



Broadland Flood Alleviation Project

Protecting



Broadland

Haddiscoe Cut

Consultation Document - November 2002

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. All improvement schemes will also reduce the risk of breach. BESL is presently working to update this strategy and this will set the scene for how future improvement schemes will be designed, programmed and carried out.



Concrete floodwall and access road (north east bank).

Consultation

BESL will need to obtain approval from statutory bodies including planning permission from the Broads Authority where it is needed. 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:

- ▶ Outline the preferred flood defence proposal and explain why this is BESL's preferred scheme;
- ▶ Invite your views on this proposal;
- ▶ Explain the alternatives that BESL considered before arriving at its preferred scheme; 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 where appropriate before finalising its plans. The results of this consultation will play an important part in BESL's planning application for this proposal. 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 Dr Eliot Taylor at the address given at the end.



Background

Haddiscoe Cut was constructed in 1832 to provide direct navigation between Lowestoft and Norwich. Two years after its final construction the original developer went bankrupt and a railway entrepreneur bought the Cut and surrounding land, on which a railway was constructed. The Cut remained in the ownership of a succession of railway companies for over 100 years, until the British Transport Commission sought to close the Cut to navigation. This met with strong opposition and the then River Board assumed responsibility for the Cut. Today the Environment Agency owns the Cut and is responsible for its repair and maintenance.

The north-east embankment is on Haddiscoe Island and the south-west bank abuts the Norwich to Lowestoft railway line. The existing flood defences are mainly made up of a continuous clay floodbank supplemented on the Island side by a combined concrete floodwall and roadway, which forms the only access onto Haddiscoe Island. Over time timber and steel piling has been installed along both banks of the Cut to counteract the erosion and instability of the floodbanks.



Norwich to Lowestost railway line.

The need to improve existing flood defences

Recent detailed surveys and monitoring confirm that improvements to flood defences for Haddiscoe Cut are urgently needed. BESL has therefore decided to bring its plans for this work forward.

The overall standard of flood defence has progressively reduced due to settlement, age, and the combined effects of erosion, corrosion, sea level rise and boat wash. The piling has a limited life span, most of which are reaching this limit. In some areas the original floodbanks are too narrow and the banks too steep, making them vulnerable to breach during very high tides when floodwater overtops them. Sea level rise and tidal surges add to this vulnerability. The poor condition of the piling also prevents dredging of Haddiscoe Cut.

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 both here and across Broadland.

What techniques are BESL considering to improve flood defences for the Cut?

The range of techniques BESL has considered for Haddiscoe Cut follows the Environment Agency's overall strategy for flood alleviation in Broadland. The available techniques are:

- ▶ **Strengthening.** Strengthening the existing clay embankment in its present location by placing clay material on the floodbank and raising the crest if necessary;
- ▶ **Setback.** Fully setting back the floodbank by building a new clay embankment inland from the river's edge and providing a new rond, folding and soke dyke;
- ▶ **Limited setback.** Rolling back the floodbank away from the river's edge and filling in the near side of the soke dyke and relocating it away from the toe of the floodbank;
- ▶ **Erosion protection.** Stabilising the riverbank and the edge of the rond. This is used where erosion may threaten the floodbank. Several types of erosion protection exist including asphalt matting, geo-bags and gabions. Piling will only be used on a limited basis. Erosion protection is usually used in conjunction with strengthening, setback and limited setback.

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 systems etc.), an evaluation of the level of flood defence provided, value for money and other factors, such as local environmental issues, legal designations and technical feasibility.



Timber piling.

What are BESL's preferred proposal for Haddiscoe Cut?

The plan on page 4 shows BESL's preferred proposal. This is to keep Haddiscoe Cut open and combine this with 'limited setback'. The floodbank on Haddiscoe Island will be 'rolled' back by a small distance, but enough to maintain the full navigable width of the channel and allow installation of an appropriate erosion protection system. A new narrow road will be created – this proposal does not require a wide road because erosion protection, and not a reeded river's edge, will protect the floodbank. A summary of these works is as follows:

- ▶ The floodbank on Haddiscoe Island will be setback by a small distance, up to 5 metres.
- ▶ Gabion mattresses will be installed at the toe of the new river's edge to protect against the impacts of boat wash. Higher up this will be replaced with a softer system (typically asphalt matting). This will help promote the growth of a reeded fringe while still giving erosion protection to the bank.
- ▶ Geo-bags will be installed in front of the piling on the railway side of Haddiscoe Cut to stabilise the existing piling system.
- ▶ The same erosion protection system detailed above will be installed over the Geo-bags in a way to promote the growth of reeds and prevent boat wash.
- ▶ This proposal will maintain the navigable width of the channel.
- ▶ A new replacement road will be provided for access onto Haddiscoe Island with the crest of the new floodbank forming a new public right of way.

What is the proposed phasing and timing of this work?

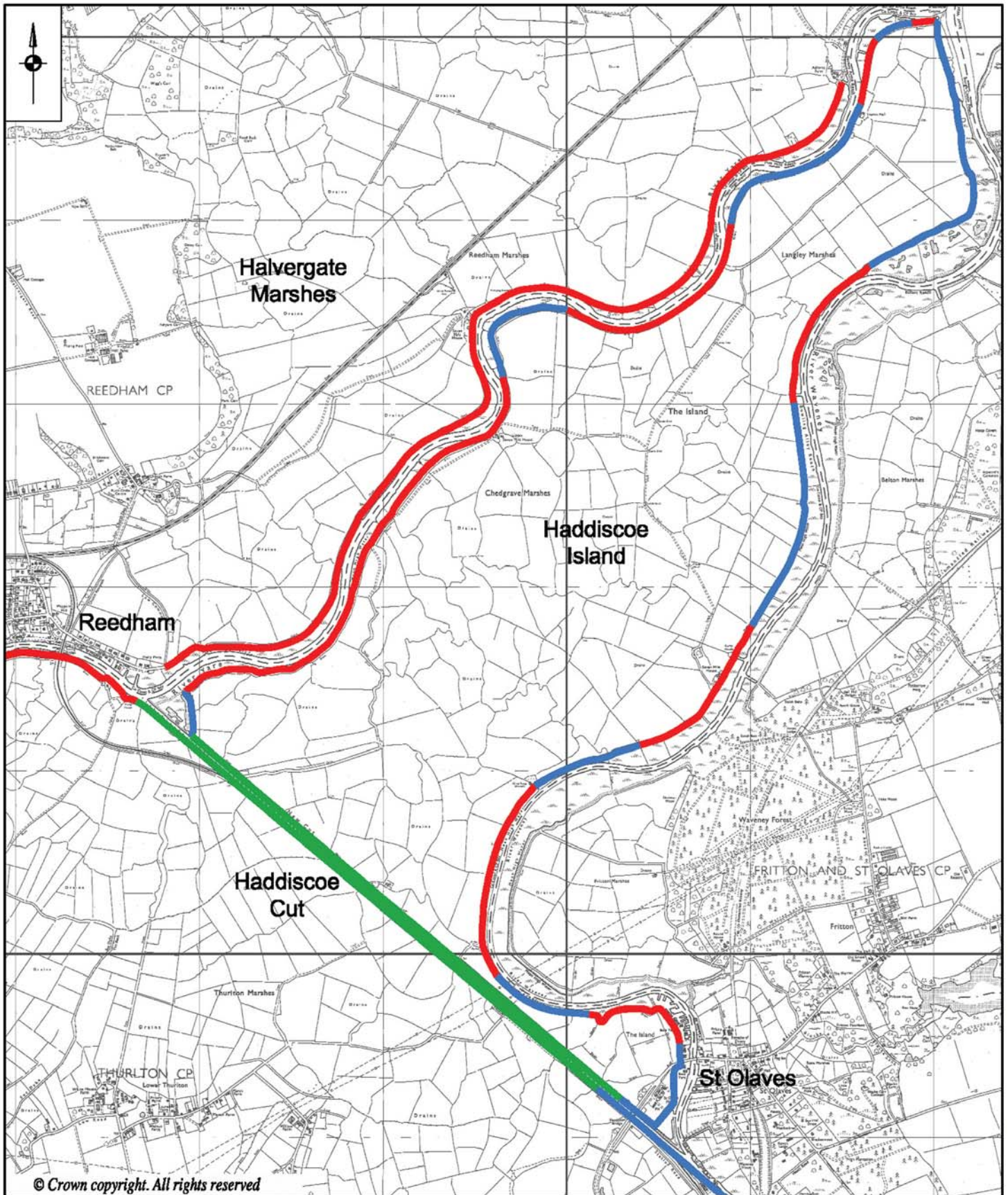
The improvement works described in this document are part of a larger programme of works for the area. You may have already been involved in the consultation for these works which was sent out earlier this year. The map on page 6 shows where the current proposals will take place, the location of proposals that we have already consulted on, and where further improvement works will be proposed in the future. Detailed proposals for these future works have not yet been developed and BESL will consult on them separately. For the Cut, at present BESL intends the programme of works to be as follows (subject to statutory approvals).

Haddiscoe Island

- ▶ Limited setback/channel realignment
June 2003 to November 2003
June 2004 to November 2004
- ▶ Extract piling/erosion protection
October 2003 to April 2004
October 2004 to April 2005

Thurlton Marshes (Railway side)

- ▶ Stabilise piling/erosion protection
October 2003 to April 2004
October 2004 to April 2005
- ▶ Strengthening/bank raising
May 2005 to December 2005



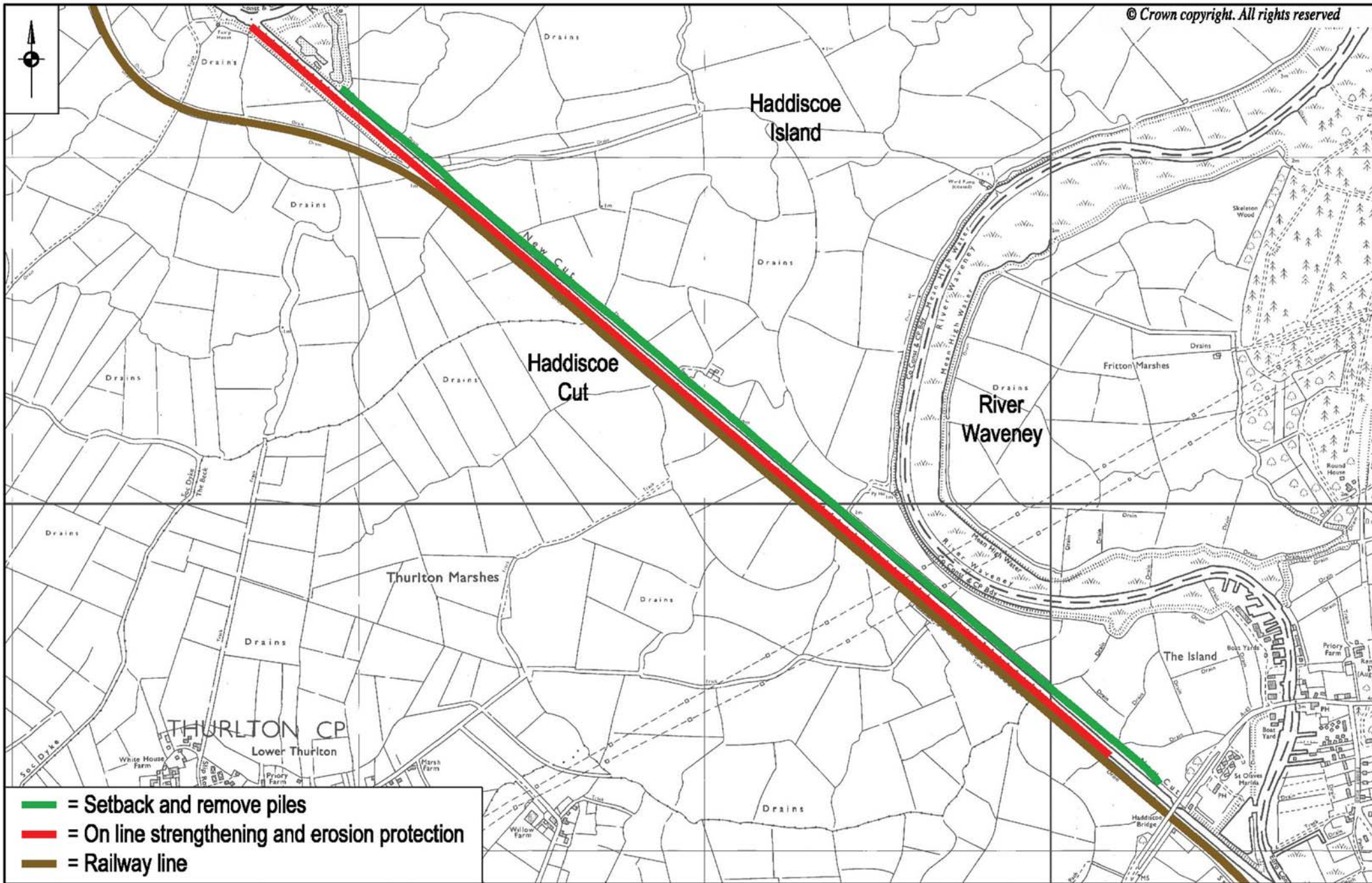
- = Proposals covered by this document
- = Proposals that have already gone to public consultation
- = Future proposals

Flood defence proposals for the Rivers Yare, Waveney and Haddiscoe Cut

What are the potential benefits and possible impacts of this work?

Following initial discussions with some stakeholders the main issues and effects that have been identified so far include:

Topic	Issues	Possible solution
Undefended communities and landowners	<ul style="list-style-type: none"> ▶ Benefits of protecting agricultural land from the damaging effects of long term flooding. ▶ Temporary noise disturbance to people in their homes. ▶ Possible changes in land use from the construction of the flood defence. ▶ Possible impacts on undefended communities by altering the flooding pattern. 	<ul style="list-style-type: none"> ▶ Construction activity to take place during normal working hours. ▶ Individual arrangements made with landowners for changes in land use (including the loss of ESA tier payments during the construction period). ▶ Ensure that the timing and design of improvement works to compartments does not increase the flood risk to Reedham, St Olaves or elsewhere.
Landscape and visual quality	<ul style="list-style-type: none"> ▶ Positive effects of protecting Broads landscape from the damaging effects of long term flooding. ▶ Improved appearance of the Cut by the removal of the piling and creation of reeded fringes to the river edge. ▶ Temporary visual effects of works during construction. ▶ Temporary change in landscape appearance due to loss of vegetated areas. ▶ Long-term changes in the landscape. 	<ul style="list-style-type: none"> ▶ Machinery on the folding will be partially screened by the floodbank. ▶ Re-seed the banks to quickly establish a sward of grass and integrate the new works into the landscape. ▶ Design has incorporated a soke dyke berm planted with reed to reduce the area of open water. Attention paid to detailed features such as fences, gates and stiles.
Recreation and navigation	<ul style="list-style-type: none"> ▶ Fragile condition of existing piling prevents effective dredging. ▶ Temporary effects on navigation for pleasure boat users. ▶ Potential temporary hazards to navigation while new banks vegetate. ▶ Temporary disruption of access along the public right of way. 	<ul style="list-style-type: none"> ▶ Improvement to flood defences allows future dredging to take place with benefits to navigation. ▶ Maintain navigational access along the river during the holiday season. ▶ Installation of navigation markers for temporary period until hazards are no longer present. Old piling will either be incorporated into the new flood defence or removed. ▶ Clearly signed temporary footpath diversions.
Ecology and nature conservation	<ul style="list-style-type: none"> ▶ Positive effects of protecting characteristic habitats against damaging effects of long term flooding. ▶ Temporary disturbance to flora and fauna. 	<ul style="list-style-type: none"> ▶ Implement agreed mitigation measures.
Infrastructure	<ul style="list-style-type: none"> ▶ Positive effects of stabilising the floodbank closest to the railway line. ▶ Safer access track on to the Island. ▶ Positive effect of protection to overhead power lines. 	



Flood defence proposals for Haddiscoe Cut

Alternatives BESL considered and discounted

BESL considered four main alternatives when formulating its preferred scheme. Three of them were discounted and are described below:

▶ Do nothing

The floodbanks would continue to settle reducing the standard of defence on both sides of the Cut and resulting in more frequent overtopping. This will impact on properties, infrastructure and farming practices.

Many of the sections of existing piling are in poor condition and currently offer little erosion protection. Continued erosion from boat wash will exacerbate this problem and eventually undermine the embankment.

The main railway line between Lowestoft and Norwich fits on top of the south west flood embankment.

The stability of the line is inherently linked to the floodbank and associated piling. Over time the piling will deteriorate and eventually fail with the embankment slipping into the Cut undermining the railway.

This was clearly demonstrated in 1993 when a pile failure caused breaching which washed a hole under the railway line.



Breach under railway line - 1993

BESL do not consider the consequences and impacts of a 'do nothing' alternative acceptable.

▶ **Close the Cut.** Close Haddiscoe Cut and provide an alternative navigation to the River Waveney.

This alternative would have closed Haddiscoe Cut to navigation between a point just west of Haddiscoe Bridge and the confluence with the River Yare. A new 200m navigation channel would be built linking the Cut and the river Waveney to bypass the low bridge at St Olaves. Navigation to and from Reedham would still be possible around Haddiscoe Island via Berney Arms.

The Cut would be closed off at either end, but water levels would continue to be controlled to reduce the risk of the south-west bank (the one supporting the railway) failing when it overtops in the future.

This alternative would be the cheapest, reducing long-term maintenance costs and minimising impacts on adjacent landholdings and on the stability of the floodbanks. However,

it would also reduce the area of navigation in the Broads and, because of its consequences, could only be closed by an Act of Parliament. BESL do not consider this alternative a viable one.

▶ **Setback.** The Cut would remain open and the floodbank would be setback on the Haddiscoe Island side, to produce a wide road.

Erosion protection would be installed on the railway side.

This alternative involves setting back the floodbank inland on the Haddiscoe Island side by 25m. The opposite bank would be stabilised by placing large earth filled bags, known as "geo-bags", placed in front of the existing piling. Erosion protection would be used to cover the geo-bags to promote reed growth.

The existing access road on this Island would be repositioned on the folding and the public right of way would move to the crest of the new bank.

This alternative would provide ecological benefits from a large new road. It would also improve the landscape setting of the Cut by creating a more natural appearance to the river's edge. Improvements to the floodbanks will allow effective dredging to take place. However, in this case, the benefits of setback would be outweighed by wide spread effects on the large number of smaller landholdings and agricultural units, on properties and on infrastructure including the high voltage overhead electricity lines. Taken together, BESL do not consider these negative impacts to be acceptable.

▶ **Re-piling.** The Cut would be kept open and the river edge would be re-piled and the existing floodbanks strengthened.

New timber or sheet metal piles would be installed along the entire length of the Cut on both banks. The existing floodbanks would also have to be strengthened as piling alone would neither reduce the risk of breach nor meet the level of flood defence required by BESL's contract.

While this alternative maintains the Cut as a navigable channel. The long-term cost and maintenance of piling would be very expensive, unsustainable and would not represent best value. Re-piling the Cut would not enable effective dredging to be carried out.

For these reasons, BESL do not consider this to be a viable alternative.



Existing piling along the Cut (railway side).

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. BESL is being assisted and advised on this public consultation by Dr Eliot Taylor from the Centre for Social and Economic Research on the Global Environment (CSERGE), at the University of East Anglia. He will be collating your replies and reporting to us on all responses received during the consultation period. BESL will then consider all comments made and 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

You may also email your reply to Eliot Taylor at:

eliot.taylor@uea.ac.uk

**Please ensure your replies are received by
Friday 10th January 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
- ▶ Aldeby PC
- ▶ Anglers Consultative Association for Norfolk and Suffolk
- ▶ Anglia Railways
- ▶ Anglia Yacht Brokers Ltd.
- ▶ Blundeston & Fixton PC
- ▶ British Dragonfly Society (Norfolk)
- ▶ Broadland District Council
- ▶ Broads Angling Strategy Group
- ▶ Broads Hire Boat Federation
- ▶ Broads Society
- ▶ Bungay Cherry Tree Angling Club
- ▶ Burgh St Peter/Wheatacre/Haddiscoe PC
- ▶ Chedgrave PC
- ▶ DEFRA - Rural Development Service East
- ▶ English Nature - Norfolk Team
- ▶ Environment Agency
- ▶ Fritton and St Olaves PC
- ▶ Great Yarmouth Borough Council - Planning and Development Dept
- ▶ Great Yarmouth Port Authority
- ▶ Haddiscoe Charity Trustees
- ▶ Hales with Heckingham PC
- ▶ Loddon Boatyard
- ▶ Loddon PC
- ▶ National Association of Boat Owners
- ▶ Norfolk Area - Ramblers Association
- ▶ Norfolk and Suffolk Yachting Association
- ▶ Norfolk County Council - Department of Planning and Transportation
- ▶ Norfolk Wildlife Trust
- ▶ Norton Subcourse PC
- ▶ Oulton PC
- ▶ Railtrack (Eastern Regional Office)
- ▶ Reedham PC
- ▶ RSPB (East Anglian Regional Office)
- ▶ Smith-Wooley (for Reveningham Estate)
- ▶ South Norfolk District Council
- ▶ Suffolk Wildlife Trust
- ▶ The Broads Authority
- ▶ Waveney District Council
- ▶ Wetland Bird Survey Organiser
- ▶ Yare and Waveney IDB
- ▶ Yare Valley Sailing Club

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.

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The Centre for Social and Economic Research on the Global Environment, CSERGE is an interdisciplinary research centre based at the University of East Anglia in Norwich. CSERGE are commissioned by BESL to facilitate consultation and public participation on the project.

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