

RM005 Ms Pallen & Mr Burraston's objection to the Environment Agency's Application to vary the Scheme within the River Medway (Flood Relief) Act 1976

Environment Agency technical response, updated 6 October 2020

1. Introduction

We moved into Colquhouns Cottage early in 2013.

In order to provide a suitable environment for home working, music production and exercise, in the summer of 2013, we converted two adjoining outbuildings in our garden to be fit for these purposes. In addition, we erected a small garden shed to provide storage for a lawn mower and gardening tools. All of these structures lie outside the area marked in blue on our deeds which the EA is not entitled to use for floodwater storage.

In December 2013, following operation of the Leigh Barrier both the adjoined studio/gym and the small shed were flooded.

In December 2019 we submitted a claim for compensation for which the EA admitted liability and settled.

Environment Agency response to point 1:

We acknowledge that your garden and the outbuildings you have converted can be affected by the operation of the existing Leigh FSA, depending on the size of the flood event, because upstream of Rogues Hill the flood water can be up to an extra 0.1m deeper as a result. However, the area is within the floodplain of the River Medway so it can also be affected by naturally occurring flooding.

Please see the photographs below showing that natural flooding occurred at Penshurst prior to the operation of the FSA. You took the first photograph (Figure 1) at 14:12 on 20 December 2019. It shows the water level near your gym. Impoundment didn't commence until 15:30 on the same day.



Figure 1: Flooding of the garden of Colquhouns Cottage, 14:12 on 20 December 2019

The next two photographs below (Figures 2 and 3), were taken from Rogues Hill on 16 February 2020. Figure 2 shows the fields immediately upstream of Rogues Hill and was taken at 12:51. Figure 3 was taken from the bridge on Rogues Hill over the River Medway. It was taken at 13:13. Impoundment didn't commence until 17:15 the same day.



Figure 2: Flooding of the fields immediately upstream of Rogues Hill, 12:51 on 16 February 2020



Figure 3: River Medway and Bridge House, 13:13 on 16 February 2020

The final photograph (Figure 4), below, was taken 14 minutes earlier than Figure 2 (at 12:37 on 16 February 2020). It shows the bridge on Ensfield Road over the River Medway, 3.9km downstream of Penshurst. It is clear that the river was within bank at this location whilst at the same time there was significant flooding in Penshurst driven by upstream flows. The Leigh FSA was not in operation and all the flooding at this time in Penshurst was driven by flows from upstream.



Figure 4: The bridge on Ensfield Road over the River Medway, 12:37 on 16 February 2020

The above photographs demonstrate that the land around Penshurst (including your garden) floods irrespective of operation of the FSA, and the level of that flooding can reach the outbuildings you have converted. The FSA only operates during high flows, and so therefore the same conditions that drive flooding in Penshurst will also determine the operation of the FSA. This does not mean that the FSA causes the flooding in Penshurst.

The 'deed' that you refer to is the agreement dated 01 February 1982, between (i) Michael Donald Holmes and Imogen Margaret Holmes, (ii) Alliance Building Society and (iii) Southern Water Authority. We agree that your outbuildings and the garden shed are not situated within the area shaded blue on the plan in that agreement. But that plan does not define the area that can be flooded. Instead it defines the area upon which you are not allowed to do anything that will interfere with the flow of flood water or raise or lower the level of the ground.

2. Reasons for Objection

Whilst we fully understand the need for enhancements to the Leigh FSA we strongly object to this application. Our primary reasons for this are as follows:

2.1 It would appear that the EA is relying solely on computer modelling to predict the impact of changes to the flood storage area. We do not accept that this can provide an accurate picture of the effect on Penshurst given the vast number of variables present during an actual flood event.

Environment Agency response to point 2.1:

The Environment Agency, and the wider hydrological industry, uses modelling software, mapping techniques and topographical and rainfall data to understand a wide range of catchment processes, how river catchments respond to different rainfall events, and to identify the impacts of these events.

The Environment Agency has flow gauges upstream of Rogues Hill, at Chafford Bridge and Colliers Land Bridge on the River Medway and at Penshurst and Vexour Bridge on the River Eden. This represents a significant investment in flow monitoring and allows us to understand the water levels on both rivers. Information from these gauging stations was used to calibrate the 2015 Medway flood model and is used to inform the operation of the Leigh Flood Storage Area (FSA).

In addition to the 2015 Medway flood model, the Environment Agency has photographs and data showing the extent of land flooded during previous events, and staff observed the flooding at Rogues Hill in February 2020 to understand the extent of flooding at this location. The timing and extent of the flooding in February 2020 was as predicted by the model.

2.2 Despite past flood events, no monitoring has been put in place to understand the actual effect of operating the flood barrier on flood levels in Penshurst, below the confluence of the rivers Medway and Eden area. The EA relies on measurements from upstream at Colliers Land Bridge for the River Medway and Vexour Bridge for the River Eden. These measurements are not a substitute for proper local monitoring.

Environment Agency response to point 2.2:

As stated in our response to point 2.1, the Environment Agency has flow gauges upstream of Rogues Hill at Chafford Bridge and Colliers Land Bridge on the River Medway, and Penshurst and Vexour Bridge on the River Eden. This allows us to understand the flow in both rivers, including after the confluence.

Whilst it is always possible to further refine the calibration of any flood model by considering more baseline data, the Environment Agency is confident that the modelled flood data is sufficient to understand the flood risk at Penshurst, and additional flow gauging data from points downstream of the confluence will align with the outputs of the 2015 Medway flood model.

We appreciate, however, that we need to address the concerns of the community in Penshurst on this issue, and are looking to provide additional depth gauging in Penshurst downstream of Rogues Hill. This will provide definitive data on this issue, and will hopefully provide the reassurance sought by the community.

2.3. The EA's application concludes that the proposed changes to the height of the flood barrier will have no impact on Penshurst in terms of depth or duration of flooding. Given the lack of empirical data we do not accept this assertion.

2.4. In our experience as residents, flooding is most definitely exacerbated by the operation of the Leigh barrier. An increase in the height of the barrier must represent an increased risk to our outbuildings and to Penshurst in general.

Environment Agency response to points 2.3 and 2.4:

Whilst, as explained in our response to point 1, operation of the existing FSA can in certain circumstances make the flood water up to an extra 0.1m deeper at Penshurst, our modelling indicates that the proposed change to increase the maximum impoundment level will not increase the depth of flooding above Rogues Hill any further. This is demonstrated in Figure 5 below. Figure 5 shows the increase in flooding depth from raising the Leigh FSA maximum impoundment level from 28.05m Above Ordnance Datum (AOD) to 28.6m AOD (measured at the main Leigh FSA embankment) during a 1.33% flood event. The map below has been taken from the Flood Risk Assessment for consistency. This map has been updated since the

submission of the Application. Whilst it shows greater depth variation lower in the FSA, the point at which the effect of the expansion dissipates remains the same.

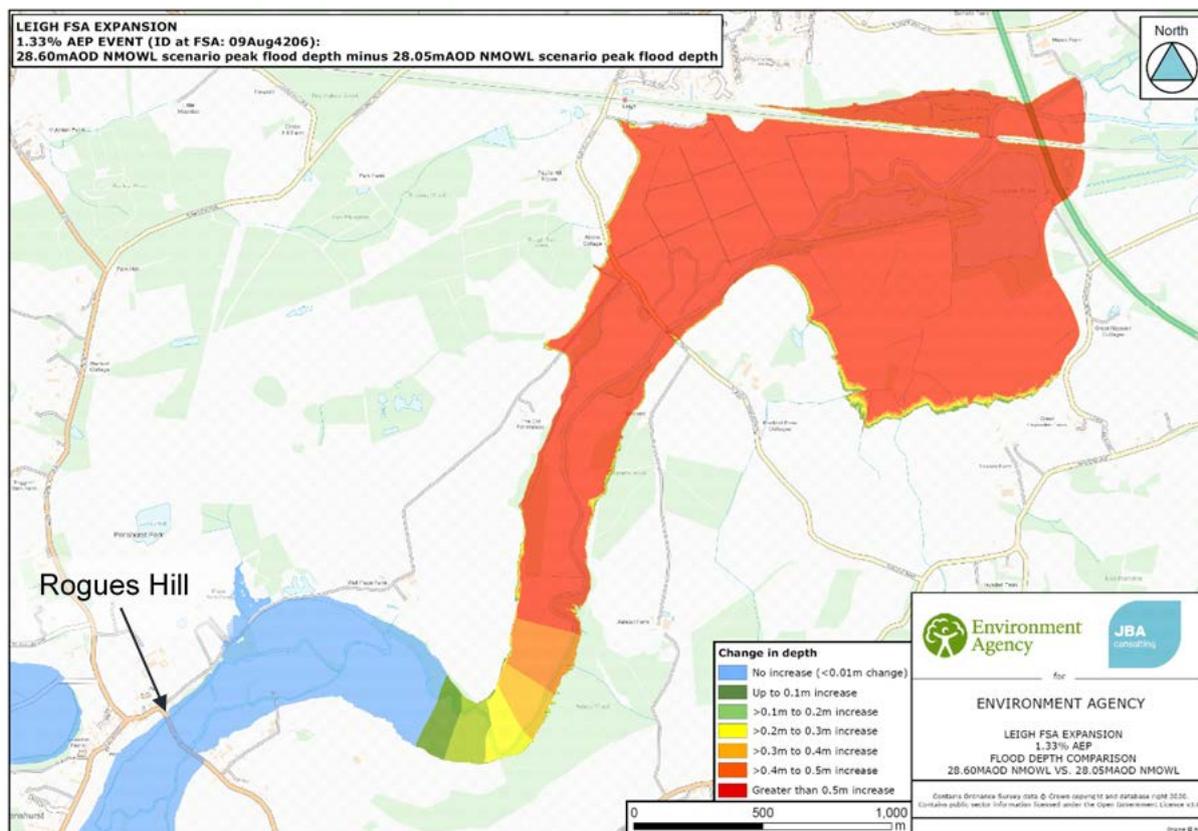


Figure 5: Increase in flood depth in a 1.33% flood event. 28.05m AOD vs 28.6m AOD

The Flood Risk Assessment was submitted with our planning application at the end of August 2020. The planning application reference number is 20/02463/FUL, and it is available for view at the Sevenoaks District Council planning portal:

<https://pa.sevenoaks.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=QFPV1WBK0LO00>

Every flood event is different, depending on a number of factors, including soil saturation and weather patterns. The modelled scenario in Figure 5 was chosen to demonstrate the impact of expanding the FSA because it shows the greatest change in flood depths.

2.5 In the EA's Strategic Flood Policy it states that 1 in 100 years plus climate change is the scenario that should be defended against. Throughout this project the EA have always quoted 1 in 100 years plus climate change as the scenario used. In the application the EA have quoted a 1 in 75 years scenario. This conflicts with their own National Guidance.

Environment Agency response to point 2.5:

Figure 5 in our response to points 2.3 and 2.4 shows a plan of the additional depth of water during a modelled 1.33% (1 in 75 year) flood event as a result of changing the maximum stored water level from 28.05m AOD to 28.6m AOD.

We chose this scenario to demonstrate the impact of expanding the FSA because it shows the greatest change in flood depths as a result of the proposed change. The depth increase for the majority of the storage area will be greatest for the 1.33% event.

During more extreme flood events, such as a 1% (1 in 100 year) plus climate change event, the increase in depth as a result of the proposed change reduces. This is because the natural flood level, which is greater, dominates.

Please see Section 5.1 (pages 24 to 26) and Appendices A and B of the Flood Risk Assessment for further details. For clarity and to address your concern, figures B1, B2 and B3 in Appendix B of the flood risk assessment show the change in flood depth for the following flood events: 1.33% AEP, 1% AEP and 1%+20% flow AEP.

2.6. The application states that since 2011 the EA have only used the FSA when the flow in the River Medway exceeds 75 cubic metres per second. The current Scheme allows the FSA to be used when the rate of flow exceeds 35 cubic metres per second and this figure has been explicitly retained in the revised Scheme. This represents a significant risk to Penshurst in the event the EA reverted to using the lower flow rate in combination with an increase to the height of the Leigh barrier.

Environment Agency response to point 2.6:

The flow rate at which impounding begins needs to be flexible to enable optimum use of the storage volume in the FSA. This will vary for every flood event. It is important not to store flood water too soon to ensure we have capacity to store the peak and the most damaging flood flows for any given event.

For the majority of floods impounding starts around 75 cubic metres per second. However that is not always the case and it may be necessary to impound water at different flows, both higher and lower, to provide the maximum flood risk reduction in Tonbridge.

Altering the Scheme's minimum operating flow rate in law would fundamentally diminish the ability to operate the FSA, as designed, to reduce flood risk to downstream communities.

2.7. Throughout the consultation period, communications have been very erratic and inconsistent. We do not believe that we have been party to all available information throughout the process. For example, we did not receive

the results of GPS altitude measurements conducted on our property in the Summer of 2019 until June this year.

Environment Agency response to point 2.7:

We are sorry that you feel communications have been very erratic and inconsistent. You now have a copy of our Application and the documents that have been prepared to support the planning application are all available on Sevenoaks District Council's website with our planning application.

2.8. Despite the consultation process, we have not been given any insight into the EA's intentions with respect to any actions that could be taken to mitigate future damage to our property.

Environment Agency response to point 2.8:

As explained in our response to points 2.3 & 2.4, the 2015 Medway flood model shows that your property will not be affected any further by the proposed expansion.

The River Medway (Flood Relief) Act 1976 (the 1976 Act) accepts through section 17(4) that property may be affected by the operation of the Leigh FSA since it gives landowners the right to be compensated. Further, landowners may enter into easements with the Environment Agency to allow the Leigh FSA to flood their land under sections 24 and 25 of the 1976 Act.

We appreciate that you would like the Environment Agency to contribute to the cost of works that will make your outbuildings resilient to future flood events. This is something we will consider, and discuss with you as an option to fully and finally discharge the obligation to pay compensation when damage is sustained as a result of operation of the FSA. However, the Environment Agency does not have to agree compensation before submitting the Revised Scheme to Defra as they are separate discussions that will not prevent the Minister from determining the Revised Scheme.

2.9. The application contains various letters of support. However, no-one from any of the affected upstream communities has been asked to comment. This is biased and unacceptable.

Environment Agency response to point 2.9:

In May 2019, the Environment Agency's land agent, Dalcour Maclaren, wrote to 36 landowners and tenants within the existing FSA to advise them of the proposed application to increase the maximum stored water level, and to offer a meeting to explain the impact this would have on them and discuss any concerns they had.

These letters were followed up with phone calls and 27 parties took up the offer of a meeting. There are no new landowners and/or occupiers that would be brought into the FSA as a result of the proposed expansion.

Alongside this process, the Environment Agency also contacted all of the organisations named within the Act as Specified Interests (plus additional organisations as directed by Defra) to make them aware of the application to expand the FSA, offer meetings to discuss the proposal and any concerns they had on behalf of their residents or members, and to understand what process they would need to go through in order to consider the proposal. These parties are listed in Section 8.1 of the Application. All of these parties, with the exception of Maidstone Borough Council represent members of upstream communities, to a greater or lesser extent.

The organisations have gone through their own processes to ensure that they understand the impact of the proposal on their residents or members.

It was hoped that by carrying out this pre-consultation, the Environment Agency could understand and resolve or mitigate any concerns prior to submitting the Application to the Minister.

The one month long formal consultation for the Application began on submission of the Application to the Minister. Any Specified Interest could make a representation (either of support or objection) during this period, therefore we do not agree that the consultation has been biased.

2.10. The EA have not met the requirements of Section 17, Part II (e) of the River Medway (Flood Relief) Act 1976. The Act requires the EA to supply a copy of the revised scheme to “The Specified Interests” BEFORE submitting the scheme to the Minister for approval. The EA failed to do this.

The scheme was submitted on the 10th June, but we did not receive the copy until after this, denying us the opportunity to (a) discuss the revised scheme with the EA and (b) to come to an agreement with them.

Furthermore, the copy supplied is not the same as that which has been submitted to the Minister. The revised scheme on the reverse of the letter dated 8th June contains 5 paragraphs, whereas the revised scheme submitted contains 4 paragraphs. Again, as the scheme had already been submitted, we were denied an opportunity to (a) discuss the revised scheme with the EA and (b) to come to an agreement with them.

Environment Agency response to point 2.10:

Section 17(3)(e) of the 1976 Act requires the Environment Agency to submit the Revised Scheme to Specified Interests before submission to the Minister. We posted the Revised Scheme to the Specified Interests on 8 June 2020 and then submitted the Application to the Minister on 10 June 2020. We understand that some of the

Specified Interests did not receive their copy of the Scheme until after the Minister. We agree that this is a technical breach of Section 17(3)(e), for which we apologise. However, as your representation has been accepted by Defra, the delay in you receiving the notification of our intention to vary the Scheme has not denied you the opportunity to be heard by the Minister. You have not suffered any detriment or prejudice from this delay.

We have not denied you the opportunity to come to an agreement with us as we have been in discussions with you for some months. We do not have to agree compensation nor agree an easement to flood before submitting the Revised Scheme to the Minister.

We understand that you would like compensation to enable you to carry out works that will make your outbuildings resilient to future flood events. We have started discussing with you the possibility of a supplemental agreement to fully and finally discharge the obligation to pay compensation when damage is sustained as a result of operation of the FSA.

These are separate discussions which we do not believe should affect the determination of the Revised Scheme.

With the covering letter that the Environment Agency sent you on 8 June 2020, we also sent you a full copy of the Environment Agency's Application dated June 2020. This Application included a copy of the Revised Scheme in Appendix B. The copy set out in Appendix B of the Application differed from that in the covering letter since it did not include paragraph 2 as it appears in the covering letter. We apologise for this error and any confusion caused. However, we believe no prejudice has been suffered. Paragraph 2 of the covering letter is merely informative in that it states we will apply for planning permission and that we shall operate the FSA according to the Revised Scheme after planning permission is granted in accordance with the succeeding paragraphs of the Scheme.

This version of the Scheme does not differ substantively from the version in the application. There is no difference between the two versions on how the Scheme will be operated. For the sake of certainty, we confirm the Scheme as enclosed in the Application is the version of the Scheme which the Environment Agency intends to operate. Apart from some confusion, which we have now clarified, you have not suffered any prejudice.

3. Summary

3.1 We believe the EA have not acted in good faith in terms of addressing the additional risk posed to our property by this application and they have not taken on board the legitimate concerns and interests of the residents of Penshurst.

Environment Agency response to point 3.1:

The primary objective of the proposed expansion of the Leigh FSA is to provide improved flood protection to properties in Tonbridge and Hildenborough.

For the reasons set out in our response to points 2.3 & 2.4, our modelling shows that the expansion will not increase flood risk in Penshurst.

Our engagement with the community through this scheme has raised awareness of the FSA and opened a conversation about the wider flooding experienced in Penshurst and the problems this causes. We now recognise the depth of concern in the community about local flooding.

As a result, we are offering to fund the National Flood Forum to help the local community to set up a flood action group where the concerns of the community can be raised with all of the organisations involved in managing flood risk so that ways to mitigate the impact and improve the resilience of the community to flooding can be explored together.

The Environment Agency is always here to discuss any aspect of our work, including flood risk, and we have had numerous discussions with you about the impact of the existing FSA and the possibility of extending your existing flood deed to compensate you for future flooding compensation claims.

3.2 The process they have followed has clearly been flawed in several areas versus the requirements of the River Medway (Flood Relief) Act 1976.

Environment Agency response to point 3.2:

Please see our response to point 2.10.

3.3 There is an unacceptable level of reliance on computer modelling versus real world evidence and measurement.

Environment Agency response to point 3.3:

Please see our response to point 2.1.

3.4 During the consultation period there were occasional indications that the EA might be considering mitigating action to prevent the cyclic recurrence of damage to and compensation for our property but nothing material has come of this.

3.5 The solution to our flooding problems would be to simply raise our adjoined main outbuilding (studio + gym) by approximately 1 metre.

3.6 We would have been prepared to negotiate a revised easement in exchange for funding to enable this work to be carried out and given the requisite planning permission by Sevenoaks District Council, rather than face the misery and disruption caused by flooding due to future operation of the Leigh barrier.

Environment Agency response to points 3.4, 3.5 & 3.6:

Please see our response to point 2.8.

4. Penshurst Village

4.1. Risk of Death

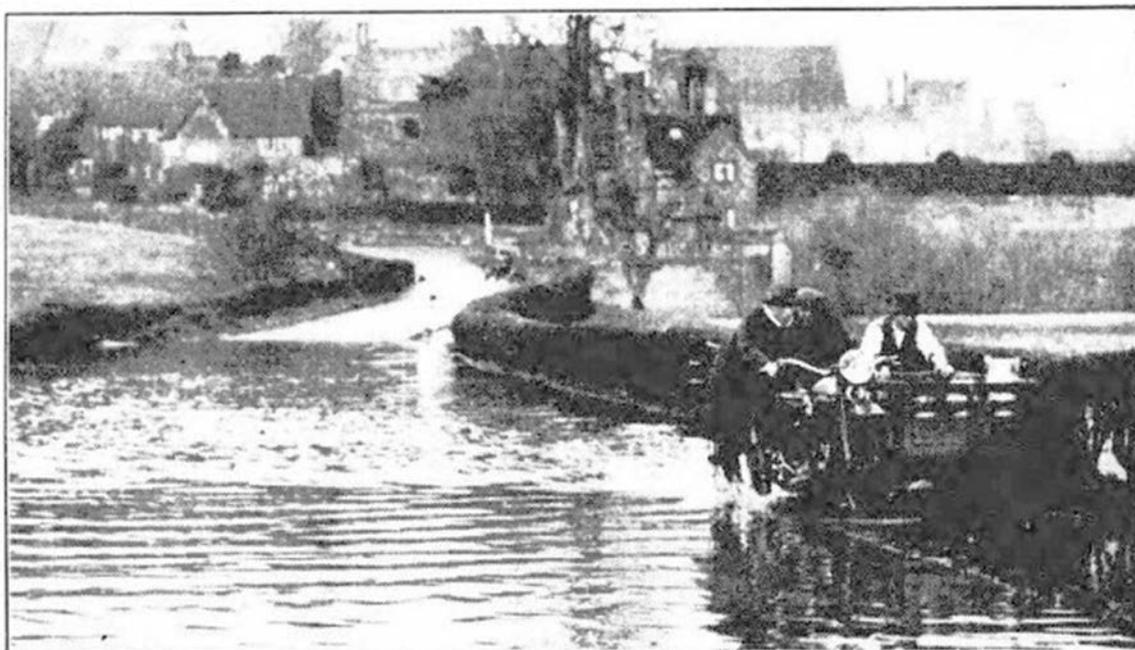
Rogues Hill is a major route into and through the Village. It is the route used by the Fire Brigade, Police and Ambulance Service responding to emergency calls. It is also used by school buses and village traffic. When the EA impound the FSA this road floods to a depth of up to 1 metre, making it impassable, yet vehicles still attempt to pass. Raising the level of the FSA can only increase this flooding. This would create a Moral Hazard, with the potential for death. The water flow is known to be in excess of 70 cubic metres per second and should a school bus attempt to go through the flood, it could easily be carried away downstream. This risk of multiple death is high. The EA have merely said that it is the responsibility of the Highways Agency. The Grenfell disaster has taught us that Moral Hazards can prove fatal years later for many innocent members of the public.

Environment Agency response to point 4.1:

As you state, Rogues Hill is a major route into and through the village. It is built on a causeway across the flat valley 200m downstream of the confluence of the Rivers Eden and Medway. Rogues Hill passes over the River Medway by Bridge House. The lowest part of Rogues Hill is particularly vulnerable to flooding.

The photograph below from a 1937 newspaper article (Figure 6) shows flooding on Rogues Hill. In 1968 the flooding at this location was so severe that the Rogues Hill road bridge over the River Medway was damaged to such an extent a temporary bridge had to be installed. These events show that Rogues Hill has historically experienced flooding and that it is not the operation of the Leigh FSA that causes flooding.

THE COURIER 29 JANUARY 1937



The recent heavy rains have produced some of the worst floods in Penshurst for 40 years. This is a portion of the road to Bidborough.

Figure 6: Flooding of Rogues Hill in 1937

In your representation you suggest that Rogues Hill floods to up to 1m deep as a result of the operation of the FSA. Whilst in certain circumstances the FSA can, when operating, add up to 0.1m to the depth of water at Rogues Hill, the depth and timing of the flooding of Rogues Hill is dictated by upstream flows. This is shown by the photographs provided in response to point 1.

To further illustrate this, the peak of the most recent flood at Penshurst Gauging Station was at 01:30 on 17 February 2020 (see Figure 7 below) and the water level was falling as the water levels in the Leigh FSA were rising (see Figure 8). Penshurst Gauging Station is situated on the River Eden about 2.8 km upstream of Rogues Hill, and so the peak of this flood will occur earlier at Penshurst Gauging Station than at Rogues Hill but it clearly demonstrates that the water level in the river is not influenced by the operation of the FSA.

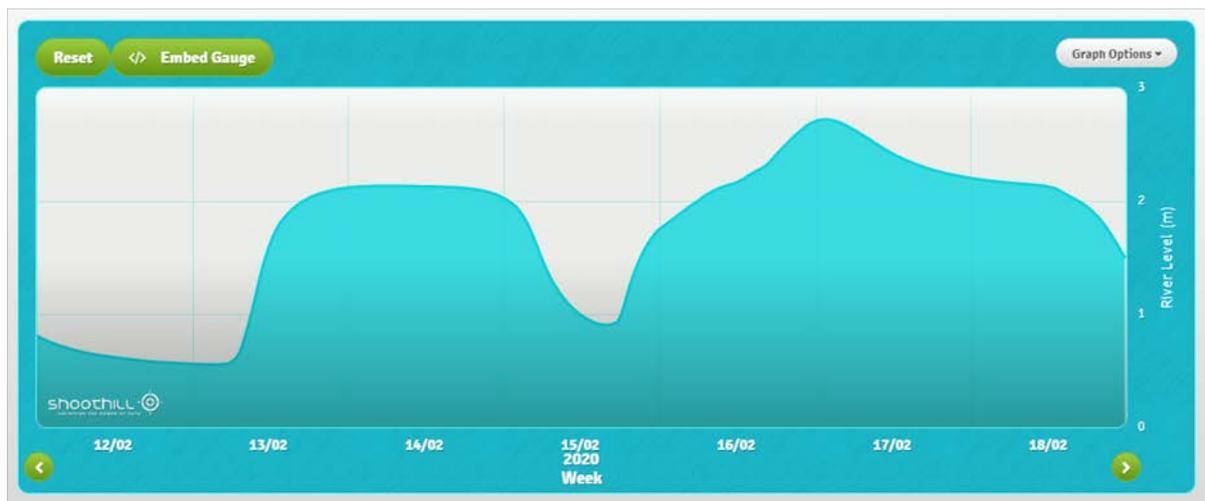


Figure 7: Water levels at Penshurst gauging station 12 to 18 February 2020. Image from Shoothill Gauge map using data from Environment Agency gauging station

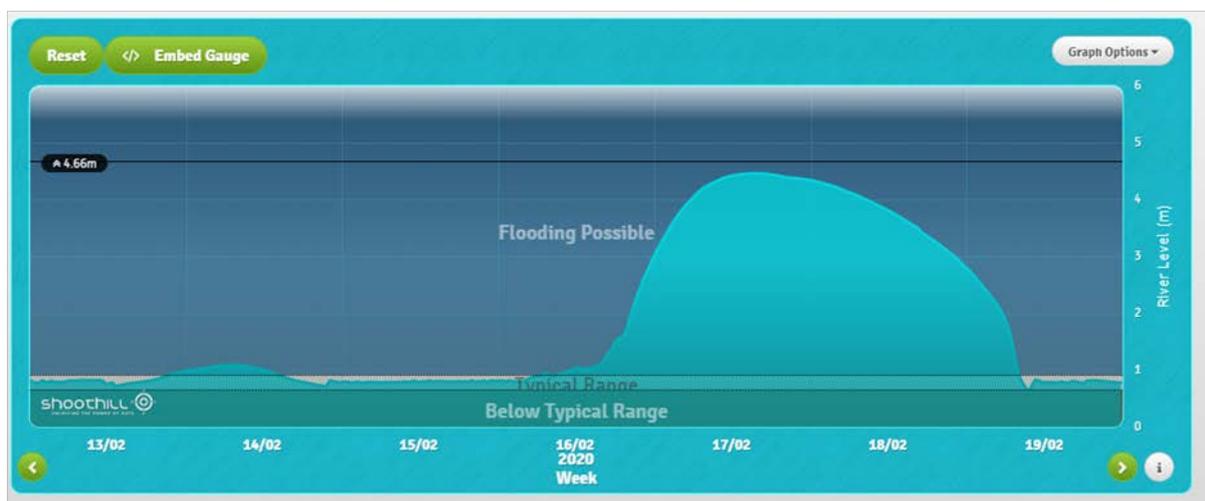


Figure 8: Water levels at Leigh Barrier upstream gauging station 13 to 19 February 2020. Image from Shoothill Gauge map using data from Environment Agency gauging station

For the reasons set out in our response to points 2.3 & 2.4 above, the proposed expansion does not increase the flood risk at Rogues Hill. Therefore, the proposed expansion does not exacerbate the present situation.

Whilst the expansion of the Leigh FSA will not increase the level of flooding experienced at Rogues Hill, we recognise the risks that arise through flooding of the roads around Penshurst. We always warn the public against driving through flood water. Flooding of these and other roads makes them dangerous, with the potential for drivers to try to pass through the floodwater at Rogues Hill and for cars to become stuck with the obvious risk to life this presents and the ongoing blockage to passage after the floodwaters have receded.

There are a number of organisations involved in managing and responding to flood risk. The Environment Agency has powers to manage flood risk from main rivers and Kent County Council provide and manage highway drainage and roadside ditches.

Other organisations and risk management authorities also have roles in managing and responding to flooding.

The risk of flooding in the natural floodplain cannot be eliminated. Warning and informing presents the only viable approach to the management of the risk to road users.

Our engagement with the community through this scheme has raised awareness of the FSA and opened a conversation about the wider flooding experienced in Penshurst and the problems this causes. We now recognise the depth of concern in the community about local flooding.

As a result, we are offering to fund the National Flood Forum to help the local community to set up a flood action group where the concerns of the community can be raised with all of the organisations involved in managing flood risk so that ways to mitigate the impact and improve the resilience of the community to flooding can be explored together.

4.2. Disregard for Penshurst Estate Residents

When the Leigh FSA was built in 1982 the EA's predecessor identified the risk of access to properties on the Penshurst Estate, and paid for the construction of a concrete road to ensure safe access. The EA's proposal to raise the height of the FSA now places access via that same concrete road at risk. On Page 21 the EA deny this problem, but say there may be scope to help . This is typical of the condescending attitude throughout both communications and the application. They have failed to provide a solution to a problem of their creation. A problem that affects not just six residential properties and farm buildings but also a nursery school with many children in its care.

Environment Agency response to point 4.2:

This is a matter that has been raised by the Penshurst Place Estate and we are working to address it with them.

4.3. Disregard for High Street Properties

Flooding will affect properties on High Street. There are buildings used for warehousing, hobbies and garages to the rear of these properties. Increased flooding will cause damage to property and access problems.

Environment Agency response to point 4.3:

Section 4.2 (page 24 and 25) of the Application and our response to points 2.3 & 2.4 explains the impact the proposed change to the flood water levels. This is also

explained in greater detail in section 5.1 (pages 24 to 26) of the Flood Risk Assessment submitted with the planning application.

You will see that no change is expected to the extent of flooding or depth of water at the properties on the High Street, which are upstream of Rogues Hill, as a result of the proposal to increase the maximum stored water level.