

Willoughby Flood Action Plan - Part 2

January 2025

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1. Measures to reduce the impact of flood events and updates

Measures that would impede the progress of floodwater into the village

1. Try to ensure that as much water as possible bypasses the village by persuading the relevant authority to increase the water flow capability under the A45 at the county boundary, firstly by clearing the culverts *on a regular basis* and, possibly, by increasing the culvert size.

This is the responsibility of West Northamptonshire Council. Their contractor cleared the culverts in March 2023 and the flow of water through them seems adequate. There is, however, a great deal of loose vegetation in the field behind and a large pile of topsoil all of which is ending up in the brook. The landowner has been identified but he has not yet been approached to discuss the possibility of removing the vegetation and the topsoil.

2. Pressure riparian owners into clearing and maintaining the watercourse between the Oxford Canal and the A45 by lobbying West Northamptonshire Council to use their enforcement powers under the Land Drainage Act.

This is also the responsibility of West Northamptonshire Council. No progress to date.

3. Make the Canal and River Trust aware of the consequences of excess water coming from the canal and to take account of this within their operating procedures.

Members of FLAG met a councillor from Braunston Parish Council on 4 January 2024. The councillor is an asset manager for the Trust for West Northamptonshire and one of the leadership team for the Braunston Canal Society. The issues faced by Willoughby in the event of the canal overtopping and the culverts under the A45 not being cleared were discussed, together with the Affinity Project (See 5. below).

See Appendix A. Canal Flooding (Revised 18.05.2024)

4. Pond in Hayward Lodge Nature Reserve next to the A45: increase the bore of the inlet pipe and adjust its position. As the pond is normally dry, the inlet should be just above the stream's normal level to make maximum use of storage in the pond and to allow accumulated water to drain away, as the flood level subsides. This adjustment would ensure that the pond has drained, making maximum storage available, should there be a repeat event within days of the first. The original intent of the pond make up pipe was not effective and this modification would not change the environment of the pond.

5. Affinity Water/Severn Trent and the Grand Union Canal (GUC) Water Transfer

A plan supported by the Government to create a means of transferring water from the Midlands to the south to reinforce the potable water supply in South East England. The aim is to ultimately transfer 50 to 100 million litres per day. Several options have been considered and *the Grand Union Canal route has been selected*. This comprises the Coventry Canal, the Oxford Canal and the Grand Union Canal. The studies which have already been undertaken are fairly advanced and cover many aspects, pumped transfer over lock flights, location of reservoirs, impact on environment and wildlife, pollution and

water cleanliness. The risk of the effects of climate change have also been recognised as a project risk

Until now, there appears to have been little emphasis on the effect of flooding. There is mention of the need to raise banks in certain areas and to widen the canal where water velocity may impede canal traffic or lead to erosion. The engineering of the system would need careful control to ensure that sudden transients such as valve closure due to power loss or weather effects do not result in increased risk of flooding.

A new consultation on the project ran from 11 September to 25 October 2024. The links to the information and consultation are: www.guctransfer.co.uk/ and www.guctransfer.co.uk/have-your-say/

The Chair of the Flood Action Group wrote a detailed response to question 7. in The Canal Section of the consultation. The response was submitted by the Parish Council and copied to the WCC Flood Risk Management Team, Cllr Dale Keeling and Braunston Parish Council, as Braunston would also be badly affected should the engineering of the project not be fit for purpose.

Measures that would improve the flow of floodwater out of the village

The measures outlined below begin at the Lower Street/Main Street junction near the bottom of the village and continue west out of the village along Moor Lane.

1. Profile/lower the tarmac at the junction

Over the years tarmac has been added to this junction with the result that now the junction is higher than the three roads that lead into it. This has the effect of prohibiting the floodwater, pouring down Main Street, from flowing straight on through the junction and along Moor Lane to the fields beyond. Instead, the water turns right into Lower Street and, as well as flooding Lower Street, starts backing up Main Street again causing a much higher level of floodwater than necessary.

Trial holes were dug in August 2024 to find out the depth of the ground above the culverts at the sides of the road. On 2 October 2024, Highways emailed FLAG to say that the tarmac could not be lowered as 'after completing the trial holes, it appears that unfortunately due to the barrel of the culvert we are unable to lower the carriageway at this section without having sufficient coverage of carriageway surface and base course to protect the culvert, therefore we are unable to lower the carriageway here'. There is nothing further that can be done.

2. Remove the excessive buildup of silt in the culverts and ensure these are kept clear

When severe flood conditions occur, the three culverts under the road at the junction become swamped and floodwater pours onto the roadway. A great deal of brash (vegetation and other debris) continues to come down the brook and becomes blocked at the culverts in part due to the buildup of silt. The responsibility to keep these culverts clear of silt and blockages, so that this problem is minimised, lies with Warwickshire County Council.

Over the past 18 months, there have been site visits and numerous email exchanges with the WCC Flood Risk Management Officer and the Highways Area Surveyor, with a focus on having the silt that has built up in the culverts cleared. A contractor for WCC finally cleared the culverts on 10 and 11 December 2024.

Following their recommendation, work was then carried out on 20 December to clear silt from before and after the culverts to further improve the water flow. In addition, one bank of the brook opposite the Village Hall was reduced and profiled as the accumulated mud was beginning to block the culverts there. There is no doubt that the village would have flooded on 6 January if this work and the clearance of the dense vegetation in the brook had not been carried out.

Restrictions further downstream appear to be contributing to the heightened level of flooding in the village. The following may contribute to this:

- the parapet of the box bridge by the sewage pumping station downstream of the culverts;
- the backwash effect of floodwater coming off fields to the south of Moor Lane and/or;
- the restriction created by the gap between the roadway and The Moat

OPTIONS to improve the situation include the following:

3. Replace the barrel culverts under the Main Street, Lower Street junction with a concrete box culvert or an open span bridge to accommodate higher flows

It should be noted that such improvements to the culverts will do little to reduce the level of flooding during severe events, unless attention is paid to effects further downstream. Thus, improvement of the capability downstream should also be considered. This would include:

4. A regular programme of clearance of vegetation as a first step but this will not have a dramatic effect upon maximum levels;

Volunteers regularly remove vegetation and other debris that flows down the brook and comes to rest either before or after the culverts at the Lower Street junction, thus significantly impeding the flow of water through the culverts and occasionally blocking them. The sections of the brook after the Lower Street junction were choked with vegetation and these have also now been cleared by volunteers.

5. Increase the size of the road culvert which carries the water coming off the fields onto Moor Lane.

This culvert runs alongside the boundary of the last house on the left-hand side of Moor Lane.

6. Install concrete grips (gulleys) beyond the pumping station on Moor Lane to enable the water coming off the fields to flow across the road, through the grass verge and into the brook.

Highways was asked on 8 October 2024 to consider this option once FLAG was advised that the tarmac at the Lower Street junction could not be lowered. As a result, this section of the roadway was added to the WCC Grip Cutting Programme. Markers and photographs were sent showing where the concrete gulleys should be located.

7. Or, better still, route all or some of the flow along a deepened ditch to the south of the roadway to enter the main watercourse further downstream where the road gradient falls away; or
8. Widen the banks of the brook and deepen the bed

The improvements above would undoubtedly result in lower flood water levels in the region of the junction of Main Street and Lower Street. WCC Highways and the WCC Flood Risk Management Team would be involved in deciding which of the measures above would be most effective and viable from a cost point of view.

Though potentially expensive, enabling the most effective of the measures above would make a considerable difference to the flood levels in the village and would help to reduce the significant anxiety of residents who live in properties at risk and the cost and mental distress that results from flood damage to property.

Additional maintenance measure required in the village

Maintenance of the drain from the A45 behind houses on Main Street to the brook opposite the Village Hall

A copy of a Deed of Grant between British Railways and the Minister of Transport, dated 1949, for the drain from the main road (A45) under the old station approach road and adjacent railway land was found recently. The Minister, on behalf of Highways, accepts responsibility for installation and maintenance of this drain by Highways and its successors. The resident who found the Deed of Grant believes this validates his assertion that WCC Highways has inherited that responsibility and, if similar grants for the remainder of the drain cannot be found, it creates a precedent.

This information was forwarded to Highways but their legal department has stated that WCC is not responsible for maintaining the drain. There is nothing further that can be done so the drain will have to be maintained by volunteers or a paid contractor.

2. Adequacy of the sewerage system

The main sewer in the village was constructed in 1961. A plan has been produced showing the number of properties that existed in 1961 (81) and the number built afterwards (105). The sewer is a combined sewer into which most properties discharge both sewage and rainwater. This leads to overloading of the sewer during periods of sustained rainfall and the lifting of inspection chamber covers so that sewage overflows into floodwater creating a significant environmental and health hazard.

See Appendix B. Sewerage System - Properties built before and after 1961

FLAG proposes to contact Severn Trent Water to see if it would be possible to increase the capacity of the sewer to prevent the current situation during flooding events. Cllr Dale Keeling has a contact at Severn Trent and has said he will raise our situation with him.

Appendix A. Oxford Canal flooding

18/05/24 (A.Ogle)

CANAL FLOODING (WILLOUGHBY)

Figure 1 shows the EA map for Fluvial Flooding for Willoughby. The Oxford Canal is shown to the right of the map and the source of the floodwater is overflow from the Canal. The flood water originates at MR:-SP535666 where the brook draining the Braunston Cleaves catchment flows into the Oxford Canal. A waste weir is sited on the opposite bank of the canal with a spillway into the streambed which existed before the canal was built. This stream bed routes across the fields to the east of the A45 and passes through two culverts under the A45 at MR:-SP528667. The waste weir is normally dry and the stream bed is silted and overgrown and at a meeting with British Waterways in 2014 it was stated that the weir had been out of service for the preceding ten years and reliance was on the major waste weir at Puddle Bank above the River Leam at the Severn Trent sewage facility near Braunston and which was being modified to be returned to service.

The well recorded Easter Storm of 1998 which lasted for two days resulted in canal overtopping and flooding of the fields to the East of the A45. The surplus water found its way across the A45 at the old station to be taken by the drain, installed in 1938 to keep the roadway at the station drained of flood water, behind the houses in Main Street to join the Willoughby Brook at the centre of the village. This resulted in significant flooding in the village and is the flood incident upon which the EA fluvial flood map is based.

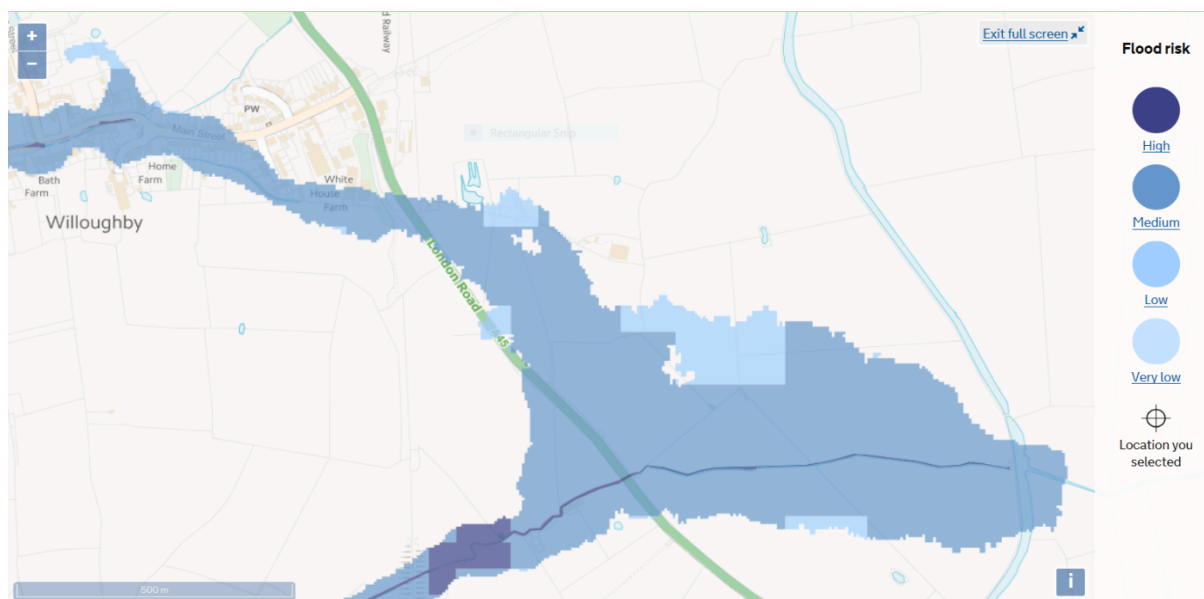


Figure 1.

At times of sustained rainfall or severe thunderstorms the canal water level rises, flooding the towpath and overflowing the canal boundary into the fields beyond. Which is what occurred on May 9th 2023 when as result of a severe thunderstorm over the Braunston Catchment and North Daventry substantial quantities of water entered the canal resulting in overtopping in the length of canal around Bridge 88. (See photograph 1). Water cascaded into the adjacent fields.

All the floodwater cannot pass through the two culverts and the surplus spreads across the adjacent fields. Because the A45 is higher than the surrounding fields the water accumulates and flows back towards the old Great Central Railway station. (The Turnpike was raised to avoid boggy ground when the road was built in the 1700's). When the GCR was built the roadway below the bridge was lowered to

provide extra clearance allowing the floodwater to build up on the roadway and flow diagonally across the road to bring floods into the village of Willoughby. (See photograph 2)

The May 2023 event did not result in water reaching the highway at the station. This was probably due to the duration of the thunderstorm and the fact that several fields between the canal and the A45 have been used for turf cutting and the ground level is now below that which it was in 1998. This does not mean that in the event of a prolonged storm similar flooding to that experienced in 1998 could not occur.

On February 18th 2024 the Willoughby Brook level rose early morning around 5am and was over road in lower Main Street by 7.30am. It was short lived and the level was falling by 8.45am. An early morning observer reported seeing fields flooded adjacent to canal overflow drain at A45 and another walker reported still high flow in Willoughby Brook under A45 later in day and queried if this might be due to canal overtopping. The canal was described as excessively high on social media and photographs of the canal overtopping the towpath towards Flecknoe are shown (Photograph 3). Comments by canal related people in criticism of design of Puddle Bank waste weir which is clearly inadequate to handle flows required to maintain the Oxford Canal within its banks. If the Affinity Project goes ahead this is an aspect of canal design which must be addressed.



Photo 1:- Canal overtopping at Bridge 88



Photo 2:- A45 Flooded by Canal water off fields to East of Road (Old Station Bridge)



Photo 3 :- Oxford Canal topping banks towards Flecknoe

Canals and River Trust Constituted Aims.

1. The Trust is a navigation authority. It inspects, maintains and operates the water control structures within its ownership primarily to meet its statutory obligation to maintain navigation.
2. The Trust is not a Risk Management Authority (RMA) as defined by Section 6 (13) of the Flood & Water Management Act 2010.
3. The Trust is not a Category 1 or 2 responder as defined by the Civil Contingencies Act 2004, and is not therefore required to undertake any specific civil protection duties under the Act. By local agreement, the Trust may provide specific assistance in the event of a flood incident. Typically this would be in consultation with Silver Command and/or the Environment Agency.
4. In terms of managing flood risk, the primary responsibility for land drainage and flood prevention rests with private parties. The Trust does not have any specific statutory responsibilities in relation to flooding and, therefore, its responsibilities are those of an owner and operator of its canals and other waterways.

If we are to mitigate the effects of flooding in the village, arising from canal overflow as described, it is essential that we pursue the following:-

1. Try to ensure that as much water as possible by-passes the village by persuading the relevant authority to increase the water flow capability under the A45 at the County Boundary, firstly by clearing and possibly by increasing culvert size.
2. Pressure riparian owners into clearing and maintaining the watercourse between canal and A45 by lobbying NCC to use their enforcement powers under the Land Drainage Act.
3. Make Canal Trust aware of the consequences of excess water coming from the canal and to take account of this within their operating procedures.

Puddle Bank Waste Weir Design

The Puddle Bank Weir is a vintage design introduced well before modern sluice and gate barriers were introduced. Four culverts are capable of passing water from the canal to a chamber some 25 feet long. The water is held back by a weir wall which presents a barrier to the water in the canal and when the water is level with the lip of this weir represents normal canal level. As the canal level rises during a flood the water level rises above the lip of the weir and the run-off is proportional to the depth of water above the weir lip. The water flow is limited by the quantity of water that the culverts can pass.

With the inevitable increase in rainfall resulting from climate change this facility, which is already unfit for purpose, will need to be replaced with a modern sluice gate with a three term control facility which maintains the level in the presence of increasing flow of water into the canal. The size of the overflow is insufficient to meet future needs and the use of a single major overflow is questionable. A distributed approach to overflow is probably required. A much more sophisticated technique will be required if the Affinity Water Project goes ahead.



Appendix B. Sewerage System - Properties built before and after 1961

