

## Slowing the Flow in Pickering - Flood Storage Option

### Background

Following work by the Environment Agency, investigating the feasibility of building bunded flood storage areas upstream of Pickering, an initial cost estimates for the construction of a single flood storage reservoir totalled £950,000. This estimate was based on a low risk (Category C) reservoir, however, as the design progressed the Reservoir Panel Engineer assessed the design as being high (Category A) due to the proximity of downstream properties. The requirements this placed on the design, coupled with the constraints of the site, resulted in a revised cost estimate for a single large raised reservoir of £3.2m.

Following a 'Slowing the Flow' board meeting in August 2011 the Environment Agency committed to exploring alternative bunded storage options. Preliminary investigations suggested that building smaller flood storage areas in conjunction with other measures may be cost effective and provide the required level of flood protection. Of the eight small bund sites identified, all fell within the North Yorkshire Moors National Park and four fell within the Newtondale SSSI.

After discussions about the potential environmental constraints and the costs of constructing bunds within the SSSI, these sites were rejected by the board on grounds of the expected high costs associated with managing access, insufficient reduction in the required flow rate, railway constraints and damage to protected habitats. At the end of 2011 the Partnership Board asked the Environment Agency to investigate whether building four smaller bunds, which would not need to comply with the Reservoir Act, could deliver the required 1 in 25 year standard of protection to Pickering.

During the course of this work, which was carried out by the engineering consultants, Arup, important new developments occurred. Specifically:

- Discussions with Defra made it clear that the proposed bunds would still fall under the scope of the Reservoir Act, as 'reservoirs in cascade'. This meant that the construction cost estimate for building four bunds totalled approximately £2.0m and modelling indicated would not provide a 1 in 25 year standard of protection. Reducing the number of bunds to three, whilst reducing construction costs to £1.6m, still did not provide a 1 in 25 year standard of protection.
- A productive meeting with the North Yorkshire Moors Railway led to an agreement in principle to enable building to take place much nearer to the railway embankment than previously proposed. This led to the potential for significantly reduced design, material and construction costs.
- More accurate data, produced using LiDAR technology, suggested that less storage capacity would be needed in order to provide a 1 in 25 year standard of protection.

In light of these new factors Arup were also asked to investigate the potential for a revised single reservoir scheme.

## **Current Situation**

Arup's revised proposals for the design of a single reservoir have been developed significantly to allow more certainty in the proposals and have been reviewed by a commercial contractor (Birse Civils). This has led to an estimated scheme cost of approximately £2.5million, including a number of risk factors. However, further work remains to be done on trying to reduce certain costs below their current upper estimates.

A current funding package, including potential contributions from RDC, YRFCC and prospectively NYCC, totals £1.5m and follows on from work undertaken to address the funding gap completed over the summer. Discussions with NYCC have been positive, although nothing has yet been finalised. Discussions with Pickering Town Council concerning the routine maintenance of the scheme have led to an agreement that the Council will work with the EA to deliver grounds maintenance locally, although the costs of this have yet to be agreed. The EA would retain responsibility for all requirements of the Reservoir Act and any large structural work/repairs. Dialogue will also continue with Ryedale District Council around their contribution and there is potential for Defra/EA to continue to support the project financially as well.

At their meeting on 19 October 2012, the board received a report from the Environment Agency containing detailed information on both the technical and financial aspects of the revised single reservoir design. Taking this information into account, they reached a decision that work should continue with the development of the scheme in line with submitting a planning application. In addition, they also agreed that investigations into potential costs savings should be progressed and work concerning possible funding streams for both capital and maintenance costs should continue, in order to bridge the funding gap. If the outcome of this work is positive the Board agreed that a planning application could be made in December.

### **Additional measures to reduce flood risk in Pickering**

In September 2011 a bid for individual property resilience was submitted to Defra for Pickering. The bid was successful and Ryedale District Council were given £85,000 from Defra and the Regional Flood & Coastal Committee through their Local Levy budget, to protect properties within the town. This was in addition to a £50,000 grant that RDC made available for individual property resilience. Initial interest by residents in these grant schemes has been good, with demand and applications high.

The Environment Agency will continue with routine channel maintenance in Pickering and the wider Pickering Beck catchment throughout the winter period;

Further work has been carried out by the Forestry Commission, Natural England and the National Park, including additional tree planting, creation of more large woody debris dams in stream channels, extending the blocking of moorland drains and extending moorland no-burn strips.

## **October 2012**