

## Mytholmroyd Flood Alleviation Scheme (FAS)

### 9 February 2020 - Flood Review Summary

Following the devastating flooding experienced in Mytholmroyd on 9 February 2020, the Environment Agency has been working to understand the event in more detail, including the performance of the existing, new and temporary flood defences, and what lessons could be learned. As part of this process we have also employed an independent consultant to carry out a review of the flood event on our behalf.

We are committed to being open and transparent and we promised to provide the community with an update as soon as we were in a position to do so. We are now in a position to provide the update and we thank you for your continued patience. Below is a summary of the findings and a more detailed report accompanies this document. We also continue to work with Calderdale Council on their Section 19 Report into the Storm Ciara flooding.

#### **Flood Event**

On Sunday 9 February 2020, Storm Ciara swept across the UK, bringing heavy rain and strong winds. The Met Office, which has records dating back to 1891, has shown that February 2020 was the wettest on record in the Yorkshire area, and specifically in the Calder catchment. More than 100mm of rain fell in the upper Calder catchment in the space of 12hrs between 8 and 9 February. Calderdale received more than a month's rainfall (129.8mm) in 48hrs during Storm Ciara, with river levels rising by over 4 metres in the space of 12hrs. River levels on the Calder reached the second highest ever recorded in Mytholmroyd, second only to the Boxing Day 2015 flood event.

The available photographic and video evidence shows that the main source of flooding in Mytholmroyd was the River Calder, with evidence of overtopping of existing defences upstream of White Houses and overtopping of new defences in the vicinity of St Michael's Church. There was also evidence of some flooding from Cragg/Elphin Brook and surface water flooding on Burnley Road, New Road and Scout Road.

The flood defence scheme, which is now complete, is designed to better protect 400 homes and businesses up to a return period of 1 in 50 or 2% chance of occurring in any one year. The flood event which occurred on 9 February 2020 had a return period of 1 in 75 or 1.33% chance of occurring in any one year.

A Flood Alert was issued for Mytholmroyd on Saturday 8 February to notify residents to be prepared. On the morning of Sunday 9 February, a Flood Warning was issued for Mytholmroyd as flooding was expected as a result of the heavy rainfall and rising river levels.



We are aware that the siren for Mytholmroyd was not sounded following the Flood Warning being issued. When we realised this, we attempted to sound the siren, but by that point power had been lost at the siren unit. After the flood event the siren was confirmed as fully operational following the completion of a 'silent' test. We are also investigating options to make the siren more resilient.

### **Day of the flood event**

When Storm Ciara arrived in Calderdale, construction of the Mytholmroyd FAS was partially completed. Areas where the existing defences had been removed were replaced by temporary defences. Two key locations had temporary defences erected, the first being opposite Burnley Road Academy comprising metal barriers and bulk bags, and the second being opposite Longfellow Court comprising bulk bags only.

Regrettably the temporary defences adjacent to Burnley Road did not operate fully as intended. The available evidence shows that at approximately 8.30am on 9 February 2020 the River Calder was coming through the bulk bags opposite Longfellow Court and onto Burnley Road. By 9.15am significant flow was coming from beneath the metal barriers onto Burnley Road and beneath the bulk bags placed at the end of the metal barriers.

Evidence also shows that by mid-morning, existing defences were overtopping upstream of White Houses, which is a known flooding mechanism and is consistent with previous flood events. Overtopping was also occurring at the now demolished Caldene Bridge. Just before midday the River Calder was overtopping the new defences at St Michael's Church. By midday the level of the River Calder had exceeded the height of the metal barriers and was overtopping onto Burnley Road. The peak level of the flood event occurred an hour later at 1pm.

Whilst not modelled, there were other contributing sources of flooding during the event including, but not limited to, drainage systems being unable to discharge into the river and surface water flows coming from Scout Road and Hall Bank Lane.

### **River Modelling and Conclusions**

Part of the independent review was to model what happened during the flood event, what would have happened had the temporary defences performed as expected and what would have happened had the scheme been completed.

The independent consultant was able to replicate the flood event accurately, although there are assumptions and associated uncertainties with any modelling of this nature.



Had the temporary defences functioned fully as intended, the river modelling results show that Mytholmroyd would, unfortunately, still have flooded and the overall flood extent and depths would have been very similar to those actually experienced on 9 February 2020.

It appears that the difference between what occurred on 9 February 2020, and what would have occurred if the temporary defences had performed as expected, is the timing or onset of flooding. We can conclude that some properties which flooded did so approximately 2hrs earlier than if the temporary defences had operated as intended.

The modelling also indicates that, had the new scheme been completed, the flood event experienced would most likely have been contained by the new defences, although they would have been on the cusp of overtopping. This may seem contradictory as river levels exceeded the design standard of the scheme, but allowances in the design and the addition of coping stones make this possible. Unfortunately, we are not able to say under this scenario how much, if any, flooding would have occurred as other contributing factors such as drainage systems and surface water flows were not modelled.

The independent review has therefore concluded that both the design and installation of the temporary defences adjacent to Burnley Road were deficient leading to an earlier than expected onset of flooding. Whilst the report concludes that the overall extent of flooding would have been very similar, we regret any additional distress this may have caused.

Immediately after the flood event, changes were made to the installation of temporary defences in Mytholmroyd and a number of lessons have been shared nationally through our delivery framework.

### **Contact Us**

If you have any queries please contact the following email address and we will respond accordingly – [mytholmroydfas@environment-agency.gov.uk](mailto:mytholmroydfas@environment-agency.gov.uk)

