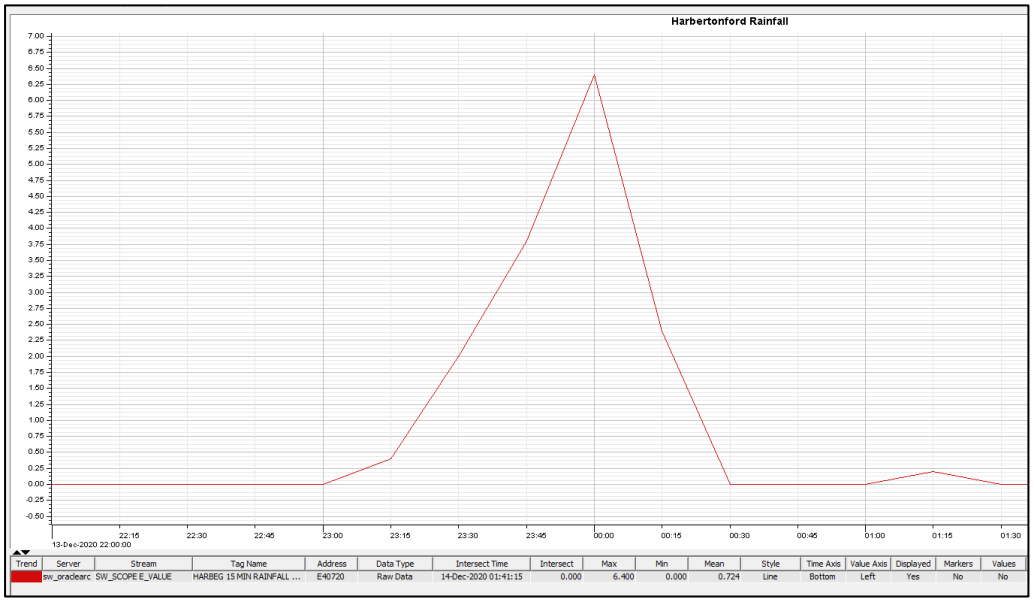
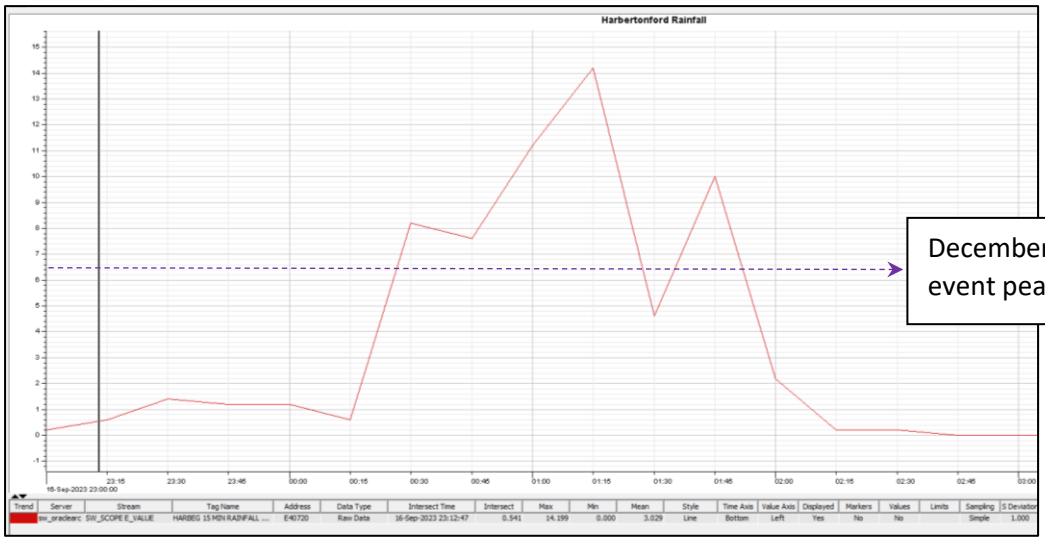
EA response: Harberton Parish Council enquiries following the 17th of September 2023 floods.

Event statistics – A comparison with December 2020:

December 14th 2020 Flood rainfall:
Peak intensity 6.4mm per 15 min. This equates to 25.6 mm per hour. Total = 15mm in 1.5 hours



September 17th 2023 flooding:
Peak intensity 14.199 mm per 15 min. This equates to 56.796 mm per hour. Total = 60mm in 2 hours.



Summary

- The September 23 event had double the peak intensity to that of the December 2020 event.
- The September 23 event was 2 hrs in duration, the December 2020 event 1.5 hours.
- The September 23 event had prolonged intense rain compared to that of December 2020. This is illustrated by the dashed purple line on the bottom graph which shows that the Peak intensity of the 2020 event was sustained for 1.2 hours compared to a 15 minute period in 2020.
- We have calculated that the culvert capacity would have been exceeded at least 4 times during this event, irrespective of any blockage.

Flood warnings:

How our Flood Warning Service works

Our Flood Warning Service includes 3 levels of warnings:

- Flood Alerts – which are issued for large areas and will usually be issued before Flood Warnings - at these levels, flooding to low lying land, including some roads and gardens, can be expected.
    - These can be triggered off multiple gauges, but we do not have gauges on every watercourse within the Flood Alert area. Therefore, instances of localised intense rainfall may not always be detected in our gauge network.
- Flood Warnings – which are issued when property flooding is expected to occur.
- Severe Flood Warnings – which are issued in conjunction with the emergency services, only when there is widespread danger to life.
- It is important to note, that if a severe flood warning is not issued, there can still be the potential for danger to life – all flood water is dangerous.
- Anyone can sign up to our Flood Warning Service to receive notifications via phone, text or email.
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Our Flood Warning Service in the Harbourne catchment

- People living in flood risk areas from the tributaries of the River Harbourne can receive a Flood Alert for the *South Devon Rivers*. This alert warns when flooding is possible and we want people to start taking steps to reduce their flood risk. Our alerts cover large geographical areas which are shown on our website.
- People at risk of flooding from the River Harbourne can also register for the full flood warning service. This means they can register for Flood Alerts and Flood Warnings. Flood Warnings are community based areas for example the *River Harbourne at Harbertonford*. Flood Warnings are used to warn customers that flooding is expected and they should take immediate action to protect themselves and/or their property.

Other Resources

Please be aware that, in addition to our online flood warning information other flood risk information is available, which includes:

- The flood risk for the next 5 days Find location - Check for flooding - GOV.UK (check-for-flooding.service.gov.uk)
- Environment Agency River Levels on the Internet
- MET Office Weather Forecast
- Sign up to Met Office Alerts Guide to email alert service - Met Office

Screen telemetry:

The telemetry associated with the screen on Moreleigh road is currently powered by a battery and has been operational for a couple of years. Unfortunately, the alarms on the night of the event did not trigger. We have been in contact with our hydrometry and telemetry teams to understand why this occurred, when previously they had been operational. We understand that there was an update

to the operating system for the site which unknowingly disabled the alarms. We have been assured that this has been rectified and the alarms are now working.

The idea around the telemetry not being connected probably arises because there is a plan to upgrade the site to mains power. The mains power has been run to the cabinet, but we are waiting for the meter to be installed and the site commissioned. This will allow us to upgrade the camera. Once complete the site should have less issues around loss of operation. The meter installation is planned for this month and the site recommissioning soon after.

Moreleigh road & A381 culvert capacity:

The culverts that discharge the Yeolands stream, back into the river Harbourne, run under Moreleigh road and the A381. These are known to be small (thought to be able to convey 1 m^3/s) and unable to cope with flood flows. There is a provision for overland flow route over Moreleigh road through the gardens and back into the river, but this also only has a certain capacity. The combined result is that during flood events water pools in Moreleigh road which raises to a level that floods properties. To some extent properties are protected by property level resilience measures i.e. flood boards.

Screen improvements project:

The screen improvement project carried out following the December 2020 floods had the following objectives and limitations.

Objectives:

- Compliance with the updated 'Culvert, screen, and outfall manual' Ciria guidance.
- Increase the screen area available for debris management.
- To provide some small improvement to the overland flow route through the provision of new gates which would allow for some additional flow conveyance and reduce blockage risk.
- To improve the telemetry associated with the site.
    - Addition of alarms to alert the Flood Incident Duty Officers and the community. None were present previously.
    - To upgrade the site to mains electricity to improve telemetry resilience (not yet complete). Mains electricity is installed but the meter and commissioning of the equipment is still pending. The meter is due to be installed this October with the commissioning to follow shortly afterwards.
    - To upgrade the camera to provide more relevant timely images (not complete - relies upon mains power)

Limitations:

- This project would not improve the capacity of the undersized culverts or change the current arrangements. This would be a much larger scheme and require a full business case.

*Note: The limitations of the project were made clear to the community and parish council.

What we are doing and can do going forward:

Short term

- We have checked and reset the existing alarms at the screen.
- We are gathering data to help with analysis. We will be attending the community drop in session in Harberton on the 17th of October.
- We are about to install the meter and commission the screen telemetry for a more resilient mains powered solution.
- We will be meeting with partners and the local council to understand review what may be possible. Date TBC.

Medium / Long term

- We can look at maintenance options.
- We are looking at an additional rain based alarm from a near by rain gauge that will provide additional resilience to the alarm network that feeds into the Flood Incident Duty Officer.
- We will be exploring if there is a possibility of doing a more complete project to improve standard of protection offered to the community. Please be aware this can take a while to complete.

  Where a large investment is required to promote an improvement scheme we must follow the government rules on spending and it should be understood that there is no guarantee that any scheme considered will be eligible.

Natural flood management fund – Expressions of interest:

We understand that Devon County Council are making an expression of interest for Harberton.

Email Queries - Harberton Parish Clerk

It would be very useful to have direct information from the Environment Agency to report to the Parish Council about the flooding event in Harbertonford - particularly after recent works on the culvert. There are rumours that the warning system hadn't yet been connected to a power source and therefore not operational - so it would be useful to have an update on the truth of this.

EA Response: Please see section titles 'Screen telemetry'

I'm attaching a document that I've prepared for the Parish Council, that has responses from residents in Harbertonford and Harberton about recent flooding events. You'll see that a member of the public (Mr Cogley) has forwarded a report that he'd prepared on the flooding event in Harberton which is amongst those papers. The report implies that Mr Cogley is in contact with the Environment Agency himself as his report includes a space for a report from EA. I was wondering if this was in your patch or if there is a specific colleague of yours looking at the issues in Harberton?

EA Response: Harberton is on an ordinary watercourse and is within the remit of Devon County Council. The Environment Agency has a strategic overview of flood risk associated with watercourses classified as 'main river'.

I've also become aware of funding available for the Natural Flood Management programme, and wondered about making an expression of interest relating to the issues seen in Harberton on 17th September. If there is anyone at EA able to discuss this that would be helpful.

EA Response: Please see 'NFM section'

Public responses to digital survey

The following roads or areas of land were reported as having been affected by flooding:

- Where the A381 meets the Moreleigh Road in Harbertonford
- Pear Tree House, Harbertonford - My driveway ponded (like I've never seen before) and the ditch in my garden filled (like it does in winter sometimes) but very minor. All drained by sunrise.
- The Melbray, Harbertonford TQ9 7TS - water filled the garden and made it to the top step at the rear door but did not enter the property. The garden filled with mud and water. We now have an issue that the gravel in the garden is on concrete and has mud underneath it. This means that when it has subsequently rained the garden is a mud bath and the car gets stuck. I am not sure how we resolve this as the mud has nowhere to go.

EA response: N/A

Please let us know any further information that you think would be relevant to share with Devon County Highways, Devon County Flood Team or the Environment Agency about the flooding event:

- The culvert doesn't work. The road drains aren't big enough.
  I have videos of the road before, during and after the flash flood
  The drain at the front of the house was left blocked in the clean up by the environment agency

EA response:

Please see section 'Moreleigh road and A381 culvert capacity'

Road drains are generally not the responsibility of the Environment Agency however, we would welcome the evidence that has been gathered for review and our records.

What kind of support do you think that people in the community were able to provide that was useful, both during and after the flooding event?

1. Neighbours helped each other to clean up their flooded houses.
2. Local help
3. After the flood locals were very helpful in clearing the affected houses
4. There was no warning, no immediate support to evacuate residents. The environment agency were only concerned with the road and offered no help to home owners. There was no offer of support or accommodation from the council. There has been no information about what went wrong or why the new system failed us

EA Response:

1, 2 & 3. N/A

4.

Please see sections 'Flood Warnings', 'Screen telemetry', 'Culvert capacity' & 'Screen improvement project'

In response to "*The environment agency were only concerned with the road and offered no help to home owners*" We provided the support we could resource. We cleared the overland flow route on the road to keep it clear for further floods and we also cleared a wider road area including some of the residents steps. The ongoing flood event required that our resources were required to provide incident response elsewhere within Devon.

Is there anything else that could have been useful to help prepare for flooding, or help clean up afterwards? How might the community be better prepared in the future?

1. Obviously a better water route for the culvert. A warning system that actually is operational. The council could actually spend time cleaning away the silt from the roads affected, so that residents don't have to constantly deal with this being tracked back into their homes once they have been cleaned. The highways could empty the drains, now full of silt, posing an even greater threat to future flooding
2. There needs to be proper flood defences.
3. The EA flood defences could have been working. Ie the culvert and the pump.
4. If the same was to happen this weekend we would have the same result. What is the plan for this?

EA Response:

1. Please see sections 'Screen telemetry' & 'What we are and can do going forward'. We aren't responsible for day to day road and drain clearance.
2. Please see section ''What we are and can do going forward' with regard longer term solutions and the requirements for this.
3. The culvert is not the responsibility of the Environment Agency this is a third party asset. The Environment Agency operated and maintained assets along the Yeolands stream are limited to the screen and its structure. We have no fixed pumps in this area, we would like to understand this statement further. Is there any more information that can be provided?
4. Please see sections 'Event statistics', 'Moreleigh road & A381 culvert capacity' & 'Screen telemetry'.

If an event of this scale were to happen again it is very likely that flood water would overwhelm the culverts at Moreleigh road and lead to similar depths of water in the road. Flooding ensuing from this relates to the property level resilience measures, their deployment and effectiveness.

The alarms at the screen have been reset and so should trigger an alert to the community from the Flood Incident Duty Officer at the environment agency and potentially the deployment of the field teams.

Is there anything else you'd like to say?

1. Why was the EA camera and warning system not activated on the culvert? Why has the council not installed proper drainage systems that can cope with these conditions? Why has no one from the council come to clean up the road silt, mud and branches? We as residents have missed work time to do this. What on earth are we paying the council and government bodies for if they don't do their jobs!
2. For two years we've had work at the back of our property, been inconvenienced by road closure. A bus has hit our garden wall due to the road works and a lorry hit our house. I would like an explanation of what work has been done, what it should have done and why it failed. I would like to know what the plan is from all agencies to avoid a repeat incident. I would like to know from each agency what their statutory duties are for these incidents and what their response was.
3. When I heard the rain and saw the puddles in the night - I checked the gov website (https://check-for-flooding.service.gov.uk/) and it said no flood warnings, so I went back to bed. I hope the poor people in Harbourne Terrace do not rely on this resource. Seems strange that it would not even say "flooding is possible", even while several houses were under water. Maybe it only covers predictions of river levels (the Harbourne, which is at the end of my garden, was not exceptionally high, throughout) and it was incoming streams problematic in this case, which it does not cover? Would be good to understand this better.

EA Response:

1. In response to "Why was the EA camera and warning system not activated on the culvert?" please see section 'Screen telemetry'.

   In response to "What on earth are we paying the council and government bodies for if they don't do their jobs!". We, at the environment agency, are sorry you feel let down by our service. We have powers, but no statutory duty to undertake flood defence works and we must work within the government spending guidelines to ensure a consistent and proportional allocation of funds.

2. Please see sections 'Event statistics', 'Screen telemetry', 'Screen improvement project' & 'What we are and can do going forward'.

   In response to "For two years we've had work at the back of our property, been inconvenienced by road closure. A bus has hit our garden wall due to the road works and a lorry hit our house."

   We are sorry to hear of the inconvenience caused by the screen improvement project. As best we could the local council and community were consulted about this disruption and efforts made to keep this reduced to a minimum. While the work occurred over two years (Design through to construction) there were only a few weeks where the actual road was closed or impacted during construction. We were unaware of the incidents highlighted; please can more details be provided so we can discuss this with our contractor? As far as we understand all standards and compliance requirements were carried out for the road works.

   In response to "I would like to know what the plan is from all agencies to avoid a repeat

incident."

Please see section 'What we are and can do going forward'

Additionally, if an event of this scale were to happen again it is very likely that flood water would overwhelm the culverts at Moreleigh road and lead to similar depths of water in the road. Flooding ensuing from this relates to the property level resilience measures, their deployment and efficacy.

The alarms at the screen have been reset and so should trigger an alert to the community from the Flood Incident Duty Officer at the environment agency and potentially the deployment of the field teams.

In response to: "I would like to know from each agency what their statutory duties are for these incidents and what their response was".

Generally, the Agency does not have a duty or liability to stop or reduce all flooding. The Agency's flood risk management powers (Section 165 Water Resources Act 1991) to carry out flood risk management works including maintenance to manage flooding from main rivers are permissive in nature and not a duty. Using these powers are subject to 2 conditions: (1) that the Agency considers the works desirable in accordance with the Agency's strategy (national flood and coastal erosion risk management strategies under sections 7 and 8 of the Flood and Water Management Act 2010) (2) that the works are to manage a flood risk from main rivers or the sea.

In the case of the Yeolands stream we have and are putting in place several ways to improve resilience and warning. We increased the screen area in line with up-to-date guidance. We introduced new alarms to warn the community. We are upgrading the telemetry to mains power which will improve the resilience and allow us to improve the camera at the site.

On the night of the 17th we attended the area and supported in the clear up of debris from the road to maintain the overland flow route. We prioritise incident response to areas depending on resource and risk, as such we cannot guarantee that we will attend every flood event.

3. Please see section 'Flood warnings'