

Grand Union Canal GUC) Water Transfer - Consultation Response

The Canal Section

5. Do you have any comments on how we are considering the flow of water, or any information that will help us identify other potential impacts on the canal as a result of the water transfer?
6. We have presented locations where we think we will potentially need to locate new equipment such as pumping stations or gravity bypasses. Do you have any comments that could help us develop our plans for these?
- 7. Do you have any comments or information that can help us plan for construction associated with our work along the canal?**

The village of Willoughby floods regularly as a result of high volumes of rain, either persistent over several days or from violent thunderstorms, but the most severe flooding has occurred when the canal overtops. This last happened in 1992 and was the result of the overtopping into the Willoughby Brook where it passes beneath the Oxford Canal. The canal banks local to this length of towpath were subsequently raised causing other lengths of bank to be vulnerable which is what happened in 1998 when the overflow occurred further North (Flooding of crossroads at Longdown Lane/A45) and further South, adjacent to Bridge 88, the latter giving rise to excess floodwater reaching the old Great Central Railway bridge on the A45 and entering the drain to the South of the village. The drain was installed in 1938 to prevent flooding at the old station.

The levels which arise from EA mapping are, by their own admission, questionable and based upon the 1998 flooding. The EA do not have integrated maps which combine fluvial and pluvial flooding, perhaps because, in most cases, fluvial flooding may be caused by separate events such as tidal in the case of the sea or time delayed events such as the flooding of towns along the River Severn.

The situation in Willoughby is different in that the floodwater due to overflow of the canal, almost always, occurs at virtually the same time as the causal rainfall and is therefore additive. Unquestionably there will be more overtopping incidents in the future, as climate change takes effect, with greater impact on Willoughby unless measures are taken to prevent them and the implementation of The Grand Union Canal Transfer can only serve to increase the possibility of increased flooding unless ameliorative measures are taken.

Our main concern regarding the proposed water transfer scheme relates to the perturbations in water level caused by:-

- a. Interruption in flow caused by downstream pump trip or valve closure. Even if a dual pump backup system is envisaged the transient caused by changeover could be sufficient to cause overtopping.
- b. The differential flow rates which must be catered for over the system when the canal is subject to water ingress due to heavy rain and thunderstorms. The Oxford Canal, originally designed to be fed by local streams when it was a contour canal, still retains some feeds from local streams.

Our solution to overtopping protection would be:-

- Eliminate all low points along the length of bank between Longdown Lane and Bridge 89 (A45 road bridge). Recognise that banks cannot be dramatically raised due to freeboard on canal boats.
- Introduce larger overspill weir in location of old waste weir adjacent to Bridge 88 with P+I control and increased depth channel to River Leam. (Including increased culvert sizing).
- New waste weir to discharge into brook which drains part of Barby hill and joins Willoughby Brook beyond sewage facility on the Woolscott Road.
- Address the sizing and control of principal waste weir at Puddle Bank, allowing excess water to flow directly into the River Leam.

A. W. Ogle CEng, MIMechE (Chair - Willoughby Flood Action Group)

Any other comments

12. Do you have any comments on any of the other information we have provided, or any other comments you would like us to consider?

It is assumed that the Project Management will be calling upon the services of an organisation such as HR Wallingford to perform analysis and simulation of the system and recommend control strategies.