

Slowing the Flow, a long-term plan for York

Introduction

In November 2016 we published our York 5 Year Plan, setting out options for new flood defences within the city. This is as a direct result of the £45million secured from government in the aftermath of the December 2015 floods. This plan looked at new and improved flood defences within the city.

This work is essential to better protect the city over the coming years, but there is a limit to how high we can build flood walls and embankments. As our climate changes and flood risk worsens we will need to reduce and slow the flow of water into the rivers of York. This will maximise the lifespan of the hard defences. We have now completed a 'Slowing the Flow' study for York, looking at long-term measures to reduce flood risk on the Ouse and Foss.

Why is this needed?

Records show that on average, the peak river level in the centre of York has been increasing annually over the last century. This increase means that the level of protection offered by York's flood defences is decreasing over time. With current land usages and climate change, predictions show that this trend will continue. Unless we can slow the flow upstream, it is predicted that in 100 years' time the flood defences in York will need to be 90cm higher just to offer the same standard of protection as they do now.

Future Options

Improvements to York's flood defences within the city represent the best short term measure to protect the city. In the long-term our options can be split into two broad categories.

Engineered storage areas can hold back and slowly release huge volumes of water. They alter large areas of farmland and in general provide greater benefit the closer they are to York. We already have a number of storage areas upstream of York, and we will look into how best to optimise their effect during floods.

Natural Flood Management is a term that covers a wide range of measures, usually making fairly subtle changes to land management or drainage and small watercourses. Cumulatively these measures can be effective, but they do need to be very numerous and the flood risk benefit of any individual action can be very hard to quantify.

The well-known Pickering Flood Alleviation Scheme used a combination of storage areas (below right) and Natural Flood Management (below left) to reduce flood risk. On the following page is a review of how this could apply to York.



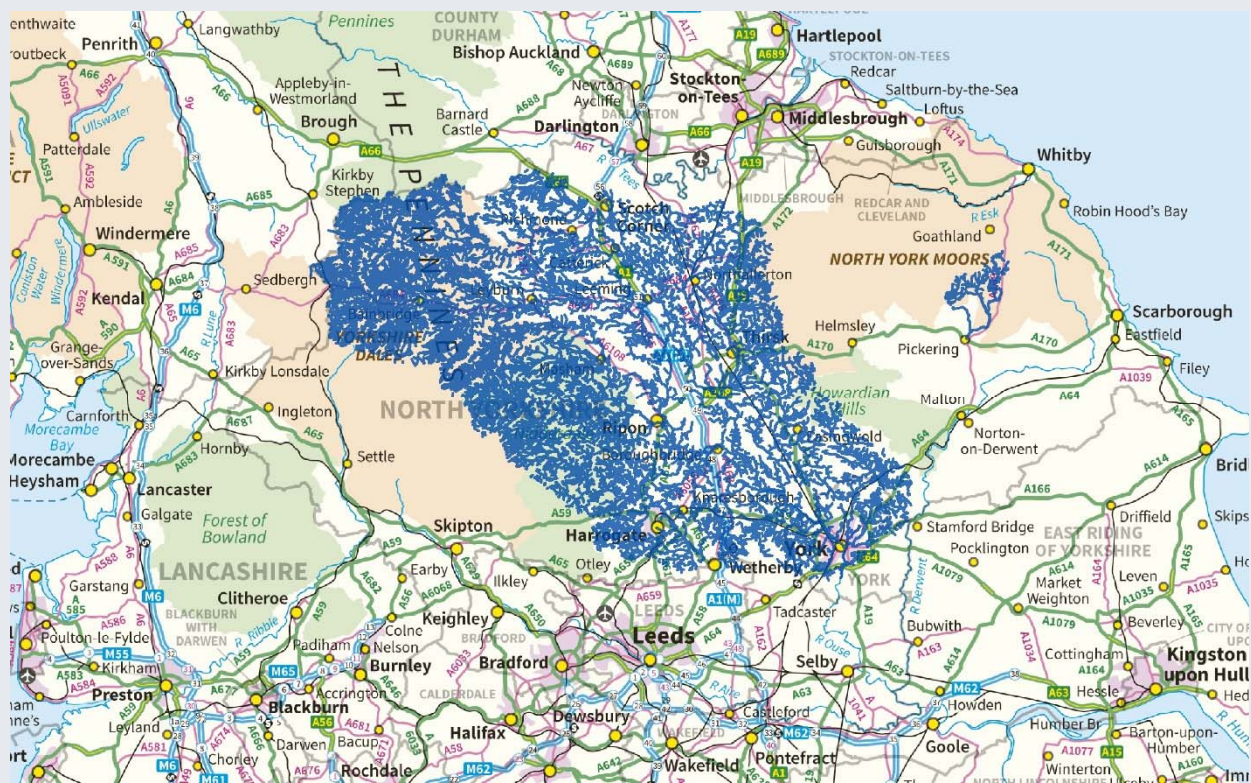
Case Study: Pickering Slowing the Flow

Slowing the Flow at Pickering is a new approach to flood management, using a combination of natural flood management measures and an engineered storage area holding up to 120,000 cubic metres of water to slow the passage of water downstream. Whilst this scheme will not prevent all flooding, it will reduce the frequency of future floods in Pickering.

In relation to York, we have to consider that the Pickering scheme is designed to give protection against a flood which has a 5% chance of occurring in a given year. This is a lower standard of protection than much of York already has, and is considerably lower than our ambitions for future defence standards in the city.

This means that we would need proportionally even larger flood storage areas and a greater number of Natural Flood Management measures in order to benefit York. We would also need to consider a much bigger river catchment. The map below illustrates the difference between the river network above Pickering on the North York Moors and the river network above York across the Dales and Vales.

An approach similar to that at Pickering could work for York, but the scale of the task is hugely different.



Shown in dark blue are the rivers above York (the large area in the middle of the map) and the rivers above Pickering (the small area on the right)

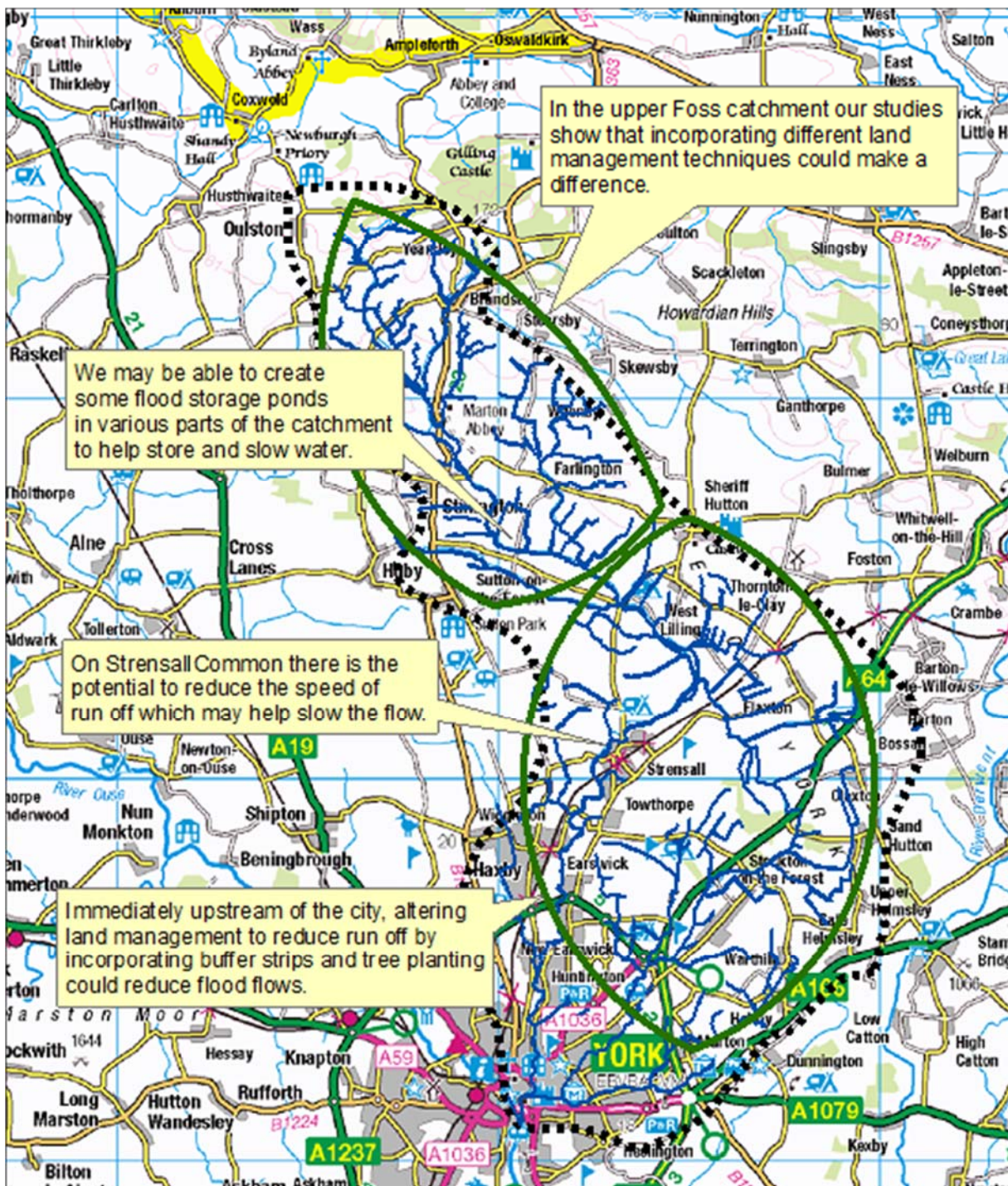
customer service line
03708 506 506

incident hotline
0800 80 70 60

floodline
03459 88 11 88

What We've Done So Far

To begin looking at what can be done to reduce flood risk to York in the long term, we have modelled the effect that Natural Flood Management measures could have on the Foss catchment. We have looked first at the Foss catchment as this is the smallest catchment that flows through York, and therefore the simplest to model. The map below gives a summary of the measures we believe could be most effective in different parts of the catchment.



Summary of potential Natural Flood Management measures on the Foss

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03708 506 506

incident hotline
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floodline
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What Happens Now?

On the Foss catchment our modelling has identified which Natural Flood Management measures could be most effective in reducing flood risk to York. It has also shown that if natural flood management measures were introduced in every location identified through this project, it would reduce peak flood flows on the Foss in York by a maximum of 10%. This is a valuable difference, but it will be difficult to attract conventional flood risk funding for such diverse and widespread work that provides a relatively small benefit.

For this reason, we will work with landowners, our partner organisations and community groups to look for opportunities to fund and introduce these measures. Many Natural Flood Management measures have benefits beyond flood risk. They can improve water quality, create habitat, improve biodiversity, and in some cases can help make farms more productive and sustainable. We are making links with academic programmes to see if new research into crops and land use could help us find joint benefits between agricultural businesses and flood risk management.

On the Swale, Ure, Nidd and Ouse we will continue flood modelling programmes to look at how floodplain washlands and storage areas are best used. Where we can prove the benefit of work we will look to carry it out using the funding options available to us.

We do not believe that long-term planning for the future of the Ouse catchment should be driven purely by flood risk concerns. We will take our 'Slowing the Flow' document to discuss with our partner bodies in government and the environmental sector. Our hope is that we can develop a multi-agency plan that aligns our ambitions with others to create a coherent long-term strategy for the management of the Ouse catchment.

Successful Natural Flood Management often depends on specific local knowledge, and we all have an interest in the long-term management of our environment. We would be very pleased to hear directly from anyone who has ideas or suggestions they want to share.

Please contact us at:

yorkfloodplan@ea.gov.uk