

**Broadland Flood Alleviation Project:
Erosion Monitoring at Piling Removal Sites**
Report by Senior Waterways and Recreation Officer

Summary: This report provides members with a summary of the erosion monitoring data Broadland Environmental Services Ltd (BESL) has provided for the piling removal sites in the project area.

1 Background

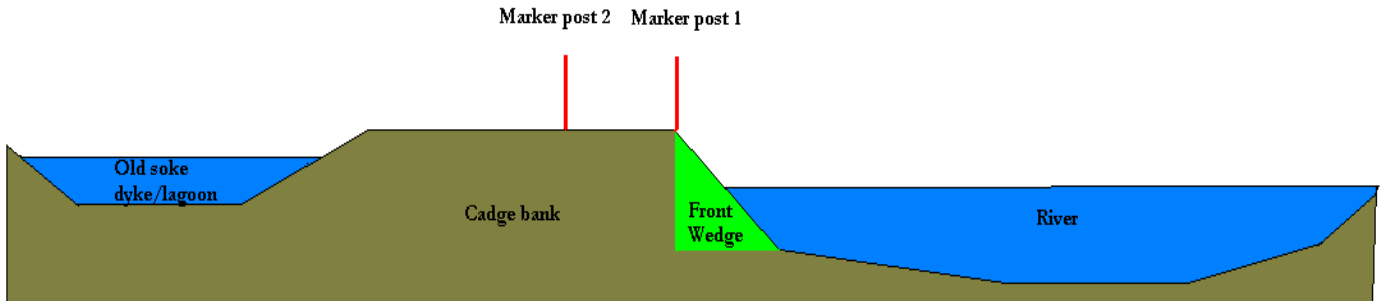
- 1.1 Members will be aware that a number of planning permissions have been granted by the Authority for piling removal in the Broadland Flood Alleviation Project (BFAP) area. Piling removal has now taken place in Compartments 11 and 35 on the River Yare, Compartment 5 on the Rivers Ant and Bure, Compartments 21 and 22 on the Rivers Chet and Waveney respectively, Compartments 1 and 2 on the River Bure and Compartment 29 on the River Waveney. Further planning permissions have also been granted for piling removal in Compartments 10 and 11 on the river Bure and 12 on the River Yare and these compartments will be considered in the next erosion monitoring report.
- 1.2 Piling removal in the BFAP area can deliver a number of benefits for the Broads in terms of landscape improvements, habitat creation, dredging disposal opportunities and the removal of hazardous structures. However, it also gives rise to concerns regarding the potential for increased erosion and sediment deposition in the navigation area.
- 1.3 The planning permissions granted to BESL by the Broads Authority for piling removal therefore include conditions requiring BESL to carry out monitoring in accordance with a methodology agreed with officers in order to enable an accurate assessment to be made on the effects of piling removal on erosion rates, vegetation establishment and sediment deposition.
- 1.4 BESL has acknowledged the importance of monitoring, not only because of the potential impacts of erosion and subsequent sediment deposition on the navigation, but also because excessive erosion could threaten the integrity of the newly established flood defences.

2 Monitoring methodology

- 2.1 Members will recall that a new monitoring methodology was agreed at the meeting of the Navigation Committee on 21 October 2010. The data considered in this report was therefore produced using the new methodology which uses a combination of hydrographic surveying, calculation of the volume of the front wedge of material in the newly re-profiled river banks and

calculating a threshold time limit for the erosion of this material back to a vertical profile which is measured from marker post erected on the bank. A second trigger level for horizontal erosion is assessed by the positioning of a second marker post. Diagram 1 illustrates this.

Diagram 1



3 Hydrographic Surveys

- 3.1 During this reporting period comparative hydrographic surveys were carried out in Compartment 5 on the River Bure, Compartments 21 and 22 on the River Chet and Compartments 11 and 35 on the River Yare. Baseline surveys were also carried out in Compartments 1 and 2 on the River Bure and Compartment 29 on the River Waveney.
- 3.2 Full hydrographic survey data from these compartments has been supplied to the Authority for analysis. Assessment of cross sections from the comparative hydrographic survey results indicates that there have been no significant changes in bank or bed profile in the compartments surveyed. The next surveys carried out will enable comparison with the baseline surveys in Compartments 1, 2 and 29 although it should be noted that in Compartment 29 erosion protection matting was installed on the newly reprofiled river edge.

4 Monitoring Results from January to December 2011

- 4.1 The monitoring data submitted shows that trigger levels and threshold time limits have not been reached in any of the reaches surveyed. No significant erosion has been observed in any of the reaches surveyed aside from the gradual development of a cliff profile on the front face of the reprofiled banks which was anticipated. Additionally vegetation establishment has been excellent with abundant reed growth evident in all reaches. In particular vegetation has continued to establish well in Compartment 5 on the River Bure and in Compartments 21 and 22 on the River Chet with reed growth spreading down the front face of the bank.
- 4.2 There are some small localised areas of poor reed growth and erosion in Compartment 5 which are directly attributable to Goose grazing and in Compartments 1 and 2 vegetation is not well established in areas where the Broads Authority deposited dredgings to assist in rond creation. However,

this does not cause significant concern and is anticipated that vegetation in these areas will become fully established in this year's growing season.

- 4.3 Members will recall that additional slope reprofiling had to be carried out in Compartment 35 on the River Yare where exposed tie rods and debris had to be removed by BESL towards the end of 2010. Officers are pleased to note that the data submitted in this report shows that aside from a cliff profile starting to develop in the early part of the year there has been no significant erosion or change to slope profile observed in these reaches.
- 4.4 Comparison of the photographic evidence submitted by BESL of the reaches that were programmed to be surveyed corroborates the contention that little erosion has taken place in the piling removal areas. Officers have also carried out a number of site inspections over the survey period and accept that there are no visual signs of significant erosion in these reaches. Slope profiles remain largely unchanged from the last survey and as mentioned at paragraph 4.1 vegetation establishment is generally excellent with reed growth evident on the front faces of the cadge banks.

5. Conclusions

- 5.1 Officers are content from site inspections and examination of the data provided by BESL that erosion rates currently appear to be within the agreed intervention criteria levels. Vegetation establishment and bank stability in all the reaches surveyed is also generally good.

Background papers: Nil

Author: Adrian Clarke
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Appendices: Nil