

**Norfolk County Council Proposals for
True Left Bank of River Chet at Hardley Flood**
Report by Senior Waterways and Recreation Officer

Summary: This report provides members with details of an issue that has arisen during a consultation being undertaken by Norfolk County Council on a proposal to stop up the section of the Wherryman's Way Trail which runs on the true left bank of the River Chet immediately adjacent to Hardley Flood. The report considers the reasons for the proposal, its implications regarding the future management of the river bank and draws members' attention to the fact that the Authority has been made aware of concerns regarding the potential for the proposal to result in deterioration in the condition of the navigation on the River Chet. Members' comments on the report are welcomed.

1 Background

- 1.1 This report provides members with details of a consultation being undertaken by Norfolk County Council on a proposal to stop up the section of the Wherryman's Way Trail on the true left bank of the River Chet immediately adjacent to Hardley Flood. The report also considers the implications of the proposal on the future maintenance of the river bank and the hydrology of the River Chet.
- 1.2 The Wherryman's Way runs between Norwich and Great Yarmouth and is formed in the main of existing public rights of way which are signposted and promoted as a long distance route by Norfolk County Council's Trails Department. The section of the Wherryman's Way which runs on the bank of the River Chet immediately alongside Hardley Flood has long been subject to significant maintenance issues. The bank originally breached during WWII and at that time Hardley Flood, which is now designated as a Site of Special Scientific Interest (SSSI), formed on what were grazing marshes. The designation of Hardley Flood emphasises the importance of the fact that breaches in the river bank allow tidal waters to move freely between the river and the Flood. Further breaches in the bank occurred over time and a number of water control structures were built in the breaches by various bodies and private landowners. These structures were intended to defend the breaches in the bank and control the flow of water into and out of Hardley Flood.
- 1.3 Since Hardley Flood formed the flood defence is recognised as being on high ground to the north of the site. Consequently the bank is not recognised as a flood defence bank and has not been maintained by the Environment Agency

or its predecessor authorities in the same way that the other banks of the River Chet have been over time. Because of this the bank has been subject to erosion and settlement for decades and this has resulted in increased erosion and more frequent overtopping events occurring.

- 1.4 Over the last 50 years various structures have been built on the bank and path surface maintenance works carried out by a number of public authorities in order to allow pedestrian access to continue on the bank. More recently, as the path is recorded as a public footpath on the Definitive Map of Public Rights of Way Norfolk County Council, as Highway Authority, has been responsible for maintaining the surface of the path.
- 1.5 Since 2005 a number of the structures that have been built on the path including bridges, revetments and boardwalks, have started to reach the end of their useful life. In 2005/6 a major bridge structure was replaced by Norfolk County Council at the upstream inlet to the Flood and at that time a weir under the bridge also failed. Over time the failure of the weir resulted in increased flows into Hardley Flood at the inlet and the development of a scour hole some 3m deep and 7m wide. The Authority became concerned that this was resulting in a reduction in channel velocity in the river upstream of the weir and increased siltation rates. To alleviate these concerns the Authority replaced the weir through a partnership project with Norfolk County Council in 2013.
- 1.6 After the weir was replaced anecdotal evidence from the owners of the boat yards at Loddon was that flows up to Loddon Basin had improved. However, over 2014/15 a box culvert at the extreme downstream inlet to the Flood also failed which in turn resulted in a bank and bridge failure at the site of the culvert and increased flows into and out of the flood at that point. Due to the seriousness of the failure Norfolk County Council formally closed the path in early 2015 for reasons of public safety. The closure has been maintained over the last year because other culverts, boardwalks and revetments on the route have also failed or been washed out due to the condition of the underlying bank and the frequency of overtopping events.

2 Norfolk County Council's Position

- 2.1 The County Council has undertaken a survey of the route and looked at the scale of the works that would be required to deal with the multiple failures of structures and weirs on the Hardley Flood frontage and has estimated that the cost of the works that would be required to put the path back into a safe condition would be in the order of £250,000. It should be noted that the works identified would only deal with the surface structures and not resolve the fundamental problem of the deteriorating condition of the underlying bank. In the context of the budget available to the Trails Department for the maintenance of rights of way in the whole County £250,000 is a huge sum.
- 2.2 The County Council asserts that it only has a duty to maintain the surface of the public right of way and not the underlying bank. In this case the Council considers that the deterioration of the path and bank has gone beyond that

which can reasonably be considered to be maintainable under its legal duties as set out in the Highways Act 1980. Consequently, the County Council is of the view that sections of the path have been lost to the river by erosion and it is proposing to stop up the route from the weir to the downstream end of Hardley Flood by legal order. This would leave a cul-de-sac path terminating at a view point at the weir on the upstream side of the Flood and a cul-de-sac path terminating at the downstream side of the Flood. The County Council is currently promoting an alternative route for the Wherryman's Way which uses other public rights of way and sections of road.

- 2.3 Having reached that decision the County Council recently consulted with local parish and district councillors and held a public meeting on the 17 of March 2016 to discuss the matter with the local community. Over 100 people attended the public meeting and strong views were expressed about the need for the public authorities to maintain the route for the benefit of local tourism and the continuation of navigation on the River Chet.
- 2.4 In these circumstances, given the County Council's position and the fact that the bank has not been part of the flood defence maintained by the EA or its predecessor authorities for some time, the presumption is that any responsibility for maintaining the bank would rest with the private landowner. This is the case with all other banks, quay heading and erosion protection in the Broads.

3 Maintenance of the Navigation

- 3.1 At the public meeting a number of people stated that regardless of the existence of the public right of way they felt the Broads Authority had a duty to maintain the bank in order for it to be able to fulfil its duties under the Broads Act 1988 regarding the navigation. The basis of the argument put forward was that if, over time, the bank eroded completely it would result in the navigation up to Loddon being lost because water would preferentially flow into Hardley Flood and there would be insufficient flow and channel depths upstream of Hardley Flood to allow boats to navigate. Two of the boatyard owners present at the meeting also stated that the breach in the bank where the bridge has failed was already causing depth problems at Chedgrave and Loddon, particularly with regard to the use of their slipways, and requested that the Authority take action to deal with the breaches in the bank.
- 3.2 Under the Broads Act 1988 (the Act) the Authority has a duty to protect the interests of navigation and to maintain the navigation area for the purposes of navigation to such standard as appears to it to be reasonably required. In the case of the River Chet the Authority has recently carried out significant works to fulfil its duties under the Act. Aside from the replacement of the weir dredging operations have been carried out to maintain the waterway specification for the river that is defined in the Authority's Sediment Management Strategy. Navigation works were carried out by the Authority in the River Chet on the following occasions:
 - 2009/10 dredging from Chet mouth to Nogdam End

- 2012/13 dredging from Nogdam End to Hardley Flood
- 2013 weir installed
- 2014 dredging Loddon basin to Pye's Mill
- 2015 dredging Pye's Mill to Hardley Flood

- 3.3 Since 2013 14,900m³ of sediment has been dredged from the river upstream of the new weir and compliance with the waterways specification has been improved to the extent that only 19.81% of the bed area of the entire river is non-compliant with the waterways specification which was reviewed by the Committee in December 2015 and also deemed to be economically dredgable. The Authority will continue to programme dredging operations to maintain depths in the river in accordance with the prioritisation principles in the Sediment Management Strategy.
- 3.4 It should be noted that the comments made at the public meeting and in recent correspondence to the Authority regarding water levels and flows in the River Chet are not currently substantiated by any scientific evidence. The Authority has received no complaints from boaters regarding depths in the river and other than observing variations in water levels resulting from normal tidal cycles water levels in the River Chet appear to have been approximately the same as those in the River Yare during the two dredging operations carried out since the replacement of the weir.
- 3.5 There are strongly held views regarding the potential for navigation on the River Chet to be compromised if the right of way is stopped up and no works take place to maintain the bank in the future. While being sensitive to these concerns, in the absence of any scientific evidence to prove that a problem with flows and depths in the river upstream of Hardley Flood is currently occurring or likely to occur in the future, officers consider that it would be inappropriate for the Authority to take action to replace the various culverts and weirs in the bank.
- 3.6 There are a number of factors that would have to be considered prior to any works being carried out on the bank. First, there is a need to understand how the Chet/Hardley Flood system currently responds to flood and ebb from the River Yare and how this system would react to works that altered the flows between the Flood and the river. Additionally the existing bank, which hasn't been maintained for decades, is low and extremely narrow (1.0m wide in places). This gives rise to serious concerns regarding the potential for works to fill the gaps or restrict flows through them causing bank failures elsewhere on the Hardly flood frontage. Aside from the risk of bank failure isolating Hardley Flood from the river would also potentially affect the SSSI designation.
- 3.6 There would also be a number of consents and permissions that would have to be obtained prior to any work taking place on the bank. These include:
- EA flood defence consent
 - Marine Management Organisation licence
 - Natural England consent under the Habitats Regulations
 - Planning permission

- Crown Estates Commissioners licence
- Landowner permission.

4 Conclusions

- 4.1 There are a number of engineering solutions that could be considered to deal with the sections of the bank that are failing. These range from minimal works to fill the gaps in the bank with geotextile bags filled with stone which could be done at a low cost but would only provide a temporary solution, to constructing a new fully piled weir at each inlet to the Flood which would be at a high installation cost and require budgetary provision for replacement in the future.
- 4.2 However, as indicated at paragraph 3.5 there is no scientific evidence available to confirm the anecdotal evidence submitted by the boatyard owners in Loddon regarding any impact on channel depths in Chedgrave and Loddon being caused by the breaches. Further, the Authority does not consider that it has any duty to maintain the bank and there is no budget available to pay for the works that would be required to deal with the failing water control structures and breaches. In these circumstances it is suggested that the most appropriate course of action would be for the Authority to monitor how the system is currently operating and start to collect data regarding water levels. As a first step officers are proposing to install a water level monitor at Pye's Mill in order to begin to gather evidence about channel depths and tidal fluctuations upstream of the weir. Norfolk County Council is also approaching Broadland Environmental Services Ltd (BESL) to ask them to model the impacts of the breaches in the bank on water levels and flows in the River Chet. This hydraulic modelling information will be jointly reviewed with the County Council.
- 4.3 If monitoring suggests that there is a problem the Authority would then have to take a view as to whether it was appropriate for it to undertake any works, both for navigation and National Park purposes. At that stage it is likely that there would be a need for further modelling to be carried out and specialist advice obtained to inform a full options appraisal and identify likely costs which would in itself require budget provision. Members' comments on this approach are welcomed.

Background papers:	Nil
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Date of report:	11 April 2016
Broads Plan Objectives:	NA1
Appendices:	None