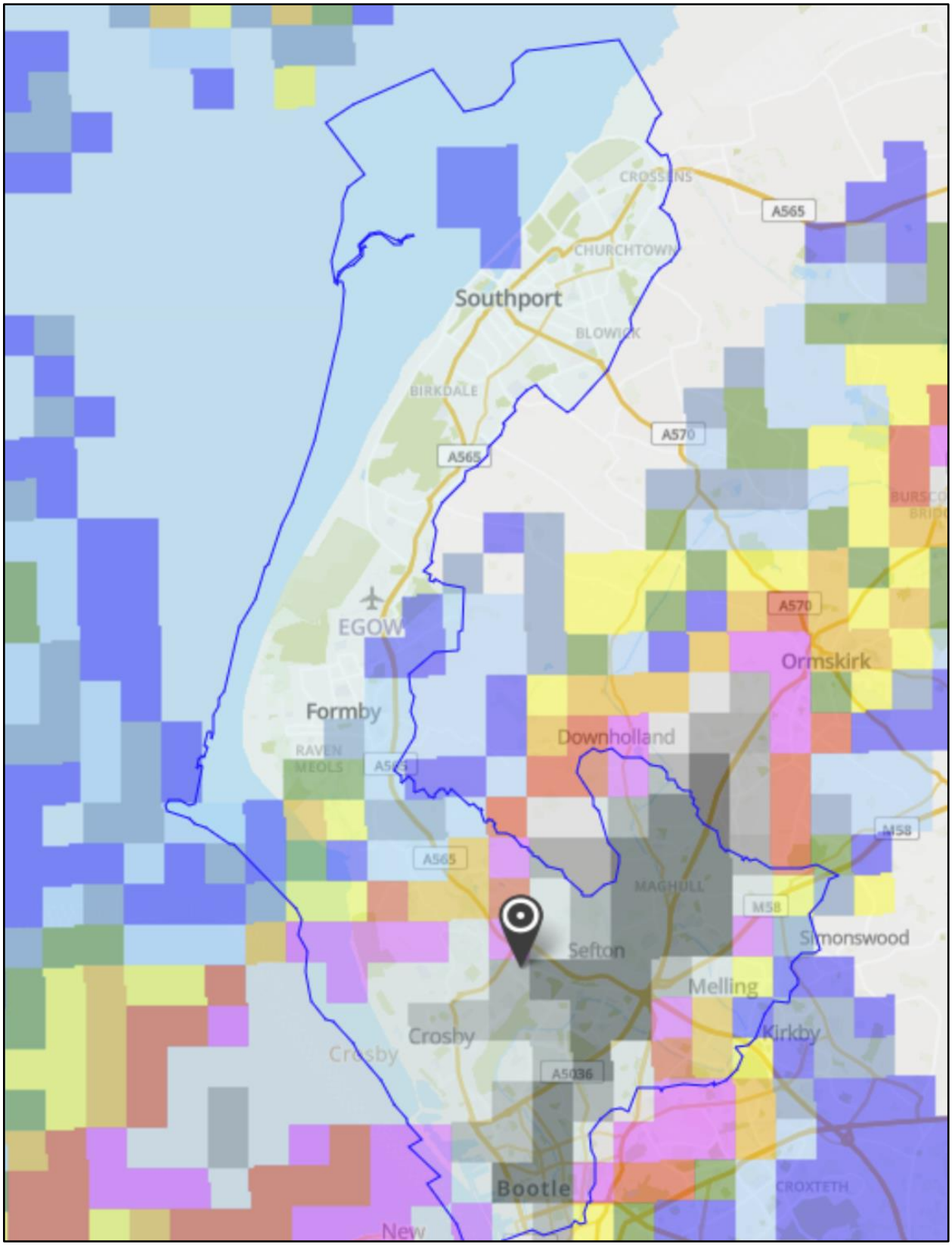
Section 19 Flood Investigation Westbourne Avenue – Thornton 10/11th August 2020



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Executive summary

On the night of the 10th August 2020, a fast moving band of intense rainfall travelled over the Sefton area. The intensity of the rainfall caused flooding at several locations across the borough as the drainage systems were temporarily overloaded.

One of the roles of Sefton Council as the Lead Local Flood Authority (LLFA) is to carry out investigations into flooding incidents if they meet the set thresholds.

The LLFA will:

- Identify and explain the probable cause/s of flooding.
- Identify which authorities, communities and individuals have relevant flood risk management powers and responsibilities.
- Provide recommendations for each of those authorities, communities, and individuals; and
- Outline whether those authorities, communities or individuals have or will exercise their powers or responsibilities in response to the flooding incident.

The LLFA cannot:

- Resolve the flooding issues or provide designed solutions; or
- Force Authorities to undertake any of the recommended actions.

History of flooding

This area has a history of flooding stretching back to at least August 2012 and has been affected several times since, mainly during the summer months. The roads and properties that have been affected over the period were Westbourne Avenue, Halifax Crescent, Water Street, Hartdale Road and Brook Road.

Scope/purpose of the report

The purpose of this report is to investigate the flood events that triggered a section 19 report for Westbourne Avenue during the night of 10th/11th August 2020. Westbourne Avenue, Thornton has been affected by flooding each year in the last 4 years.

Event background

Flood incident / extent

The flooding occurred because of an intense short duration thunderstorm crossing over the area. There had been a few showers preceding the storm but the rainfall was not significant. The storm itself moved speedily over the area with rainfall lasting 15 - 25mins, but during this period over 20mm (2cms) of rain fell. Following this storm further rainfall was experienced 2 hours later dropping just under 5mm of rain in 15mins. The calculated return period for the first storm (main storm) was just under a 1 in 25 year storm event.

Location Characteristics / plan

The affected properties were 39 to 49 Westbourne Avenue, Thornton. The flooding was confined to the gardens, both front and back, and garages. The affected properties are either level with the road or the drive ways slope down from the road to the garages.

The area is drained by a conventional surface water sewer network which flows into a watercourse that flows all the way through Thornton from Runnels Lane to Brook Road.

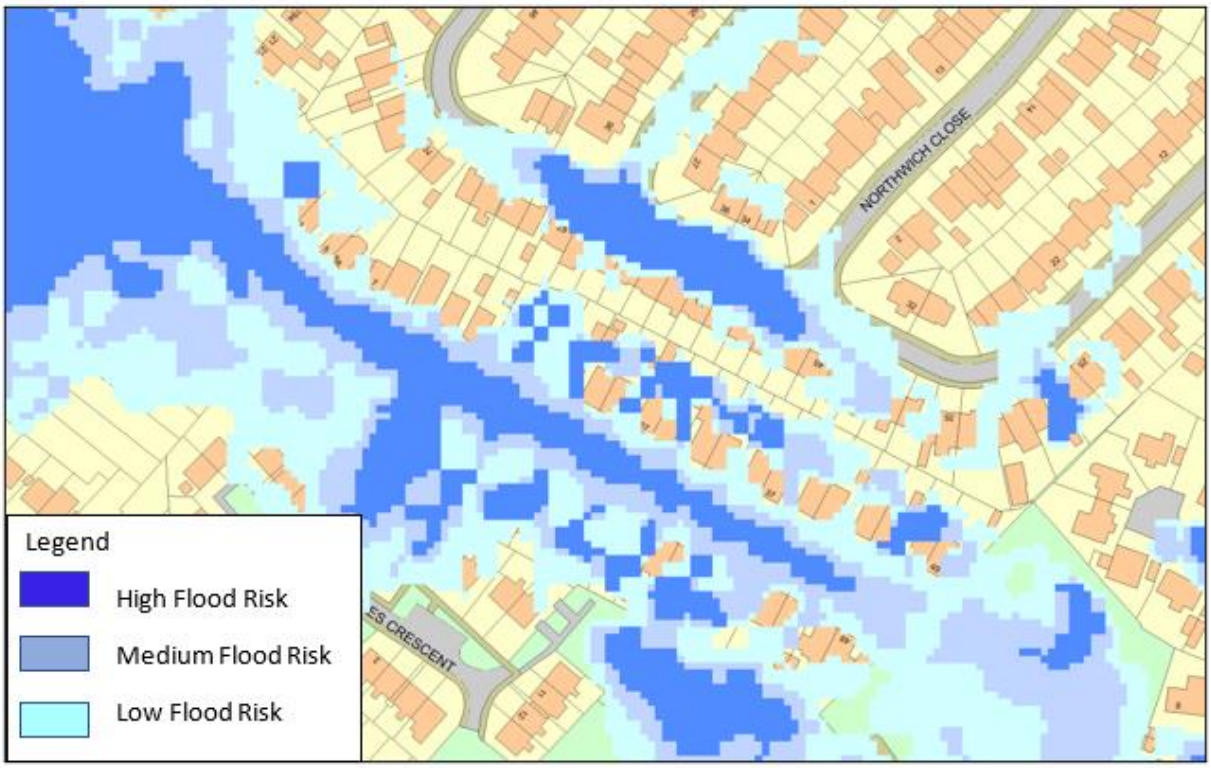

Figure 1 Surface water flood risk map

Figure 2 Surface water drainage network

Current Flood Defences

There are no flood defences for the area.

Investigation

Responsibilities for maintenance of main rivers, ordinary watercourses, surface water systems and sewers

Maintenance for any watercourse, main river or ordinary watercourse, lies with the riparian owner, however, Lead Local Flood Authorities and the EA have powers to carry out maintenance activities on watercourses and main rivers, respectively.

The public sewerage system is maintained by the Water and Sewerage Company, which is United Utilities for Sefton. Whilst the property owner is responsible for (private) drainage upto the boundary of the property.

The Highway authority is responsible for drainage of the roads and pavements and associated assets ie gulleys and pipes flowing to the point of discharge ie public sewer or watercourse.

For more detailed information about Rights and Responsibilities please refer to Section 8.

Rainfall event(s) in terms of depth, duration and return period

The black line on the graph below shows the amount of rain that fell in Thornton on the 10th August 2020, this has been derived from radar imagery. The blue line shows the rainfall recorded in the nearest raingauge, Fazakerly. As can be seen only a small amount of rainfall was recorded in the rain gauge whilst a significant amount, over 20mm, of rain fell in 25 minutes in Thornton. The return period for this event is 1 in 24.7 years.

To put the rainfall into context the average rainfall for Liverpool in August is 69mm and during this event a third of this amount fell in a 15 minute period.

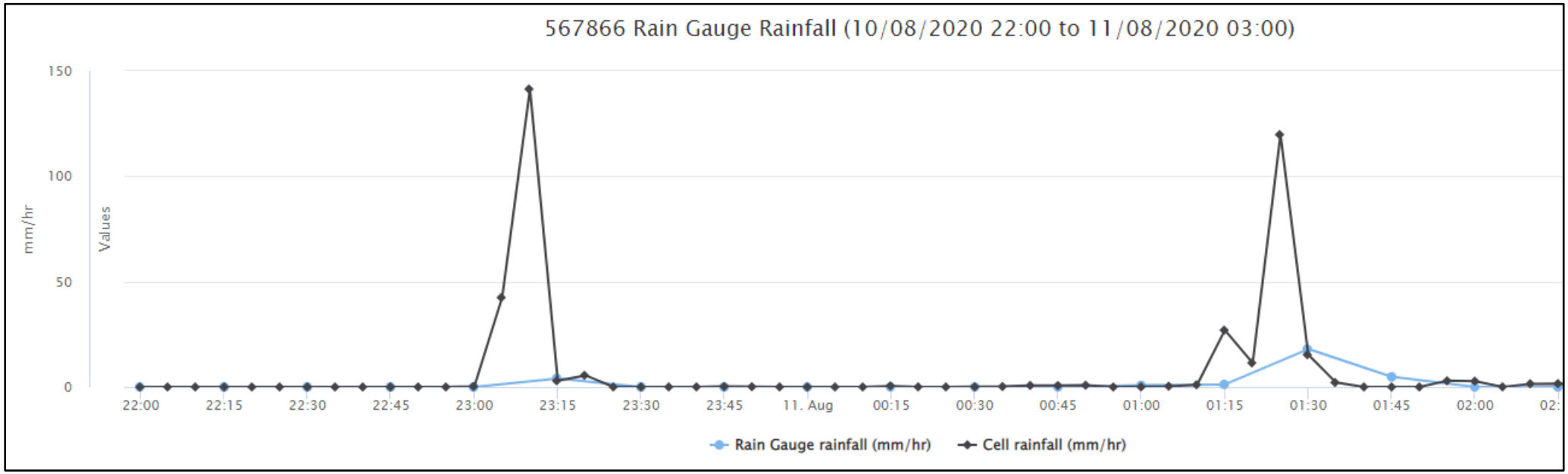

Figure 3 Radar Derived Rainfall rates for Thornton (Black Line) and rain gauge data for Fazakerley (Blue Line)

As can be seen from the radar imagery (figure 4) there was a significant cell of rainfall over Thornton at the time of the flooding.

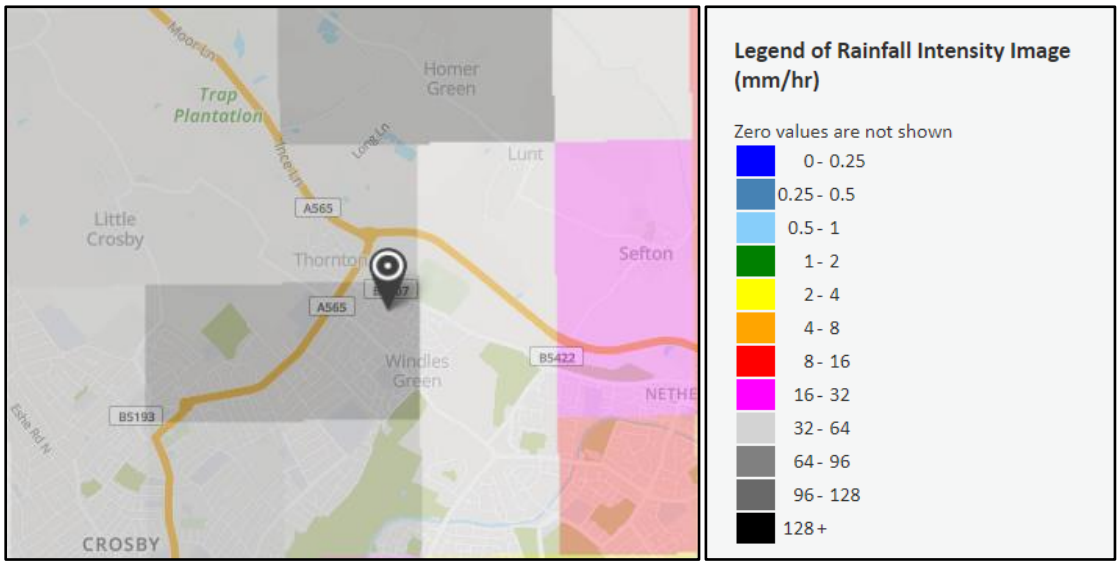

Figure 4 Radar Imagery showing rainfall event, with legend, at 23.15hrs from Meniscus MapRain software.

River gauge levels and flows

There are no river gauges in the vicinity.

Flooding flow routes, including flood inundation maps

Officers where not present to observe the flooding and flow routes. But it was reported that water was seen bubbling out of the manhole in the road outside No. 49 and also bubbles out of the manhole in the garden of No. 45. Additionally the houses and drive ways are lower than the road surface, so water accumlating on the road will drain towars the properties.

Causes of flooding

Overall the main cause of flooding is considered to be the amount of rainfall that came down in such a short period of time, the water was falling faster than it could get into the drainage networks leading to water ponding on the highway and properties and eventually leading to flooding. However, there was an obstruction found in the section of watercourse that the surface water sewer drains into.

a. Failure of drainage systems and the mechanisms of failure (operation and asset performance)

Following the flood incident United Utilities surveyed a length of surface water sewer on Westbourne Ave down to the culvert which found no obvious defects that would exacerbate the flooding in heavy rain. Sefton MBC carried out a CCTV investigation on the watercourse section of the network and a blockage was discovered.

b. Flood incident response

Once the flooding was reported to the council the SeftonArc team responded out of hours distrbuting sandbags. The next day officers carried out follow up visits including distributing more sandbags.

c. Timeline

23.00 Rainfall starts

23:15 short sharp thunderstorm with heavy rain fell in the catchment.

Summary of impacts and findings

Whilst the flooding was rapid onset external flooding with minor impacts, the frequency of flooding may still have an impact on the residents well being.

Conclusion

A short but intense storm lasting 15 minutes caused flooding to a number of properties which had been affected before triggering the need to undertake a Section 19 flood investigaton report. Following on from the flooding cctv investigations found a blockage in the watercourse that has since been removed allowing free discharge from the surface water sewer.

Even with the drainage system flowing freely it is not possible to rule out flooding for this location if another storm of similar intensity affects the area again as it has the potential to overload the system in the short term.

Rights and responsibilities (authorities and landowners)

Lead Local Flood Authority – Sefton Council

The LLFA has an overarching strategic coordinating role in managing local flood risk from surface water (pluvial), ordinary watercourses (fluvial) and groundwater sources.

The Council's key responsibilities as a LLFA are to:

- Develop a Local Flood Risk Management Strategy (Section 9 FWMA).
- Investigate flooding (Section 19 FWMA) to a locally derived threshold as detailed in our flood investigations policy for Sefton.
- Maintain a register of assets (Section 21 FWMA) affecting flood risk management.

The FWMA also amended the following sections of the Land Drainage Act 1991 (LDA) resulting in new roles and responsibilities for the Council:

- Section 14a – The addition of this subsection introduced the role of the LLFA and provides general permissive powers to undertake works to mitigate flood risk from ordinary watercourses, surface water and groundwater.
- Section 23 – As of 6th April 2012, the responsibility for issuing Land Drainage Consents for works in or near to ordinary watercourses passed from the EA (Environment Agency) to the LLFA.
- Section 25 – The LLFA have permissive powers to require works to maintain the free passage of flow on ordinary watercourses.

Duties remaining under the LDA.

- As a Land Drainage authority, we retain general powers under Section 14 of the LDA to enter private landownership and undertake works to alleviate flood risk.
- Undertake maintenance on watercourses to which the council is the landowner

Highways Authority - Sefton Council

The Highways Authority has a duty under the Highways Act (1980) to drain the local Highway network (not Trunk Roads) of surface water where it creates a nuisance. Where drainage infrastructure is provided to assist in this duty then the Highways Authority must maintain it to be fit for purpose.

Maintenance of roadside drainage ditches may be the direct responsibility of the Highways Authority or the adjacent landowner. For more information relating to the Highways Authority please refer to the Highways Statutory Duties and Vested Powers Guidance Notes.

Environment Agency

The Environment Agency has the strategic oversight for all flood and coastal erosion risk management in England and Wales. The EA is responsible for managing coastal flooding and fluvial flooding from Main Rivers as well as the risk of flooding from reservoirs. For more information, please visit the Environment Agency website.

Highways England

Highways England has sole responsibility and powers for managing Highway surface water runoff from the trunk road network (i.e., M1, M6, A50, A38 etc).

United Utilities

Sefton is serviced by United Utilities who manage the surface water, foul water and combined public sewer network throughout Sefton and neighbouring authorities. United Utilities have a duty to ensure the reliable operation and maintenance of the public sewer network.

Property Owners

Residents are encouraged to understand the flood risk in their local area, or may encounter during their daily routine i.e., routes to work etc, and have a flood plan to steer their response in times of flooding to reduce the consequences of flooding. It is recommended that residents sign up to appropriate warnings for their area and when and where possible alert neighbours to the risks.

When flooding does occur, residents are encouraged to document as much information as possible to aid the investigations of all operating authorities and to provide information to their loss adjusters and insurers. It should be noted that landowners/householders have a responsibility to prevent surface water runoff flowing onto neighbouring land.

Property owners are responsible for protecting their own property.

Recommended actions

- UU and Sefton to check systems are operating as they should.
    - If not blockages to be cleared and riparian owners to be informed of their responsibilities.
- UU and Sefton to investigate options to alleviate flooding.
- Property owners to have a supply of their own flood sacks for future events.
- Property owners to consider flood resistance and resilience measures on their property to stop the water from getting into their property or if it does to enable them to bounce back and recover quicker.

Next steps

Since the flooding, the drainage system has been checked and cleared, and the watercourse is flowing freely, as such there are no further actions to take.