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 Cleeves 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 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.

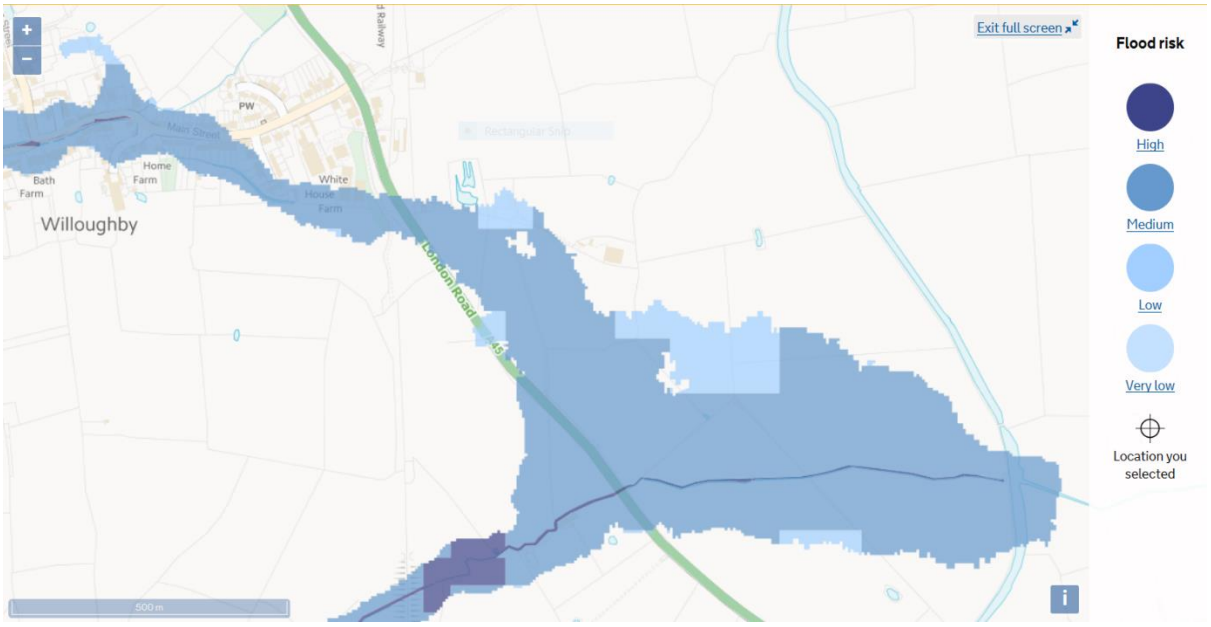


Figure 1

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 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 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 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 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 rise 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.

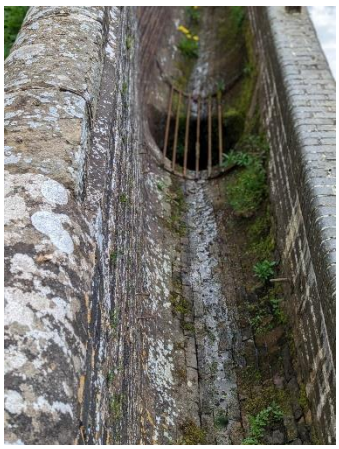




Photo 4,5,6: Details of wasteweir at Puddle Bank, Braunston