



Broadland Flood Alleviation Project

Protecting



Broadland

Somerleyton (Compartment 31) and Herringfleet (Compartment 32) Consultation Document - October 2003

Introduction

In May 2001 Broadland Environmental Services Limited (BESL) was awarded a long-term contract by the Environment Agency to improve and maintain flood defences in Broadland. The Agency's approach to flood alleviation in Broadland was adopted in the 1990's and is based on a strategy consisting mainly of bank strengthening and erosion protection and reducing the risk of banks breaching. BESL has recently updated this strategy and it now sets the scene for how this and future improvement schemes are designed, programmed and carried out.

Recent detailed surveys and monitoring confirm that improvements are needed to flood defences for the River Waveney between Blundeston Marshes and the railway swing bridge at Somerleyton (referred to as Compartment 31) and between the railway swing bridge and Sandy Lane, Herringfleet Hills (referred to as Compartment 32).



View from Herringfleet Hills across Herringfleet Marshes

Consultation

This leaflet has been prepared as part of an ongoing process of consultation to inform you about BESL's proposals and to seek your views on them.

The purpose of this consultation document is to:

- ▶ Explain the range of flood defence options that BESL can consider;
- ▶ Outline our preferred flood defence proposals and explain why this is BESL's preferred option in each case;
- ▶ Invite your views on these proposals; and
- ▶ Make sure, from the responses we receive, that we are aware of any specific local issues that ought to be considered as we go on to develop the proposals in greater detail.

BESL will carefully consider any comments it receives, seeking clarification and incorporating changes before finalising its plans. The results of this consultation will play an important part in BESL's planning application for the proposals. General feedback on this consultation will be contained in planning application documents.

A questionnaire is provided with this leaflet. If you do not have one please contact Paul Rao at the address given at the end.



The need to improve existing flood defences

The existing flood defences in the lower reaches of the River Waveney are continuous clay floodbanks with a mixture of reed ronds that vary in width, and harder defences such as sheet metal and wooden piling. The piling was installed in areas where excessive erosion had destabilised the floodbank around the outer edge of a bend and within Somerleyton Boatyard where the piles physically support the floodbank.

The overall standard of flood defence has progressively reduced due to settlement, age and the combined effects of erosion, corrosion and sea level rise. In some areas the original floodbanks are too narrow and the banks too steep, making them vulnerable to breaching during very high tides when floodwater overtops them. Sea level rise and tidal surges add to this vulnerability.

BESL has taken every effort to ensure that the solutions presented here are technically feasible, cost-effective, and environmentally sound. It is the combination of these principles for a 'sustainable' project that underpin BESL's specific detailed proposals here and across Broadland. These proposals are also in line with the strategic environmental standards that have been developed in detail with stakeholders.



Failed piling on the River Waveney

What options are BESL considering for improvement work in this compartment?

The range of flood alleviation solutions BESL are proposing for these works follows the Environment Agency's and BESL's overall strategy for flood alleviation in Broadland. These are always the solutions BESL will examine first, before looking at alternatives. BESL's choice of technique needs to follow the strategy options for sustainable flood defences that are technically feasible; offer value for money; environmentally sound; and acceptable to local communities.

The options are:

► Floodbank strengthening.

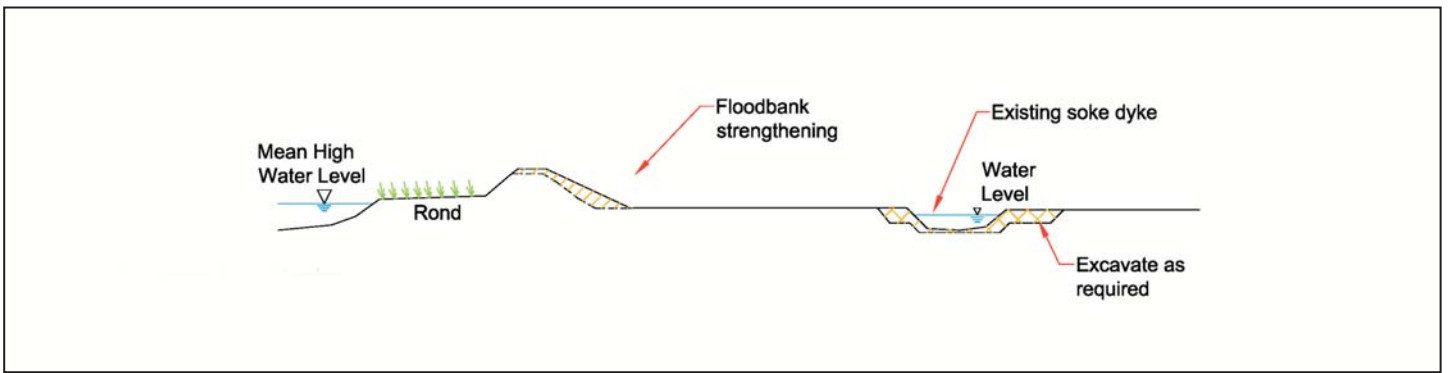
This involves the strengthening of the existing clay embankment in its present location by placing material on the front and/or back slope of the bank, raising the crest may also be necessary. Typically the strengthened banks will have a 2m crest width and a back slope of between 1 in 2 and 1 in 3. Bank crests must be wide enough to allow maintenance access and further topping up if necessary. In some cases the existing soke dyke may also need relocating.

► Floodbank setback.

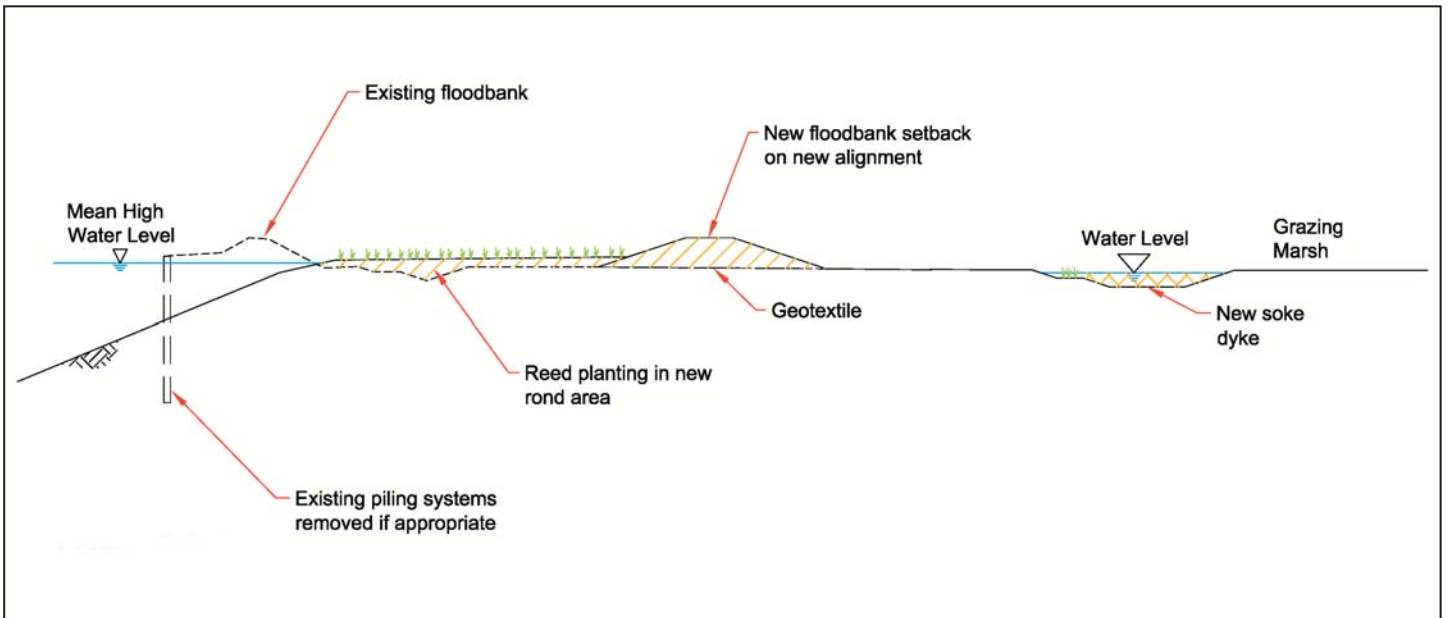
This is an option when the bank might become unstable due to failed piling or the reed rond failing. A new clay embankment will be constructed 20m to 30m behind the existing floodbank. The actual distance of setback depends on local erosion rates, river depth and the quality of land behind the existing floodbank. Once the new bank has been constructed the existing floodbank will be removed, the material levelled and profiled to promote the development of a stable rond. A new folding and soke



Existing floodbank and rond, Somerleyton Marshes



Floodbank Strengthening



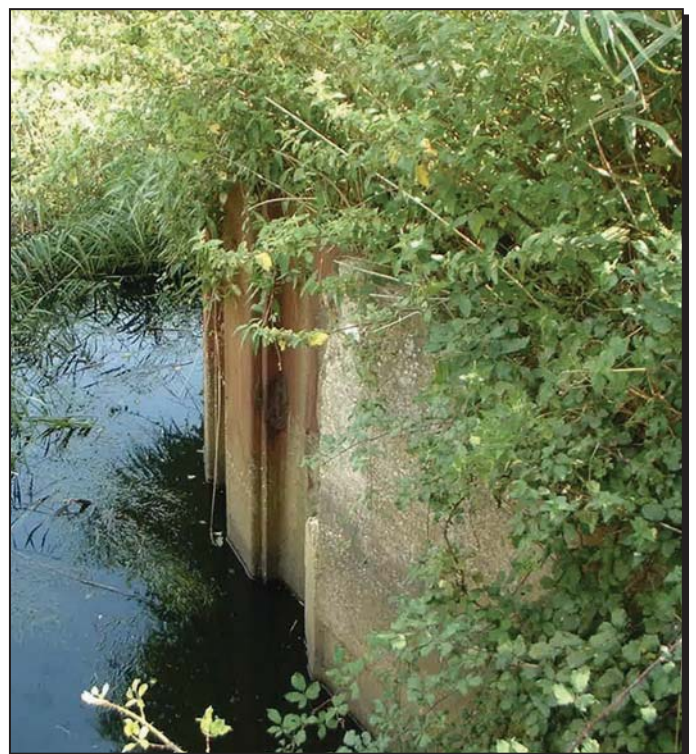
Floodbank Setback

► **Erosion protection.**

This stabilises the riverbank and the edge of the rond and is used where erosion may threaten the floodbank. There are several types of erosion protection and most types are soft engineering such as asphalt matting, coir and reed rolls and alder poles. In a small number of locations, BESL installs replacement steel sheet piling but this hard engineering is used very sparingly.

The decision about which solution to use in any one place is based on a number of factors. These include: up-to-date survey information (to assess the condition of the existing floodbanks, erosion protection etc.); an evaluation of the level of flood defence provided; cost and other factors such as local environmental issues or legal designations; and technical feasibility.

BESL uses a sequential approach to material sourcing using local material where possible, preferably from the existing soke dykes and internal drains by widening them. The use of dredgings is an alternative option if there is a suitable source close by. However, if there are no other reasonable alternatives, local borrow pits may need to be created.



Existing piling, Somerleyton marshes sluice

What are BESL's specific proposals for the right-bank of the River Waveney from Blundeston Marshes to Herringfleet?

BESL will need to obtain approval from statutory bodies including planning permission from the Broads Authority for works other than maintenance or replacement of existing defences.

The plan on page 5 shows what solutions BESL are proposing for different lengths of floodbank in Compartments 31 and 32. These are based on the current best available information. Factors such as ground conditions may determine the optimum solution.

A summary of these works is as follows:

Compartment 31: Blundeston Marshes to the railway swing bridge at Somerleyton.

- ▶ Strengthen a 2890m length of floodbank between Blundeston Marshes and the railway swing bridge at Somerleyton. (Red line on plan)
- ▶ Strengthen a 70m length of floodbank at the mouth of Whitehouse Dyke and install tanalised timber post erosion protection. (Green line on plan)

Compartment 32: Railway swing bridge, Somerleyton to Sandy Lane, Herringfleet Hills.

- ▶ Strengthen a 160m length of floodbank from the railway swing bridge to Somerleyton Boatyard and a 60m length of floodbank in two short sections on the River Waveney at Herringfleet. (Red line on plan)
- ▶ Maintain 120m of floodbank in two sections within Somerleyton Boatyard and re-pile using sheet metal piling. (Orange line on plan)
- ▶ Strengthen a 70m length of floodbank within Somerleyton Boatyard and re-pile using sheet metal piling. (Blue line on plan)
- ▶ Strengthen a 70m length of floodbank along the River Waveney which is also a Broads Authority 24 hour mooring and re-pile using sheet metal piling. (Blue line on plan)
- ▶ Strengthen a 15m length of floodbank along the River Waveney and install asphalt matting erosion protection. (Green line on plan)

BESL's proposals to improve the floodbanks for the River Waveney are based on a mixture of strengthening and erosion protection using both hard and soft engineering. Where piling will be undertaken using water-based plant, the width of the River Waveney at Herringfleet will be temporarily reduced but will still be open to navigation. Access to Somerleyton boatyard will need to be closed temporarily but in order to minimise disruption this will be undertaken during the winter period, outside of the busy boating season and in close liaison with the relevant landowners.

What is the proposed phasing and timing of this work?

The improvement works will be progressed in two phases with the piling started over the winter period so as to minimise disruption to navigation within Somerleyton Boatyard and on the River Waveney.

Re-piling and erosion protection works do not require planning permission and can be started sooner. Piling at Somerleyton Boatyard is planned to start in mid-November 2003 with piling at the Broads Authority 24-hour mooring following after that.

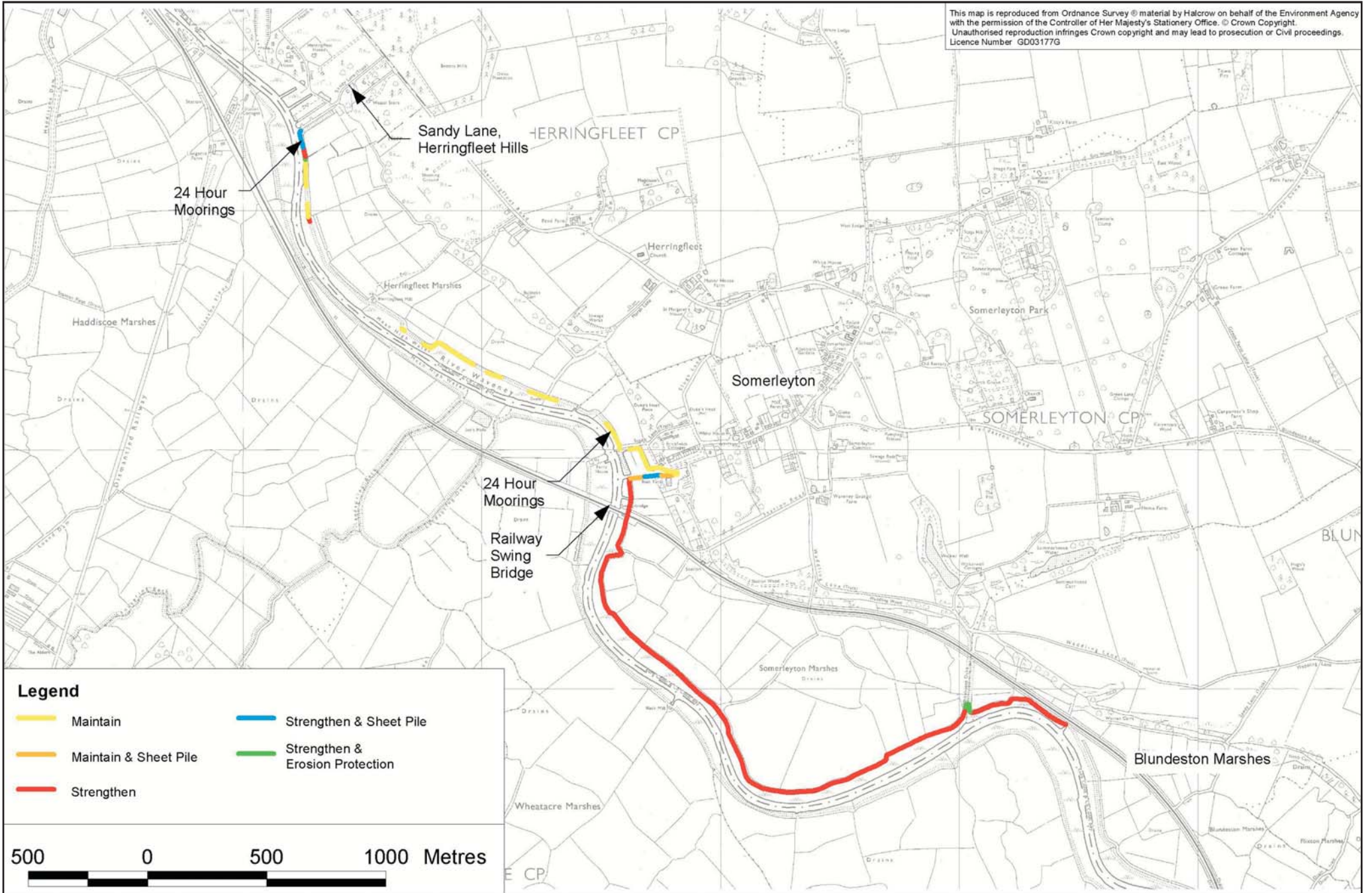
The bank strengthening works require planning permission and construction is planned to start in April 2004, to be completed by late autumn, ground conditions permitting.

Because the floodbanks in Compartment 31 are generally in poor condition BESL propose to carry out improvements to the whole compartment in a single phase during 2004.

The floodbanks in Compartment 32 on the other hand are in a better condition so only selected lengths (380m) need strengthening in 2004. The remaining 2490m will not need improving straightaway and depending on future settlement rates, these banks will not need to be improved for several years. There will be routine maintenance of sections of floodbank as highlighted in yellow.



Reed rond on River Waveney



Flood Defence Proposals for Somerleyton Marshes (Compartment 31) and Herringfleet Marshes (Compartment 32)

What are the potential issues associated with this work?

The Strategic Environmental Assessment (SEA) process developed by BESL with extensive stakeholder input sets out environmental standards for maintenance, flood defence improvements and first-time defences at undefended communities. The scheme details are consistent with these environmental standards. Previous consultations have identified that majority of issues raised by consultees relate to the construction phase, with fewer issues relating to the long-term impacts following construction.

Short-term issues during construction	
<p>Negative</p> <ul style="list-style-type: none"> ▷ Temporary disturbance to peoples' homes. ▷ Temporary views of earthworks and machinery during construction. ▷ Temporary change in the landscape appearance and loss of vegetation cover. ▷ Piling with water-based plant will disrupt navigation within the Waveney and Somerleyton Boatyard. ▷ Temporary effects on public access. Public Rights of Way, National trails and permissive routes are likely to be affected by the proposed improvement works. ▷ Temporary disturbance to flora and fauna. 	<p>Solutions to issues identified</p> <ul style="list-style-type: none"> ▷ Construction activity will only take place during normal working hours, Monday to Saturday and not Sundays or Bank Holidays. ▷ Wherever possible, reduce machinery positioned on the floodbank with machinery on the folding partially screened by the reed rond and floodbank. ▷ Re-seed the banks to establish a rapid sward of grass, long-term there will be no change. ▷ Carry out works outside the main holiday season to limit disruption. ▷ Footpath diversions during construction with full reinstatement of footpaths post construction. ▷ Implement agreed mitigation such as moving plants or collecting seed from rare and scarce plants for reseeded the affected area following completion of works. Also includes detailed surveys for water vole, otter, nesting birds.
Long-term issues following construction	
<p>Positive</p> <ul style="list-style-type: none"> ▷ Positive effects of protecting valuable habitats for nature conservation against permanent long-term flooding. ▷ Positive effects of protecting Broads landscape from the damaging effects of long term flooding. ▷ Existing Broads Authority moorings on the River Waveney at Herringfleet are closed due to poor state of repair. In conjunction with the Broads authority, BESL will be reinstating the moorings as part of the improvement works. ▷ Positive effects of habitat creation especially with the creation of larger and new soke dykes where appropriate (when the existing soke dyke is too close to the floodbank). These create additional reedbed and open water habitats of high conservation value. 	
Negative	Solutions to issues identified
<ul style="list-style-type: none"> ▷ There is a perception that flood defence works could increase flood risk in undefended communities. ▷ Visual effects of new, larger soke dykes. ▷ Changes in land use due to the construction of the flood defences. ▷ Possible impacts on the integrity of the Natura 2000 sites upstream and downstream of the proposed area of works and the River Waveney and Herringfleet Marshes County Wildlife Sites by altering water levels and the salinity regime of the river. 	<ul style="list-style-type: none"> ▷ The Hydraulic Model developed by BESL showed that the proposed works will not significantly increase flood risk to the undefended community of St Olaves. ▷ Design incorporates a berm planted with reed to reduce visual impacts. ▷ Individual arrangements made with landowners for land use changes (including the loss of ESA tier payments during the construction period). ▷ Hydraulic model runs have shown the proposed works will not significantly increase flood risk as a result of changes to water levels and/or velocities. The existing salinity regime will not be significantly affected.

Table 2

Alternatives BESL considered and discounted

Overall, the existing flood defences need improving. Where the existing erosion protection is failing (e.g. piling has failed or the rond is too narrow) setback has been the preferred method to improve the level of flood protection. However, within Compartments 31 and 32, the reed-fringed rond is sufficiently wide enough to meet design requirements in most places. The following were possible alternatives to BESL's preferred improvements for Compartments 31 and 32:

▶ Do minimum

This would involve 'maintenance only' to both the floodbank and any existing erosion protection. Quite a large part of the existing flood defences within Compartment 32 only require maintenance. However, a large part of the remaining floodbanks in Compartments 31 and 32 do not provide the level of protection required and need bank strengthening. If these works were not undertaken, the floodbanks would settle, reducing the standard of defence resulting in more frequent overtopping and increase the likelihood of a breach. Most of the existing piling is in poor condition (Somerleyton Boatyard and along the River Waveney). BESL do not consider the consequence of this alternative acceptable.



Boats within Somerleyton boatyard



Drainage Mill, Herringfleet marshes



Banded demoiselle

▶ Setback and Erosion Protection (installation of asphalt matting)

This option was discounted due to the existing rond being of sufficient width to meet the needs of the project along the majority of the floodbank. Therefore, the existing rond negated the need for setback, with floodbank strengthening or maintenance as the most appropriate options.

What are the next steps?

Thank you for taking the time to read through this information leaflet and answering the associated questions. BESL is keen to find out what you think of these proposals. We will collate your replies and will then consider all comments made, these will help to inform us as we develop the proposals in more detail.

If you wish to reply, our freepost address is:

**Broadland Environmental Services Ltd
Freepost ANG20504,
Norwich,
NR1 1ZW.**

We would encourage you to email your reply to Paul Rao (BESL Environment Manager) at:

halcrow@edmund-nuttall.co.uk

Please mark the subject line of your email with:

Compartment 31 and 32 Consultation

**Please ensure your replies are received by
24 November 2003**

List of Consultees

In addition to landowners and local residents, this consultation document is being sent to the following list of public bodies and organisations:

- ▶ 24Seven
- ▶ Anglers Consultative Association for Norfolk and Suffolk
- ▶ Anglia Railways
- ▶ Ashby, Herringfleet & Somerleyton PC
- ▶ Beccles Amateur Sailing Club
- ▶ Blundeston & Flixton PC
- ▶ British Dragonfly Society (Norfolk)
- ▶ Broadland and East Suffolk Tourism Association
- ▶ Broads Angling Strategy Group
- ▶ Broads Authority
- ▶ Broads Hire Boat Federation
- ▶ Broads Society
- ▶ Burgh St Peter/Wheatacre PC
- ▶ Crown Cruisers Ltd
- ▶ Defra - Rural Development Service East
- ▶ East of England Tourist Board
- ▶ English Nature – Norfolk Team
- ▶ English Nature – Suffolk Team
- ▶ Environment Agency
- ▶ Great Yarmouth Bird Club
- ▶ Great Yarmouth and Gorleston Sailing Club
- ▶ Great Yarmouth Port Authority
- ▶ Great Yarmouth Wildfowlers Association
- ▶ Haddiscoe PC
- ▶ National Association of Boat Owners
- ▶ Norfolk and Suffolk Boating Association
- ▶ Norfolk Anglers Conservation Association
- ▶ Norfolk County Association of Parish and Town Councils
- ▶ Norfolk Windmills Trust
- ▶ Norfolk Tourism Management Partnership
- ▶ Railtrack (Eastern Regional Office)
- ▶ RSPB (East Anglian Regional Office)
- ▶ South Norfolk District Council
- ▶ South Norfolk Tourism Forum
- ▶ Suffolk County Council – Department of Environment and Transport
- ▶ Suffolk FWAG
- ▶ Suffolk Wildlife Trust
- ▶ The Dukes Head
- ▶ The Ramblers Association – Waveney Group
- ▶ Waveney and Oulton Broad Yacht Club
- ▶ Waveney District Council
- ▶ Yare and Waveney IDB

Contact details:

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The Broadland Flood Alleviation Project is being delivered under the Public Private Partnership Programme by Broadland Environmental Services Limited on behalf of the Environment Agency.

Broadland Environmental Services Limited is a joint venture company between Edmund Nuttall Ltd and Halcrow Group Ltd
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