these incidents. We will use this information to inform what further flood protection is justified which could include solutions to make individual sites more robust to flooding, or operational plans to ensure we can minimise the impact and recover from future events as effectively and quickly as possible. The level of expenditure on additional flood resilience measures will depend on customer’s willingness to support that investment and the impact on their bills.

13. How will agencies ensure that the water coming off hillsides, such as Benson Knott, Hayfell, Castle Howe or Windermere Road, will not flood parts of Sandylands, Highgate or Hallgarth again?

### **Environment Agency Response**

As detailed in previous responses, the Environment Agency is working closely with other risk management authorities and local stakeholders to understand the flooding mechanisms in these locations. Recommendations relating to options to manage flood risk in Kendal will be included within the Flood Investigation Report.

14. Will the Local Development Framework (LDF) policy encouraging “infill” between existing properties be challenged and the individual sites re-assessed as a result of recent storms/weather events which led to flooding? This ground was avoided because it was obviously going to create problems. That was certainly the accusation made by residents of Lowther

Park when they were last flooded. Similarly when housing was erected at Sparrowmire in the late 1970's the plans were changed when dumper trucks reported the ground wobbling below them; a situation which led to the realisation that the circular layout of some of the existing housing on Hallgarth reflected avoidance of boggy areas. In fact, both the Sparrowmire/Hallgarth and Lowther Park areas include former areas of natural flood storage. It is, therefore, necessary for "flood resilience" and for the LDF to recognise that flooding is and will not be confined to "floodplains" but will involve former low lying areas associated with sink holes and underground water courses which were not built upon previously because they were known to flood in winter (and therefore provided vital flood water storage).

### **SLDC response**

Strategic LDF policies will be reviewed through the preparation of a replacement Local Plan to commence in 2017. Large infill sites will be identified through the forthcoming Brownfield sites register and small sites list. The brownfield land register will only list sites which SLDC considers to be suitable for development and flood risk will be a significant factor in making that judgement. All planning applications face rigorous scrutiny to ensure all developments are achieved to the best possible standard and the flood risk impacts of all new developments will be assessed having regard to EAs most up to date assumptions about the potential impacts of climate change in the future.

SLDC consult with CCC and the EA on all planning applications submitted so that it can identify and address any flood risks. The EA will update their flood risk maps and the updated maps will be published online.

### **Cumbria CCC LLFA**

We work closely with SLDC planning to ensure local plans take consideration of surface water in low lying areas. Any sites with severe concerns are flagged as not appropriate and others with minor areas of concern are discussed in detail with any potential developers to ensure the risk of flooding is covered.

- 15.** Do agencies have the necessary powers to ensure that developers put measures in place to ensure that flooding will not occur either on or off a site, given the predicted increased rainfall in Cumbria?

### **SLDC Response**

Please refer to the question answer above. Development management will be informed by the advice of the EA and CCC LLFA (Lead Local Flood Authority) which in turn is informed by the most up to date assumptions and requirements to address the potential of climate change in the future. The new development policy will ensure that all developments have to have control measures for climate change.

### **Cumbria CC LLFA**

I think the powers provided under the 2010 FWM act ensure that both the local Planning Authority and ourselves ensure that any development will not cause flooding to neighbouring land and if it has events greater than design that exceedance is kept with the development but will not lead to self flooding to the development.

16. Will all current and future housing developments in the Local Plan (not just those on the flood plain) now be re-assessed as to their suitability for development in the light of recent events? Will that re-assessment be taking into account the effect of that development on all other areas of Kendal?

**SLDC Response**

A new local plan will be adopted in 2021 and in order to fulfil the requirements, existing allocations will be reviewed having regard to their availability, suitability and deliverability. A strategic flood risk assessment (SFRA) will be undertaken which will inform overall strategy and locations for development. The SFRA will need to be informed by the outcomes of investigations into the Storm Desmond event. For this reason SLDC will not be undertaking it until next year. However in the interim SLDC will continue to receive advice from CCC and the EA regarding planning applications and the production of development briefs.

**Cumbria CC LLFA**

I think only where flood mapped areas have changed for main rivers zones and surface water is there a need to revisit the local plans.

17. To what extent will the Environment Agency be re-drawing its flooding zones and maps in the light of recent experiences? Will it also include 'kettle holes' and areas adjacent to tributary streams in that exercise? Will the County Council be reviewing its maps of ordinary water courses, and include underground springs and streams, and areas of natural flood storage?

**Environment Agency Response**

The Environment Agency are currently updating their hydraulic model for the River Kent catchment, which will provide further context on the magnitude of the flood event and use information gathered from the flood event to improve our understanding of flood risk in Kendal and the Kent catchment. The updated hydraulic model will produce new flood zones for Kendal, which will be published in late 2016. Topographical features will be taken into account in the updated hydraulic model through the use of topographic survey and a detailed digital terrain model.

18. River bank erosion has led to the loss of riverbank amenities, such as has happened at Carus Green Golf Course where an emergency footpath diversion has had to be created. In addition trees can be uprooted and enter the river causing structural damage to bridges downstream or blockage of the watercourse. What action is to be taken to avoid further problems in these areas?

**Environment Agency Response**

The responsibility of river bank erosion falls under of the land owner adjacent to it (known as the 'riparian landowner'). The EA would only be able to secure funding for erosion repairs in instances when their own assets are in danger from erosion. The EA have no legal obligation or funding mechanisms to aid land owners for erosion repairs. EA employees and contractors are walking local embankments to identify erosion and any land-slides.

19. In considering what measures might be taken upstream of Kendal is data available to show what volumes/proportions of the water were delivered by the river in Kentmere, and by the rivers Gowan, Sprint and Mint? In the light of this data has temporary flood storage been considered in the catchment area? Has consideration been given to the draining of the Kentmere reservoir over a period of time in order to increase its capacity for periods of heavy rainfall?

**United Utilities Response**

Kentmere reservoir is not owned by United Utilities and, therefore, we are unable to comment as to whether draining the reservoir has been considered.

**Environment Agency Response**

The updated hydraulic modelling that the EA are currently undertaking for the River Kent catchment will address this question. The EA will be looking at a wide range of options to manage flood risk in Kendal, including upstream storage and natural flood management. Recommendations addressing future options to manage flood risk will be made in the Flood Investigation Report.

We hope that these questions will be useful to you in compiling your response to the Kendal flooding both in terms of the incident report and future resilience and we look forward to your response on the specific questions asked.

Yours sincerely

Liz Richardson  
Town Clerk

Cc The Mayor of Kendal, Cllr Chris Hogg  
The Chair of Management Cmttee, Cllr Sylvia Emmott

Letter also sent to: South Lakeland District Council, Cumbria County Council,  
The Environment Agency and Network Rail.

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