



Flood investigation report

High Street, Chalfont St Peter 2019

Buckinghamshire Council as Lead Local Flood Authority has a duty to investigate flood incidents as detailed within Section 19 of the Flood and Water Management Act 2010.

Date of incident:

24th September 2019

Location detail:

High Street, Chalfont St Peter

Overview of incident:

Flooding caused by Thames Water foul sewer network issue. Internal flooding to five business properties.



Figure 1: Location plan of flooded area.

Summary of extent and impact

The flooding event led to the internal flooding of 5 business properties at approximately 09:00 on the morning of the 24th of September 2019 in the location of High Street, Chalfont St Peter, figure 1. The flooding started at approximately 06:00 and started to recede early in the afternoon at approximately 14:00, the maximum depth was approximately 18 inches deep.

The flooding caused the road to be closed by the local Highway authority throughout the duration of the event.

High Street Chalfont St Peter was the only road affected in this flooding event due to a natural low point in the carriageway profile.



Figure 2, 3, 4 and 5 – Photos of flooding taken by the Frost Partnership on 24/09/2019

Potential Cause

Weather conditions – On the evening of the 23rd of September 2019 the forecast through the night was cloudy and mild with torrential rainfall in areas with a yellow weather warning issued throughout the UK. The Met Office's evening forecast can be found on this [link](#).

Sewers –

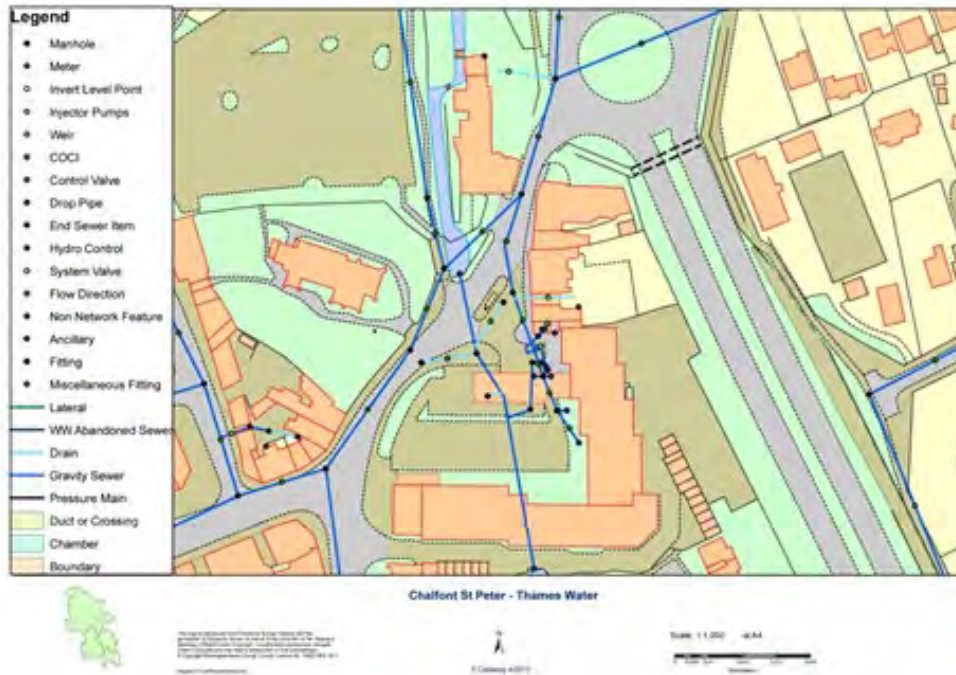


Figure 6 – Plan showing foul sewer network

A foul sewer main runs along High Street, Chalfont St Peter in the middle of the carriageway as shown in figure 6. Following the heavy rain the main sewer surcharged and sewage discharged from a foul sewer manhole covers on High Street which resulted in the flooding in the businesses.

The sewer system was the main cause of the flooding event on the 24th of September 2019. Due to the heavy rainfall the previous evening water had entered the sewer system which overwhelmed the system and caused a surcharge of water from a foul manhole cover in the middle of the carriageway. This caused a large amount of water to discharge very quickly onto the highway, filling the highway drainage system which was overwhelmed and the water was not able to discharge and started to flood properties.

Thames Water attended on the morning of the 24th Sept 2019 and pumped some of the flood water away. Due to the severity of the rainfall, a 1 in 5 year storm, approx. 30 – 40mm in a couple of hours, the system was overload . When the rainfall had stopped and the flood water had receded the system quickly regained control and the water drainage away without obstruction.

There was no flooding from the river and the groundwater levels were normal at the time so there was no contribution from groundwater.

Summary - Heavy rainfall and surface water runoff from the road and hard surfaces entering the highway drainage system and foul sewer system caused the foul sewer to become overwhelmed and reach maximum capacity, this caused sewage to flow out of a manhole located in the middle of the carriageway and as such flowed into the highway drainage system causing this to become backed up resulting in ponding in the road and rising water levels which then encroached into the shops along the High Street, Chalfont St Peter.

Catchment area and local information

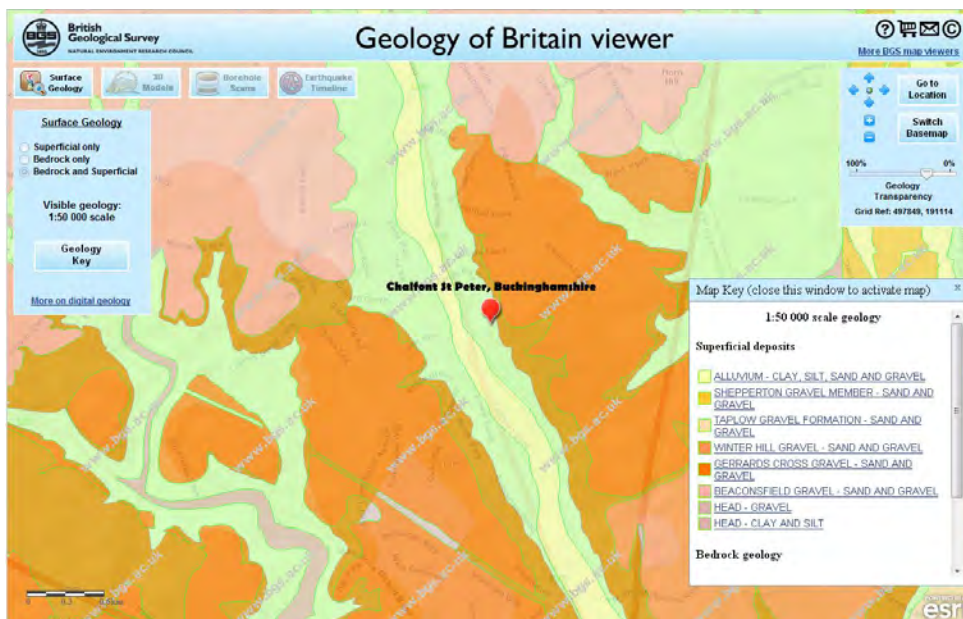


Figure 7 – Geology map of Chalfont St Peter - BGS

Chalfont St Peter is situated on alluvium (clay, silt, sand and gravel) along the line of the Misbourne, with sand and gravel superficial deposits on the more hilly parts of the village. The solid geology is chalk along the A413 and the line of the River Misbourne, but is Lambeth group (clay, silt and sand) on the more hilly parts of the village either side of the river, as shown in figure 8. Low lying areas underlain by permeable strata such as chalk, such as Chalfont St Peter along the line of the River Misbourne, are particularly susceptible to groundwater flooding.

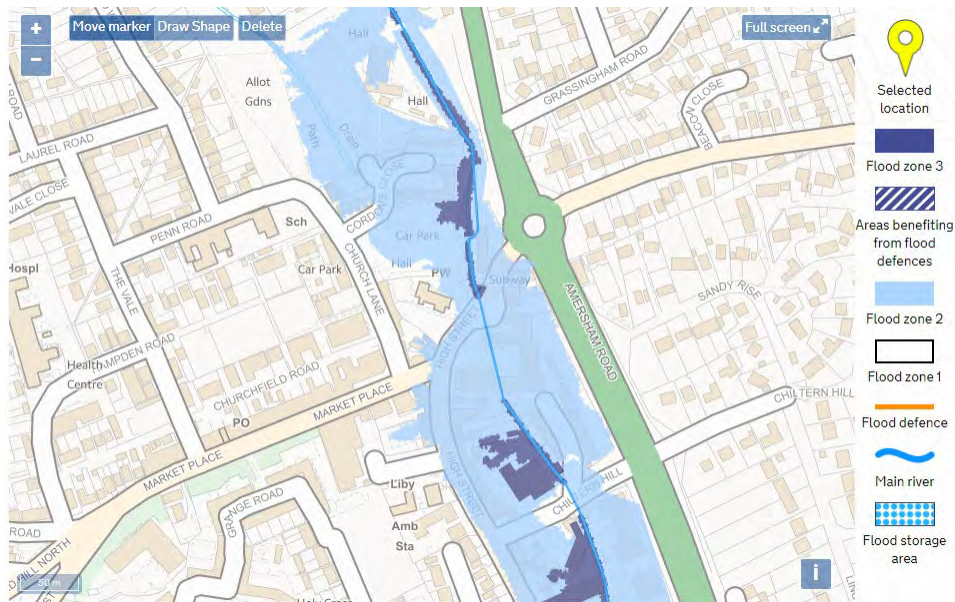


Figure 8 – Flood zone map

River – The river Misbourne runs under High Street, Chalfont St Peter. The River Misbourne is a main river that flows through Chalfont St Peter, as shown in Figure 8. It is a chalk stream that flows for 17 miles (27 km) from Mobwell Pond just north of Great Missenden to its confluence with the River Colne, which itself is a tributary of the River Thames. Apart from a small section in Great Missenden, the River Misbourne is classed as a main river and the environment agency would be responsible for the continued overseeing of the maintenance of the River Misbourne.



Figure 9 – River Misbourne plan

Groundwater – The groundwater was at normal levels for the time of year and it is not believed that groundwater played a part in this flooding event. Please see the below groundwater mapping and this shows the area is generally not effected by groundwater throughout normal periods of the year.



Figure 10 – Ground water map

Surface water – As water was unable to drain away from areas of hard standing due to existing standing water and maximum capacity being reached of the highway drainage system, caused by the rainfall from the previous evening and early hours of the morning, these factors could have been a contributing factor.

Please see below the surface water mapping, this shows that the area is prone to surface water flooding. The flooding located in the area shown on figure 11 was consistent with what happened on the day of the event but was enhanced by the sewer issue.

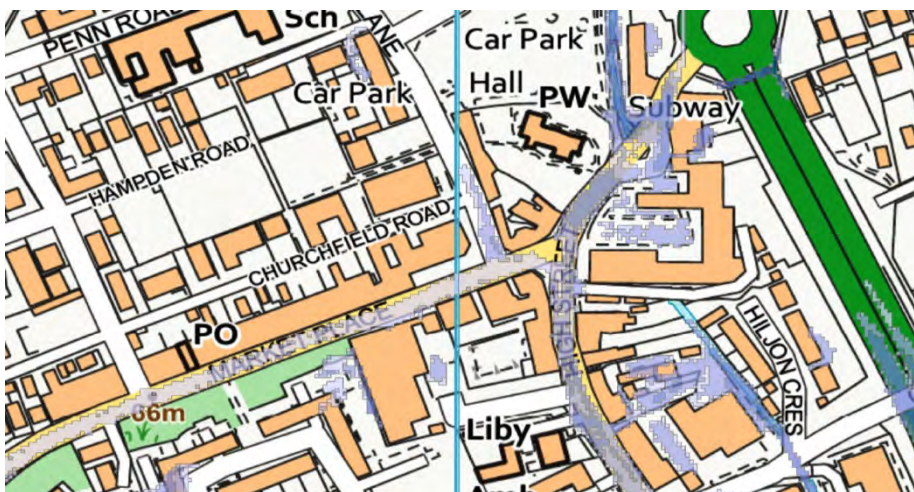


Figure 11 – Surface water map

Maintenance of local drainage systems – The surface water drainage system became overwhelmed by the volume of water and debris discharging from the sewer system and as such could not drain away the excess amount. The system was cleaned after the flooding event.

Transport for Buckinghamshire is responsible for the highway drainage in this area.

Historic flood information

A previous section 19 report was carried out in 2014 from January to March, please see the link below.

<https://old.buckscc.gov.uk/media/2842878/chalfont-st-peter-flooding-report.pdf>

Responsible bodies -

Thames Water - responsible for any maintenance or new installation to the sewer network.

Environment Agency – Responsible for the maintenance of the river Misbourne and to enforce riparian owners to keep the river free from obstruction and allow clear flow at all times.

Transport for Buckinghamshire – Responsible for maintaining the highway drainage system and ensuring the system is maintained to an acceptable standard.

Buckinghamshire Council – Responsible for performance monitoring of Transport for Buckinghamshire and investigations of flood events that meet a set criteria.

Recommended actions

All drainage assets should be cleaned and maintained by the responsible parties (outlined above).

Thames Water did look into the possibility of a Flooding Local Improvement Project but unfortunately this failed the initial engineering assessment. Thames Water will continue to monitor and undertake routine maintenance to the system and respond if severe weather conditions cause further flooding.

Environment Agency to continue to monitor the maintenance of the River Misbourne. Bucks Council to work with local businesses to explore privately funded PFR measures.

Next steps

Buckinghamshire Council will circulate this flood investigation to all relevant stakeholders and publish this document online at

<https://www.buckscc.gov.uk/services/environment/flooding/strategic-flood-management/flood-investigations/>

[BC to monitor the recommended actions and report to the strategic flood management meeting](#)

Acknowledgements

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British Geological Survey

Thames Water

Frost Partnership

Transport for Buckinghamshire

Environment Agency

Revision	Date	Details	Author	Checked and approved by
1	27/08/20		RS	KF
2			RS	KF
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