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Your ref

Our ref

MW/EC

Date

24 October 2014

Contact

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Dear Paul

I am writing in response to your letter dated 29th September 2014, requesting that Southern Water provides you with information on how we responded to the flooding experienced during the winter of 2013-14. We are committed to working with other flood risk management authorities across our region, including Kent County Council (KCC), and as such welcome the chance to comment on last winter's flooding. In doing so, I would first like to stress that in 2013-14 Southern Water:

- Engaged regularly with Lead Local Flood Authorities (LLFAs), the Environment Agency (EA) and other flood risk authorities across our region, actively taking part in Flood Risk Management Boards and the Southern Regional Flood and Coastal Committee.
- Worked in partnership with other agencies and as part of a multi-agency response to winter flooding across our region.
- Was an active Steering Group Member on a number of flood and coastal erosion projects across the south east.
- Invested heavily (more than £5M) to survey and seal sewers and manholes in areas susceptible to groundwater flooding.
- Conducted an extensive programme of work to seal sewers, where we identified significant leaks, not just in our sewer system but also in some customers' lateral drains. This meant that we only needed to deploy tankers after higher groundwater levels were reached in many areas, when compared with previous flood events.
- Developed in-house, and deployed our unique Eco-Filter process, to reduce the impact on discharges to streams and watercourses.
- Improved our sewer network serving a number of vulnerable areas, so that it was better able to withstand infiltration from groundwater.

In direct response to each of the subjects you have specifically raised queries on, I would like to update you as follows:

Published reports on floods occurring due to our assets

Annually under Section 18 of the Flood and Water Management Act 2010, the EA has a duty to report on flood risk management and mitigation. Along with other water and sewerage companies, Southern Water provided a report to the EA in April 2014 that outlined progress over the previous financial year. There was significant emphasis on the issues surrounding the 2013-14 flooding, but we highlighted the good progress on infiltration reduction and other flooding related investment that has been made, or is ongoing.

The final 2013-14 report was issued by the EA on 19th September 2014 and can be viewed via <https://www.gov.uk/government/publications/managing-flood-and-coastal-erosion-risk-april-2013-to-march-2014>. It clearly cites Southern Water's previous work to reduce groundwater infiltration (through sewer and manhole sealing) and the positive impact that this had during the 2013-14 floods. It also refers to the cost of 2013-14 flooding and the £20M total flood response spend by our organisation.

There was reference in the EA report to £6M worth of investigations and repairs during 2013-14, including in villages along the River Nailbourne, and the benefits of such investment being seen in many catchments across our region during the winter. It referred to Southern Water only needing to use tankers when higher groundwater levels than previously experienced were reached. Nevertheless, tankering and over-pumping costs peaked at around £150,000 a day, with more than 330 staff involved and 117 tankers in use. Indeed, at its peak Southern Water was pumping out around 125 million litres a day of excess water from its sewerage system – enough to fill 50 Olympic sized swimming pools.

This goes some way to demonstrate the extreme conditions that were experienced and dealt with by our workforce throughout Kent, Sussex, Hampshire and the Isle of Wight. Groundwater levels were at a record high during the wet weather of 2013-14, resulting in 40 groundwater flooding locations across our region.

Asset improvements to prevent flooding

In 2013-14, Southern Water invested more than £6 million to survey and seal sewers and manholes in areas susceptible to groundwater flooding across our region. As part of our Wastewater Pumping Station Total Care Programme, we have Total Care Plans (TCPs) identified for 500 sites selected in favour of pollution and flooding. The Programme started on March 2013 and some 470 sites had TCPs completed by the end of December 2013, reducing the risk of future pollution events and flooding. The TCP work has focussed on driving resilience and performance, but a small number of sites (less than 10) within the Programme were impacted by groundwater during 2013-14.

Increased sewer network resilience

During the current 5 year Asset Management Period of investment covering 2010-15, we have undertaken resilience assessments of our key assets, in order to identify where these require enhanced protection and justified future investment. Certain operational sites, such as Sandown Water Supply Works, were flooded by surface water during the 2013-14 wet weather. Those few operational sites that were actually flooded during 2013-14 continued to operate, despite the severe weather conditions.

As well as contending with flood waters, storm conditions had a significant impact on our assets during 2013-14, with some 250 pumping stations losing power during the Christmas

2013 storm alone. To counter this risk, we routinely undertake criticality assessments on our sites to determine the impact of power outages. Such assessments include reviewing vulnerability to power outages, as well as the impact of outages on customers and/or the environment.

Where the frequency and consequence of outages is deemed unacceptable, e.g. it results in internal flooding or a serious pollution incident, then a permanently installed generator is required. Where the frequency of outages is low or has minimal impact, then we rely upon mobile generators, which are located at strategic centres such as Ashford, Maidstone and Tonbridge. Alternatively we use tankers to take the flow from pumping stations and discharge it at local wastewater treatment works. Our experience over the last winter has shown our risk based approach to be effective and has not required us to install additional generators.

Other measures to prevent flooding

We have been working in a number of other ways to help prevent flooding. Being actively involved in a number of flood and coastal erosion projects across our region has helped to better inform these projects, provide valuable input and guidance and also to maximise protection of our own assets. LLFAs have valued our input and representation on their respective Flood Risk Management Boards, as well as the Southern Regional Flood and Coastal Committee. Drawing upon lessons learnt during previous floods, including the West Sussex 2012 floods, we have worked well with LLFAs and other flood risk management authorities to respond to the unprecedented weather conditions experienced across the south east during 2013-14.

Our collaboration with other flood risk management authorities has influenced our planning investment, in both the current (2010-15) and the next 5-year Asset Management Period (2015-20). From 2015 we plan to focus on wider adoption of Surface Water Management Plans, adoption of technology to allow integration of different flood mechanisms and real time management of the 'whole drainage' network. We also want to ensure that there is a clearer understanding of roles and responsibilities for all parties going forwards and to maintain partnership working, including multi-agency responses.

In addition, as a result of its effectiveness, we wish to continue our programme of surveys and repairs, to develop proposals for seasonal overflows with tertiary treatment and to continue to develop Infiltration Reduction Management Plans where necessary across our region.

Work with local communities to explain the risk and improve resilience

Our involvement with local communities has been prominent in those areas of our region where the flooding of 2013-14 was particularly severe. In Kent, a key part of our focus is in the County centred upon the Nailbourne Valley, where we have been working closely with authorities such as parish, borough, district and county councils, the Environment Agency and river management group to jointly resolve the problems caused by groundwater flooding. The following is a summary case study outlining our work on flood protection in village communities along the Nailbourne:

Nailbourne flood protection scheme

Work began in early 2013 on a £1 million programme to tackle the problem of high levels of groundwater flooding the sewer network in villages along the Nailbourne

Recent flooding

We were recently using five tankers and five temporary pumps to remove wastewater from the sewers serving the villages along the Nailbourne.

Investigations

In 2013, engineers used remote operated CCTV cameras to extensively survey over ten kilometres of sewers and 250 manholes. Sources of groundwater infiltration were identified. The main locations were:

- Bridge, near Brewery Lane and Mill Lane
- Bourne Park, at Bishopsbourne
- Charlton Park
- Barham
- Substantial leaks were also found elsewhere along the valley.

Between Sept 2013 and Jan 2014, over 3.5 km of sewers were repaired.

We are working closely with authorities such as parish, borough, district and county councils, the Environment Agency and river management group to jointly resolve the problems caused by groundwater flooding.

Benefits

Due to the severity of the flooding this year, the repairs were not able to eliminate groundwater entering the sewers, but Southern Water did not need to start using tankers until the groundwater level at Little Bucket borehole had risen to 80m, compared to a level of 78.5m in 2013 when tankering commenced.

Biological treatment units have been installed at four of the five over-pumping locations along the bourne, to improve the quality of the water being discharged.

Planned Work

A flow monitoring survey to identify remaining areas of infiltration will be carried out when groundwater levels fall slightly.

Contribute to a Surface Water Management Plan led by the lead flood Authority.

A study will be carried out in Spring 2014, of the potential for an emergency discharge at an appropriate location in the catchment. The discharge would include some elementary treatment.



Geographical coverage of our improvements

In your letter you have stated that the geographical areas where residents have raised questions for Southern Water are Tonbridge, Five Oak Green and the villages of the Nailbourne Valley and have asked where else we have undertaken improvements in response to the 2013-14 floods. In relation to the 2013-14 floods in Kent and associated improvements that have been identified or implemented since, I would like to take the opportunity to update you on key geographical locations as follows:

Nailbourne Canterbury area - This was the worst impacted area in 2013-14, where the sewerage system was inundated with groundwater during the winter. To ensure drainage within the system, Southern Water needed to over pump the sewerage system at five locations: Barham, Bishopsbourne, Patricbourne, Bekesbourne and Littlebourne. In addition, we utilised tankers at various locations including Barham, Patricbourne and Bridge. We have previously invested in sewer sealing to reduce the level of infiltration, and this has proved effective as the requirement for over pumping was reduced, i.e over pumping commenced at a higher groundwater level than previously experienced and also ceased when the groundwater level was higher than previous events. Since the event we have installed non-return valves at key properties, which will prevent them from flooding due to the sewerage system backing up. We have also refurbished the major pumping station, School Lane. The station now has more modern variable speed pumps and new control equipment. This will allow the station to operate at the maximum possible for the downstream sewer capacity. Although not yet tested under high groundwater levels, it is likely that it will pump more than prior to its refurbishment, thus reducing our reliance on the over-pumping.

Nailbourne Elham area – Southern Water experienced inundation of the sewerage system in both Elham and Ottinge last winter. This was the first such event since the winter of 2000-01. To ensure the free drainage of the sewerage system, we over-pumped diluted wastewater (c.90% groundwater) from The Orchards Pumping Station into the Nailbourne. To minimise the impact of this discharge, we installed a temporary treatment facility to improve the discharge quality. We have since undertaken a CCTV examination of the sewerage network and as a result will be undertaking jetting of parts of the sewerage system to remove fat build up and root ingress. We will be replacing a sewer liner, previously inserted in the sewer pipe to seal the sewer, as it has been distorted and is no longer effective. In addition, we will be sealing three manholes where infiltration has been identified. This work will be completed during the Autumn of 2014. We are also investigating the possibility of isolating a section of the sewerage system, prone to flooding under high groundwater conditions, and servicing the area by tanker.

We are looking at the possibility of providing temporary pumping of a small section of the sewerage system in Ottinge to allow permanent drainage to all properties in the catchment. This review will be completed by the end of October 2014 and if suitable the solution will be implemented in November 2014. In this catchment we have replaced a number of manhole covers that were submerged by groundwater, with sealed units, this will prevent the ingress of significant amounts of water.

Petham Bourne - The Bourne was evident again last winter, which is the first time since the winter of 2000-01. The high ground water level caused surcharging of the sewerage system leading to discharging from two manholes in the grounds of the Stiner School, near Chartham. In recognition of this, Perry Court Pumping Station, has undergone refurbishment over the spring and summer of 2014 and the opportunity has been taken to up-rate its pumping capacity by a factor of three. We believe that this improvement will be sufficient to maintain free drainage in the system and should prevent the overflowing of the manholes in the future.

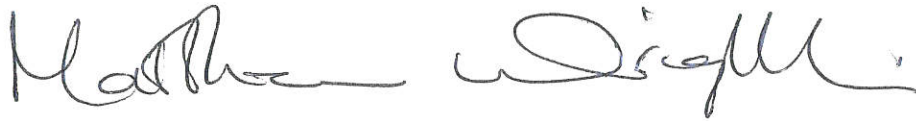
Alkham Valley - Our sewerage system suffered infiltration as a result of the high groundwater levels in 2013-14. Although not as severe as elsewhere, this led to some external flooding and several customers suffering restricted toilet use. We assisted by using tankers as required. A CCTV survey undertaken, after the flows had subsided, did not show any points of groundwater ingress.

Preston & Elmstone - We have replaced a number of manhole covers with sealed units to prevent surface water ingress. In addition, a number of sewers have been jetted to ensure that operate at full capacity. The operation of Court Lane Pumping Station allowed flows to back up in the catchment and cause some garden and highway flooding. As a result of this, the station was overhauled to ensure it operates at maximum capacity. Court Farm Pumping Station had previously undergone refurbishment, but its reliability is not as good as we would like and so we are considering the option to replace it with a conventional submersible pumping station.

Ickham and Wickhambreaux - the majority of the issues in this location during 2013-14 were associated with fluvial flooding from the Nailbourne, which caused our wastewater pumping station to fail and prevented an immediate response. We are currently reviewing an appropriate means of protecting the site with bespoke flood protection barriers, which is complicated by its location at a road junction.

I hope that you find this response to your queries useful. Should you have any further questions or concerns on any aspect of our flood risk management work then please feel free to contact me again.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Matthew Wright', written in a cursive style.

Matthew Wright
Chief Executive Officer
