Tattenhall Main Report Details

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Area:	Tattenhall		
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Tattenhall Main Report

This Tattenhall specific Main Report should be read in conjunction with the Section 19 Flood Investigation – Main Report (January 2021 Storm Christoph Flooding Event).

1. Background

Tattenhall is a village southeast of Chester. Mill Brook, classified as a main river, runs south to north through the village. To the south of the village centre, and Old Mill Place, Mill Brook runs into a mill pond then is culverted under the High Street before flowing north. There are numerous water related assets in the area including a Welsh Water combined sewer, road drainage, private drainage in Old Mill Place (including a private pumping station) and a historic mill race culvert.

An historic borehole is located within the Old Mill Place car park, this borehole was previously used by Refresco to abstract water for drinks manufacturing and abstraction stopped 5 years ago. Members of the local community believe that since abstraction ceased the water table has risen, contributing to increased risk of flooding. Cheshire West and Chester Council (CWaC), in their role as Lead Local Flood Authority (LLFA), are undertaking additional investigations into the borehole and consequences of no longer abstracting water.

Water drainage from Old Mill Place was historically an open watercourse (the millstream). With the construction of Breen Close in the 1990s the stream was partially culverted. The ancient brick and stone-lined mill race from the mill pond runs under Old Mill Place.

Surface drainage from Flacca developments feeds water directly into Mill Brook just downstream of the Mill Pond dam. The development includes a large tarmac carpark, office buildings and retirement apartments.

Mill Brook, downstream of the High Street, runs in an open channel before entering twin 1.2m diameter pipes for approximately 20m under Newall Close. Thereafter, the brook runs in another deep open channel before entering a closed drain and weir behind Breen Close.

Local knowledge indicates that Old Mill Place has been flooded many times since the 1960s. There have been new developments in the 1990s adjacent to Mill Brook and at Newall and Breen. In 2000, 18 properties including the Old Mill and Old Mill Place were flooded to a depth of 1m. A storm drain was then constructed in Mill Field to take overflow from Mill Brook.

Many of the properties affected during the Storm Christoph event are located within Flood Zone 2 and 3, and some are within the High-Risk Surface Water Flood Zone (Appendix I).

1.1. The Tattenhall Flood Management Scheme

Tattenhall received funding from the Regional Flood and Coastal Committee in 2016 to undertake Phase 1 of a natural flood management (NFM) scheme along 230m of Mill Brook upstream of Tattenhall. This involved the creation of 1.5ha of habitats (reedbed and wet grassland) and the installation of spill weirs, designed to increase floodwater storage upstream (300m^3) and slow the flow of Mill Brook to reduce flood risk in Tattenhall, as well as delivering ecological benefits.

Phase 2 of the scheme was constructed in 2021, after Storm Christoph (see Section 2).

2. Flood Review

The High Street at the entrance to Old Mill Place is a low point for the road as well as for the surface and foul water drainage systems. During Storm Christoph, large volumes of water entered from both directions along the High Street into this low area. It was also reported that water overtopped the Mill Pond and ran into Old Mill Place in the south east corner of Old Mill Place. Residents reported water surcharging from the drainage network and coming up from the ground.

Flooding affected the car park of the Barbour institute and the land between the Barbour institute and Mill Brook, including the flooding of the Grade II Listed war memorial. It was reported that where Mill Brook is culverted under the High Street, water overflowed the storm drain before flowing overland past the war memorial to the Barbour Institute and onto Old Mill Place.

The following issues have been reported:

- High Street manhole covers for surface water drainage were lifted indicating the capacity of the culvert had been surcharged.
- The car park at Old Mill Place currently has a layer of mossy sludge that has been there for several weeks, it is thought that this is related to high groundwater. Similarly, there are concerns regarding the borehole being capped which may again lead to increased groundwater levels.
- Outside of the Section 19 investigation, CWaC and the EA are consulting regarding the management of issues associated with the legacy borehole.
- Tattenhall Parish Council report that there are 3 points on the normal course of the Mill Brook which are potential throttles; the High Street bridge; the pipes under Newall Close; and the weir behind Breen Close. The High Street culvert presents the most significant throttle. Water backing up at the Newall Close culverts is contained within banks and the 'back-up' in water level does not appear to have a significant impact on the upstream High Street culvert.
- There is a grade II listed war memorial that has been affected by flood damage since 2000. The local community is deeply concerned that the frequency and severity of flooding is increasing and that the memorial is at risk of significant damage.
- The period of high rainfall prior to Storm Christoph resulted in ground being saturated which led to high and fast run off rates contributing to the peak flows within drains and watercourses.
- Welsh Water did not receive any reports of flooding to their system during the event.

Figure 1 shows details of the flooding, developed in consultation with CWaC, as LLFA, and affected property owners.

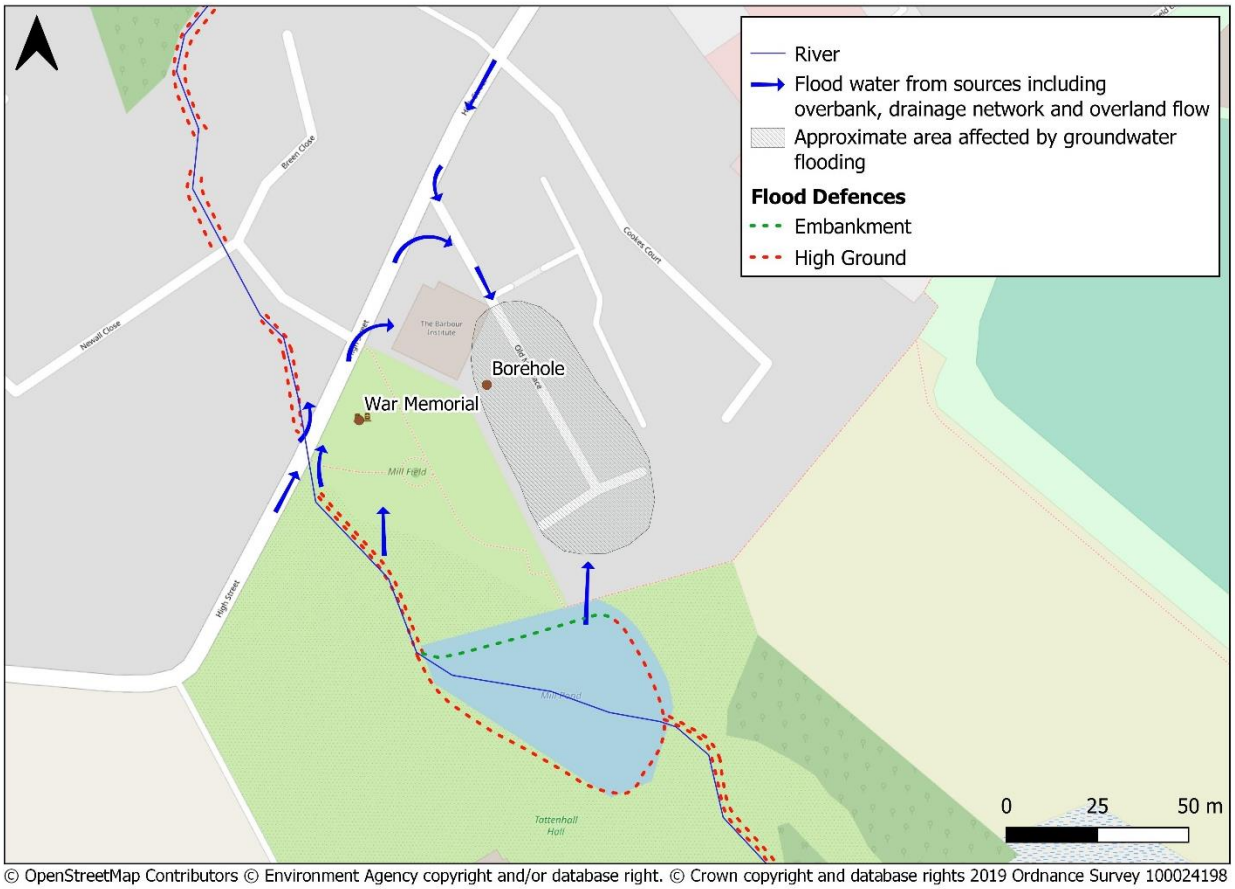


Figure 1 - Flood Overview

The extents of the flood event in the various areas can be seen in Figure 2 - Figure 4.

Figure 2 - High Street manhole cover opposite Old Mill Place. 20/01/21

Source: Parish Council

Figure 3 - Mill Brook at the High Street Bridge. 28/01/21 (note that this was taken a week after the event when water levels had subsided)

Source: Parish Council

Figure 4 - Old Mill Place. 20/01/21

Source: Parish Council

Key statistics of the Storm Christoph flooding in Tattenhall are summarised in Table 1. A detailed timeline of the flood event can be found in Appendix II.

Table 1 – Flood Impact Summary

Residential properties affected:	Commercial premises affected:	Number of properties evacuated:	Number of properties flooded:	Number of domestic properties flooded:	Number of commercial premises flooded:	Comment
20	6	6	20	15	5	As reported to CWaC prior to publishing

Table 2 provides a brief summary of the flood event, impact and response in Tattenhall.

Table 2 – Tattenhall Flooding

Date	• 20th January 2021
Affected Roads	• High Street, Old Mill Place, Newall Close
Flood Alert / warning issued?	• Flood Alert: River Dee catchment in England from Whitchurch to Chester 19/01/21 20:10
Flooding Impacts and Observations	• Property damage • Additional stress and mental anguish on the community over such an event happening again
Summary of Flooding Incident Response During Event	• Sandbags were delivered by CWaC • Some residents used their own pumps

The following actions were undertaken prior to the production of the interim report:

- Parish Council has prepared a report setting out the sources of flooding and what was affected. EA and CW&C attended Parish Council meetings to update on the flooding sources.
- The EA, in partnership with the local landowner, ELM associates and Bolesworth Estate completed phase 2a of the NFM scheme along Mill Brook (in June/July 2021). This phase created 4,500m^3 of additional upstream floodwater storage, via 3 clay bund runoff attenuation features (RAFs) to slow the flow of Mill Brook (Figure 5). These interventions are designed to divert the peak flows and store them temporarily, before releasing them slowly, thereby flattening out the peak of the hydrograph and reducing flooding impacts.
- Meeting on site with affected residents 15th July 2021 with CWaC, as LLFA, and EA.

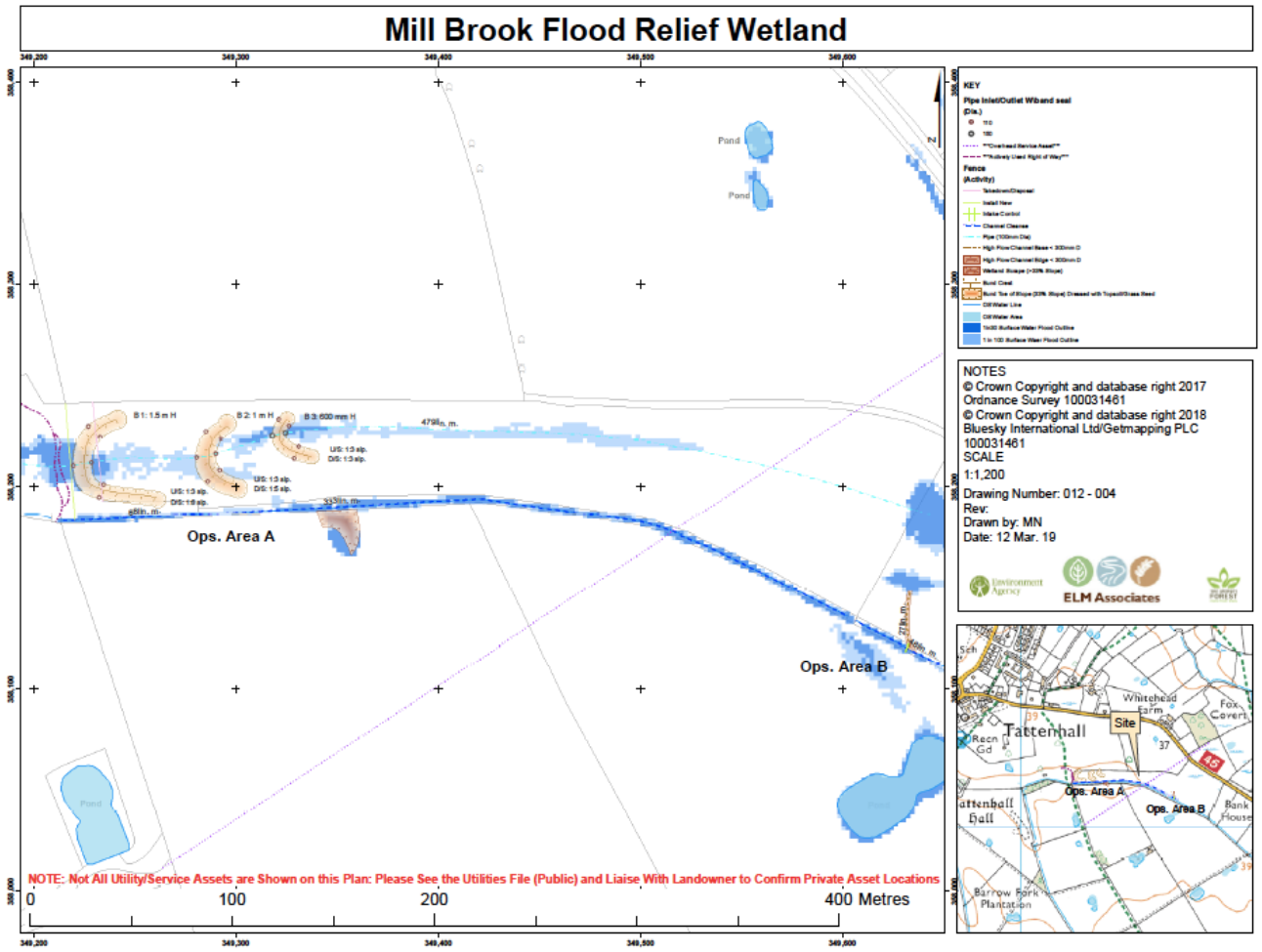


Figure 5 - Mill Brook NFM Scheme: Upstream storage bunds

Source: EA

3. RMA Response

This section outlines the RMA response to the flood event at Tattenhall. Consultations have been undertaken with the participating RMAs and local residents.

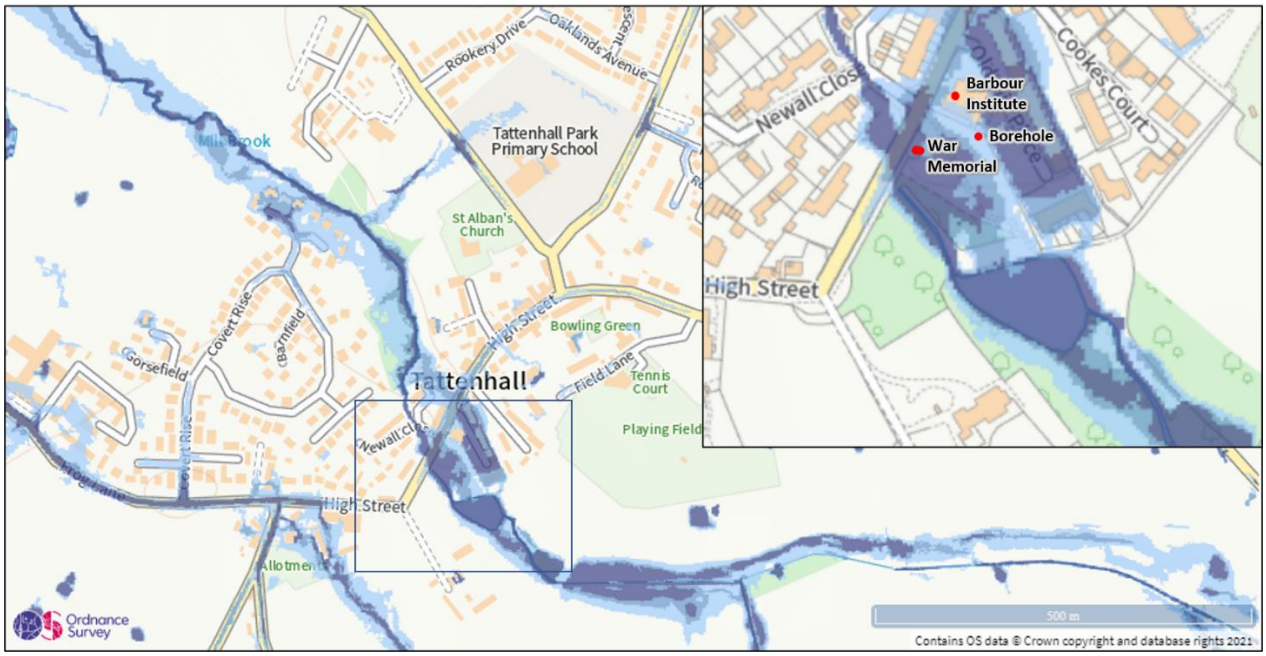
- CWaC, as LLFA, supplied sandbags to residents during the flood event.
- Environment Agency Community information Officers attended site on 23rd January to speak to residents to inform their better understanding of flooding at Tattenhall.
- In addition, the Cheshire Fire and Rescue Service attended Old Mill Place and proceeded to evacuate residents by boat.
- The FloodHub has been promoted at several engagement events and at site visits with affected residents. A link is also included from the Flood pages of the CWaC website.
- A Flood Engagement Public Meeting was held on the 1st February 2022 during which members of the RMAs, including Natural Resources Wales and Welsh Water, were available to discuss the flood event and ongoing concerns.
- Welsh Water have undertaken CCTV surveys of their system within Tattenhall to inform their review and management of their network.

4. Recommended Actions

The following actions are recommended:

- Support affected residents explore property protection measures.
- LLFA to investigate and confirm course and condition of the Old Mill race. In addition, identify the flow routes over the Dam into Old Mill Place and through the Memorial Park.
- Undertake a CCTV survey of the private drainage in Old Mill Place to confirm condition and route.
- EA and CWaC, as LLFA, to consider additional measures to reduce risk of river flooding from Mill Brook upstream of Tattenhall, specifically opportunities for NFM type approaches.
- EA to install a water level gauge to allow a Flood Warning from Mill Brook to be issued.
- Develop a strategy between CWaC and the EA to better understand how the groundwater is affected by the ceasing of abstraction at the borehole and whether continued abstraction could reduce the risk of flooding.
- Undertake CCTV of the High Street surface water system to establish whether there are any blockages and undertake any clearance work.
- LLFA to investigate how water gets back into Mill Brook from High Street by the corner of Breen Close.
- LLFA to develop a contingency plan for sandbag deployment on High Street (from the Barbour building to high ground in Breen Close).
- Welsh Water to investigate ownership of the private pumping station at Old Mill Place and investigate the reported high flows through this pumping station which may be contributing to flooding in the High Street area.
- Residents to be encouraged to sign up to the EA flood alert service and LLFA and EA to consider the feasibility of implementing a flood warning service.

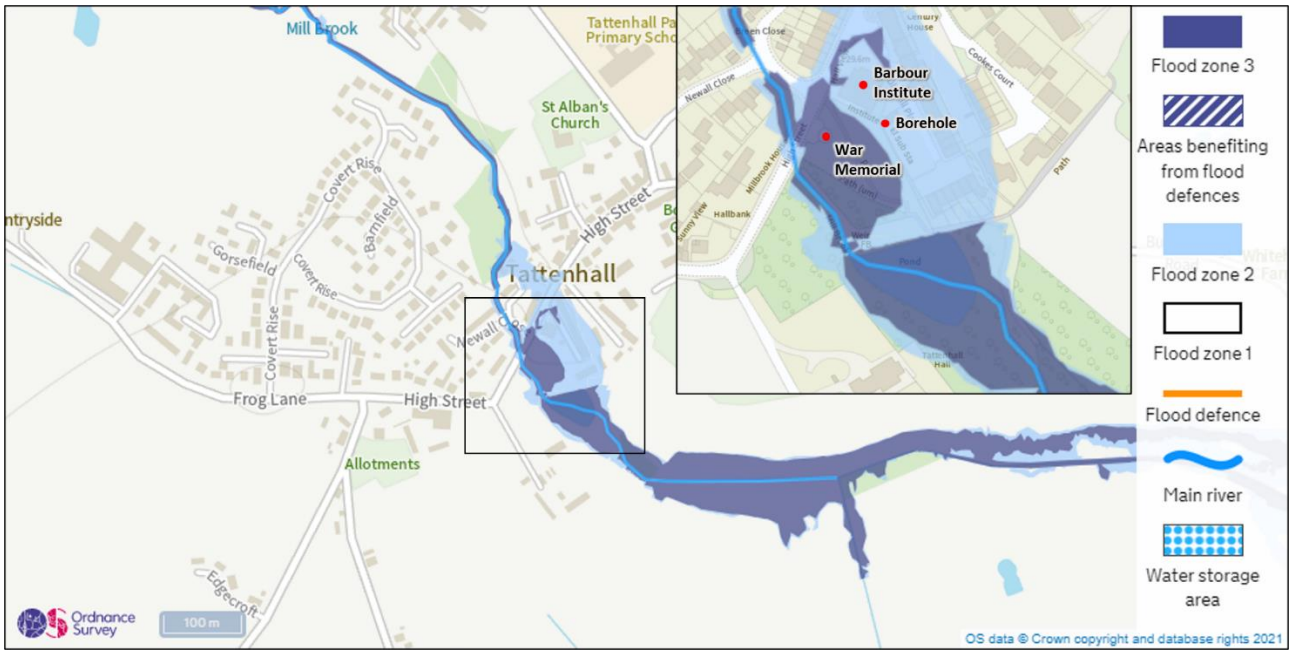
Appendix I - Map



Extent of flooding from surface water

High Medium Low Very low

Source: EA



Source: EA

Appendix II – Timeline

Time	Tattenhall
20th Jan pm	Mill Brook began to spill out of bank upstream of High Street bridge and flooded the war memorial.
20th Jan 17:30	Water enters Old Mill Place from multiple sources including overland flow the overspilling pond, excess water unable to drain through surface water drains and from groundwater.
20th Jan 18:00	Old Mill Place properties severely flooded resulting in the Cheshire fire and Rescue service attending and using a boat team to support evacuation.
20th Jan 23:00	Cheshire Fire and Rescue service leaves site. Evacuees offered overnight shelter.