

Guildford Street Section 19 Report

**Location: Guildford Street, Staines,
Spelthorne**



SURREY
COUNTY COUNCIL

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Guildford Street S19 Flood Report

Introduction

This report details the flooding that occurred at Guildford Street, Staines during Storm Christoph between 28th January and the 3rd February. This report will describe the flooding, causes of the flooding and explain which risk management authorities have responsibilities related to the flooding at Guildford Street. Recommendations will then also be made for the various risk management authorities to consider.

Method

This investigation has been undertaken using desk and site-based studies to better understand the potential causes of the flooding which occurred at the end of January 2021. Following these studies, meetings were held with other Risk Management Authorities (RMAs) including Thames Water, Spelthorne Borough Council and Surrey County Council Highways to understand what other works and investigations have been undertaken since the flood event and historic flooding in this location.

Desk Study

A review of the available data was undertaken and can be seen compiled below for the site.

The site is located in Staines, Spelthorne approximately 250m east of The River Thames and approximately 380m west of Sweep's Ditch. Guildford Street is a cul-de-sac situated east off Laleham Road. Residential properties run parallel to the road to the north and south. At the eastern end of the road there is a large communal allotment garden.

A review of GIS data was carried out for this area and found that a low point exists on Guildford Street, between 14 and 24 Guildford Street, which is vulnerable to a 1 in 30 year flood event with most of the road being susceptible to the 1 in 100yr flood event. Photos provided by residents show that this is where water pooled.

There is limited drainage on the road, with the surface mapped surface water system being gullies along the road and a soakaway outside number 11. The only other drainage system is a Thames Water foul sewer which runs west along Guildford Street before meeting the main trunk main to the north of the properties on the northern side of Guildford Street.

Site Visit

A site visit was carried out on Guildford Street to observe the site and determine if there were additional features to those mapped that are visible upon inspection. On this visit, notes and photos were taken both on Guildford Street and from within the allotments. This was to inspect gullies and the location of manholes which may indicate the location of drainage features in the area. This was also an opportunity to speak with some of the affected residents to understand their views of the flooding.

Other Investigations Undertaken

As part of the recovery from the event, Thames Water undertook an investigation of the foul sewer to determine if there was any damage to their line or whether surface water was finding its way in from the surface water drainage into the foul sewer. The investigation found that it is likely that water entered the foul system through joins in the pipe and a hole in a lateral coming from one on the properties on Guildford Street,

Actions from meeting in November 2014

A multi-agency meeting was held on 7th November 2014 following large scale flooding in the winter of 2013/14 where several actions were identified to be considered.

A number of these actions were about the soakaway outside of number 11 Guildford Street. These were to inspect the soakaway and determine if a new soakaway was needed. An investigation was undertaken following this meeting. The soakaway was found to be old but in good condition and as such was not in need of being replaced.

The other action for Surrey County Council was to resurface the road. The Maintenance Engineer has confirmed this work was done in the next financial year.

Flood Incident

Flooding occurred on Guildford Street in Staines and was reported to Surrey County Council on 4th February 2021. This was also reported to Thames Water on 5th February 2021. The flooding happened to the middle of the road and stretched to the entrance to the allotments east of Guildford Street. This water was contaminated with foul sewage and coincided with residents being unable to flush toilets indicating the water had gotten into the foul sewer.

The area flooded was the highway at the centre of Guildford Street, the same area shown on Annex A as the area at risk of surface water flooding. This water remained for approximately 4 weeks with foul contamination.

While the flood water was in situ, Thames Water pumped water from the pooling area and provided toilet facilities for those whose facilities were impacted. As water was pumped away, it was reported that water would soon fill up again. Pumping was reported to be more effective nearer the allotments rather than the low point outside number 14 Guildford Street. This work and presence remained at Guildford Street until 3rd March where flood water had receded.

Cause of Flooding

The underlying bedrock geology in the Staines area is the London Clay. On top of the clay there is a thin veneer of superficial river gravel deposits called the Shepperton Gravels. Local borehole records indicate that in this area the thickness of the gravels is commonly 7m.

In general, water is unable to infiltrate into the impermeable London Clay. The gravels lying on top of the clay allow groundwater to accumulate in the spaces between the gravel particles, analogous to water being stored in a sponge.

There is a complex interaction between rainfall, surface water, local groundwater and river levels. In general, prolonged or high rainfall accumulations in the winter months result in recharge of the underlying local groundwater in the gravels. There is also a hydraulic link of the local groundwater to the River Thames. When the river levels are high then the groundwater level is similar. Over a period of prolonged winter rainfall, high river levels coupled with high groundwater levels result in surface water ponding and flooding in low lying areas as surface water cannot drain away.

Due to the proximity with the River Thames the geology in large parts of Spelthorne including Staines, has superficial River Terrace Deposits. This means that when the River Thames is high, water flows through the ground easily. When the Thames is higher than ground level, groundwater will be at the same level, meaning that lower lying land will experience groundwater coming to the surface. In the case of Guildford Street, the Thames is only 280 meters from the area that flooded. Rising groundwater will have filled the capacity of the soakaway on Guildford Street. With the

storage capacity of the soakaway reduced, surface water falling on the highway cannot drain away. As such, it will flow overland and pool at the low point as shown on the surface water flood risk map in Annex C.

Evidence for the driving factor behind the flooding being high groundwater is that river levels at the time of the flooding were abnormally high at 4.3 meters on the 3rd February 2021 compared to 3.2 meters when the storm started on the 28th January.

This river level data can be viewed through the link below.

[Monitoring Station Information for Staines | Flood Assist Insurance](#)

The foul contamination of the flood water was caused by a combination of groundwater ingress into the foul sewer and a hole in a lateral from a property. The foul sewer experienced water ingress as groundwater levels were higher than the invert levels of the sewer. Groundwater entered the foul sewer through joints and small cracks in the sewer however this is quite common in cases of high groundwater. An investigation following the flooding event found a hole in the foul sewer lateral near the manhole in the front garden of 21 Guildford Street. Water likely seeped through this hole through the ground allowing more clean water than normal into the foul sewer, exceeding its capacity quicker. The hole has now been repaired with the lateral being lined.

Roles and Responsibilities

Surrey County Council are responsible to maintaining the highway drainage including gullies and soakaways to ensure they are functioning correctly. There is no responsibility to improve the drainage.

Thames Water have a responsibility to maintain their sewer and ensure any damages have been repaired. This has already been undertaken with investigations and repair work to the lateral at number 21 Guildford Street.

Recommendations

The following options should be examined by the risk management authorities and residents to be assessed for their feasibility and financial viability. These should be considered as part of an adaptation to the catchment rather than specific intervention which will remove this surface water flow route. Recommendations are not instructions and need to be examined by the relevant Risk Management Authority or individual.

- Further survey work should be undertaken on the highway drainage system on Guildford Street and nearby roads to determine the flow routes and connectivity of the drainage network. The survey should also determine whether there is a surface water flow route through the allotments. This survey should then be recorded onto Kaarbontech - **Surrey County Council Local Highway Office**
- Further investigation into the foul network to determine other connections there are from local surface water drainage – **Thames Water**
- Monitor how frequently the highway drainage system surcharges to determine if a more formal connection to take surface water away is needed – **Led by Surrey County Council Highways but Thames Water involved in conversations.**
- Monitor levels in the foul sewer through the use of an observational manhole to see how levels react to different conditions – **Thames Water**

- Disconnect any surface water connections to the foul sewer using storage features such as planters where possible to reduce the amount of clean water going into the foul network and making the foul network more resilient to these types of flooding event – **Surrey County Council and Thames Water**
- Residents should investigate property resilience measures to lessen the impact of any future event – **Homeowners/Surrey County Council**
- Clear communication to residents with regard to what support is available during a flood event with the most relevant contact phone numbers for the different authorities who are involved – **Spelthorne Borough Council**

Annex C – Surface Water Flood Risk data for Guildford Street



