

Strategic Environmental Objectives

STAKEHOLDER INVOLVEMENT

- 1 The environmental objectives, policies and specification set out in the SEA will provide the basis on which BESL's work will be designed and implemented during the Project. These environmental standards will be updated annually with key stakeholders.**

The SEA is a continually evolving process that makes use of new and updated information as it becomes available. The report of the SEA is a code of practice that comprises:

- Environmental objectives
- Environmental specifications for maintenance and improvement work
- Environmental monitoring framework
- Consultation framework
- Strategic environmental baseline
- Strategic Appropriate Assessment (European sites)

SEA development will also be informed by the monitoring designed to assess the effectiveness of improvements and maintenance works as they are implemented. Annual SEA updates will be developed in consultation with key statutory and non-statutory stakeholders.

- 2 The design of individual improvement schemes will be developed in consultation with stakeholders as part of the statutory planning process.**

BESL will undertake a thorough public consultation exercise prior to the submission of each planning application. This is in addition to the formal consultation undertaken by the planning authority.

All landowners directly affected by individual improvement schemes, and key local statutory and non statutory stakeholders will be identified and provided with information on each scheme, detailing the preferred improvements, alternatives that have been considered and associated environmental issues and benefits. All consultees will be invited to provide feedback to BESL on the proposals.

BESL will carefully consider any comments it receives and incorporate changes where possible and appropriate. Responses from consultees will inform the scope of an Environmental Statement.

MATERIAL SOURCING & REINSTATEMENT

See also Policy Note 7

- 3 Material will be sourced locally wherever this is possible. Where material is to be sourced from a borrow area elsewhere and imported, the proposals will be progressed in consultation with all relevant stakeholders.**

The method by which material is sourced for improvement and maintenance works must be technically feasible, cost-effective, environmentally sound and acceptable to local communities. There will be a sequential approach to the sourcing of material which is, in order of preference:

- 1 Local sourcing for improvements by widening existing soke dykes (strengthening) or by constructing new soke dykes (setback);
- 2 Local sourcing from adjacent areas by extending existing marsh dykes adjacent to the working area;
- 3 Importing material from outside the working area where insufficient suitable material is available locally.

Should material sourcing proposals involve the creation of borrow pits, these will be brought forward in consultation with key stakeholders and statutory bodies on their implementation, opportunities for after-use and restoration.

A strategic material sourcing assessment forms part of the SEA and this will be developed on a site specific basis as survey and ground investigation data is obtained.

- 4 Dredgings will be used for construction provided:**

- a) **it is technically feasible and cost-effective;**
- b) **there are no significant adverse environmental effects or impacts on communities;**
- c) **the quality of material is suitable to meet construction needs; and**
- d) **the timing, location and quantity of dredged material is compatible with the programme of work.**

River dredgings have the potential to be used for some flood defence construction activities work. Its suitability depends on the quality of the material, as well as the timing, location and quantity of availability in relation to the programme of works. BESL will continue to work closely with the Broads Authority to assess where the need to dispose of dredgings is compatible with BESL's work programme and material requirements.

AGRICULTURE AND LANDOWNERS

5 Landowner approval will be sought early in the development of flood defence proposals.

The agreement of landowners is vital to the success of the project. BESL will undertake a thorough consultation exercise during the planning of all flood defence improvement works and this shall properly include all landowners individually, and relevant stakeholders. The project will not be able to provide the desired level of improvements without landowner consensus.

6 Flood defence improvements must not have a significant adverse effect on the operation of local businesses.

BESL recognises that the local economy is largely dependant on small businesses, such as boatyards, holiday accommodation, public houses and farms. Consequently, they will be properly included within the consultation exercise and as far as practicable, adverse effects will be avoided through the design and planning of the improvements. Short term disruption is inevitable in the vicinity of construction works. Such works however, will be planned with due regard to local business and appropriate measures introduced to mitigate any adverse effects. Access to properties and land for owners and the public will be maintained while improvement works are undertaken.

7 Reinstatement of all working areas to at least their former condition will take place following the completion of improvement and maintenance works.

The majority of construction works are on agricultural land. Once works are completed the land will be reinstated to at least its former condition and will be carried out in a way that is compatible with the location, use and habitat type that existed prior to the works.

Reinstatement will mainly be in locations where there have been temporary site compounds, access tracks, haul routes and within working areas generally where construction vehicles have been operating. Re-instatement will involve measures to avoid or reduce excessive soil compaction and will encourage healthy vegetation to re-establish. Re-vegetation will usually be by re-seeding using an appropriate and approved native grass seed mix, or by allowing natural colonisation. Topsoil and grass seed mix will be applied to floodbanks.

Where trees have been allowed to grow in floodbanks and they need to be removed to enable work to take place, they will not be replaced.

8 Where new haul routes or access tracks are created within working areas, the land will be restored to its former condition following completion of the works.

Within the working areas, new haul routes will be required to access the construction areas. Where they are not needed by landowners for their needs afterwards, they will be removed and the land restored to its former condition. Access routes to be retained for operational purposes, e.g. to provide future access for survey and maintenance (and usually located behind the floodbank on the folding) will be designed as 'green tracks': a hardcore base covered by topsoil and either seeded or allowed to regenerated naturally as grassland.

Impacts on soil structure and after-use will be minimised by a variety of techniques including use of vehicles with low pressure bearing tyres, temporary reinforcement and protection of subsoil.

WATER LEVELS AND WATER QUALITY

9 The project must not result in significant adverse change in river water levels.

BESL will programme its works in such a way as to avoid significant effects on upstream and downstream water levels. This will be informed by a comprehensive hydraulic model of the river system that BESL has developed. The model is used to help understand where changes may occur and allow BESL to take appropriate steps to mitigate these changes.

Improvements in undefended communities will be completed before improvements to connected flood compartments, this will ensure that the risk of flood will not increase in undefended communities.

10 The project will provide flood defences to undefended riverside communities.

BESL will provide flood defences to properties in undefended areas. Such defences will be constructed ahead of any adjacent improvement works that may adversely impact on water levels in the village.

11 The project must not exacerbate the upstream movement of the saline limit in the rivers.

Monitoring will identify changes in the upstream limit of the saline wedge. This is currently changing through natural processes, and monitoring will identify if the project is exacerbating this above natural trends. It should be noted, however, that in any river, the upstream limit of salinity is influenced both positively and negatively by changes in the weather, seasons, tidal and fluvial flood events.

12 The design and phasing of improvement works must not increase the risk of flooding to grazing marsh habitats and freshwater marsh dyke communities.

The project will maintain, in the long-term, flood defence levels and the pattern of flooding, with allowance for future settlement of the clay floodbanks and sea level rise. The hydraulic model will be used to determine the risk of increased flooding as a result of works. This will inform the most appropriate programme and phasing of improvement works. Monitoring will verify hydraulic modelling predictions as compartments are completed.

13 Improvement works must not exacerbate the current flooding in the undrained peatland.

The majority of peatland is in undefended areas (ie where no flood defence improvements currently exist or are proposed). The hydraulic model will be used to help evaluate whether specific choices on design and implementation would lead to adverse environmental effects, including the frequency and depth of current flooding. As compartments are completed, BESL will identify the most appropriate solutions, programme and phasing of improvement works both upstream and downstream of sensitive areas and will carry out monitoring to verify its predictions.

14 Water quality in broads which are not currently connected to the river system will continue to be protected from tidal river inputs.

A number of broads are not directly connected to main rivers and the project will ensure that their isolation and water quality are sustained.

NAVIGATION	See also Policy Note 8
<p>15 There will be no overall loss of navigable waterways.</p> <p>The project has the potential to affect the quality of navigation by changes to erosion and accretion; changes to the edge of the navigable area (changing from a hard vertical piled face to a sloping vegetated face); and the presence of potential hazards in the river channel (even if for a temporary period).</p> <p>In the case of navigable width and depth, there are already natural patterns of erosion and accretion taking place. Weather, seasons, tidal and fluvial flood events heavily influence erosion and accretion. Up-to-date hydrographic surveys are being carried out jointly by the Broads Authority and BESL to identify how the channel changes naturally over time, and the potential for the project to influence this.</p> <p>BESL is currently developing an approach with the Broads Authority on the management of new ronds and river edges where piling is removed following setback.</p> <p>Haddiscoe Cut is owned by the Environment Agency who permit its use by the public. It is within the navigation area of The Broads Authority, who are also the Navigation Authority for it and all public waterways in the Broads area.</p>	
<p>16 The work will not result in a reduction in the extent and quality of established public moorings and lawful public access to them by land and water.</p> <p>Throughout the Broads river system there is a network of Broads Authority 24-hour moorings, some of which are public & parish staithes. Many make use of steel sheet piling historically provided as erosion protection by the Environment Agency. Where piling continues to serve its flood defence function effectively, public moorings will be maintained. However, where these fail, or where alternative flood defence techniques are proposed the project will to make an alternative equivalent provision in the vicinity or alternative arrangements as agreed with the Broads Authority. Lawful right of access to existing moorings must be demonstrated before making an equivalent provision elsewhere.</p>	
<p>17 The project will not result in permanent hazards to river users. Potential short-term and temporary hazards to navigation will be avoided wherever possible but where this is unavoidable, they will be clearly identified to boat users in accordance with the advice of the Broads Authority.</p> <p>Potential hazards to navigation might include wherries engaged in construction temporarily reducing navigable width. It might also include redundant piling left in place after improvement work. In these circumstances temporary navigational markers will be installed until the hazard is removed.</p>	

ACCESS AND RECREATION

See also Policy Note 1

18 There will be no long-term reduction in the overall extent of public rights of way and other public access.

The improvements will protect public footpaths by stabilising banks and in most cases providing a wider crest. Where public rights of way pass over floodbanks that are to be set back, the existing route will be closed and a new route opened along the new section of floodbank. The new floodbank will be parallel to the old one, usually no more than about 50 metres away. This will mean small-scale changes to the length and alignment of some footpaths – usually minor increases. The overall effect of such changes will be localised adjustments to take account of new alignments. There will be changes to the overall length of footpaths but this is not expected to be significant. All routes and connections with other footpaths will continue to exist after the works.

19 Wherever possible the principle of barrier-free access will be incorporated into scheme design.

Along much of the network of public rights of way in Broadland, fences, stiles and gates can act as barriers to access for some users. This is formally described as 'furniture'. BESL will have full regard to the obligations placed on it by the Disability Discrimination Act 1995 and ensure it provides an equality of access for all users including people with disabilities where it has a legal responsibility to do so.

Fencing will be reinstated at property boundaries and field divisions where these are authorised and landowners request it. BESL will not increase barriers to access on public rights of way. If landowners request new boundary fencing, gates or stiles, the relevant consents will be required for them. BESL will only seek to remove authorised barriers with the permission of the landowners.

BESL has a sequential approach towards furniture on public rights of way. They are, in order of preference:

- 1 barrier-free routes
- 2 clear gaps in fencing
- 3 'kissing' or 'squeeze' gates
- 4 stiles

20 Measures to minimise disruption during construction will be incorporated into scheme design wherever possible

Temporary closures along public rights of way are required to ensure safe working practices. Alternative routes will, in the majority of instances, be provided to ensure people who live, work and visit can enjoy equivalent rights of way throughout Broadland.

21 Rights of way will be reinstated to at least their existing standard after construction.

The existing public rights of way are usually uneven and where they pass along the crest of floodbanks they are often narrow with steep slopes on both side. Following improvement works the crest of floodbanks will be about 2 metres wide and the footpaths will be reinstated so they have a level and flat surface. This will be seeded to prevent them becoming cloggy and hazardous.

BIODIVERSITY, NATURE CONSERVATION AND WATER QUALITY

See Policy Notes 3, 4 & 9

22 Following completion of maintenance or improvement works, the resultant mosaic of habitats within the working area will be capable of supporting the same ecological function (ie same range of species and communities) as existed before work started.

Construction impacts on habitats within the works corridor are unavoidable. There will be limited scope to mitigate effects on these habitats when works are taking place. The completed works will result in a change in the proportion of different habitats rather than absolute loss.

Existing **rond** habitat will erode/accrete over time due to natural processes and provided ronds continue to offer effective natural erosion protection to the floodbanks, there will be no intervention in these processes. Other areas of rond habitat will be maintained and extended where floodbanks are setback. Overall, there will be substantial additions to the area of rond as part of the project's approach to sustainable flood defences.

There will be a net loss in **grazing marsh** due to setback and material sourcing. The scale of loss in any particular flood compartment will, however, be small relative to the total amount of grazing marsh that will remain. Replacement grazing marsh (often through arable reversion) will be provided for losses within European sites.

The emphasis on improvements to flood defences by bank strengthening and setback means that the area of **floodbank** will increase. Grass cutting on floodbanks is essential to ensure that tree roots do not weaken the banks and also to allow floodbank condition surveys to be carried out. Grass cutting is required for health and safety purposes, to allow users to clearly see the edge of the crest. In European sites the floodbank habitat itself supports certain species and in these areas BESL has agreed a modified cutting regime with English Nature. This is designed to ensure vegetation has sufficient time to regenerate between cuts to support the associated species.

The area of **folding** will change and more detailed engineering and environmental planning is needed to accurately quantify such change. The increased footprint of improved floodbanks will reduce the folding in some locations. Where the folding is wide enough it may also be reduced by material sourcing from the folding side of existing soke dykes. In some cases, reconfiguration of the soke dyke will lead to an increase in folding width. The aim will be to provide a minimum folding width of 9m in all cases. The management of foldings is not expected to change as a result of the works. There will be a loss in saltmarsh communities on foldings due to a reduction in seepage of brackish/saline river water onto the foldings in the lower valleys. This is outweighed by the improved protection to all land protected by floodbanks from the damaging effects of long-term saline flooding.

The area of **soke dyke** will increase as this is the main source of clay material for construction.

There will be some new lengths of **marsh dyke** and areas where this will be reduced. BESL estimates that there will be a small net loss of this habitat compared to the overall resource.

23 The design and implementation of improvements and associated infrastructure will seek to maximise opportunities to enhance existing grasslands or create new grazing marsh habitats.

The approach to sustainable flood defences emphasises working with natural features. It is unlikely that the improvements will directly or indirectly lead to a change in land use from grassland to arable. It is more likely that opportunities will exist to revert additional land e.g. from arable to grazing marsh, especially where habitat creation takes place (either formally or informally). The works may also present opportunities to provide new / enhanced dykes and water level control structures.

Existing and future agricultural support mechanisms are a further consideration. The Broads ESA will come to an end in March 2004, but existing ESA agreements will remain in place for up to 10 years. A revised framework for Agri-environment Schemes in England will come into effect from April 2004 onwards, and it is anticipated that this will provide continued support to farmers whose land is grazed in accordance with traditional practices. BESL will work with agreement holders to ensure that, wherever possible, agreement boundaries are not reduced. Where beneficial management under the ESA or its successor scheme is no longer possible, any necessary reduction will be agreed with the landowner.

24 There will be no adverse impact on the area and quality of existing estuarine habitats as a result of the project.

This relates specifically to Breydon Water. The nature conservation interest is in the mudflats that provide feeding areas for birds at low tide. Existing patterns of sedimentation in Breydon Water will, over time, reduce the area of mudflats and increase saltmarsh habitat. The project must make sure that its work does not exacerbate these natural processes. The hydraulic model will assist decisions on engineering and environmental design and implementation, and monitoring will measure the project's effects.

25 The design and implementation of works in European sites will avoid or minimise significant adverse effects and will aim to maintain or improve favourable conservation state. Proposals in European sites will be brought forward in detailed consultation with the relevant statutory organisations and specialist advisors to ensure the effects of the works are fully addressed.

In some cases English Nature may advise that the works are necessary for the conservation management of the site. In any event, the project will always seek to avoid or minimise significant effects on protected habitats and species. The process to determine and assess impacts on European sites and features is complex and must involve competent authorities and specialist advice from other organisations.

There are key issues to consider in assessing impacts of the works on European sites:

- The significance of effects;
- The loss of functioning habitat;
- Effects on site integrity.

26 BESL will make provision for new habitat creation to balance losses in European sites.

Depending on individual circumstances, new habitat creation will be delivered either on a voluntary basis or as a statutory requirement.

LANDSCAPE	See also Policy Note 2
<p>27 Landscape changes will be of a scale and nature that is in keeping with the local character and of benefit to the Broads environment as a whole</p> <p>The project will deliver significant benefits by protecting the valuable and sensitive National Park landscape and will give the river's edge a more natural appearance by the creation of new ronds and the removal of piling where setback takes place. Without flood defence improvements the level of protection provided by such defences will diminish and eventually defences will fail. The consequences of the project not taking place, or being delayed, are that, without the maintenance of floodbanks, the characteristic drained marshes landscape would alter radically, reverting to estuary, reedbed, fen and open water.</p> <p>There will be changes to the width and height of improved floodbanks. The upper range of changes to floodbanks will be in downstream reaches of main rivers where the scale of improvement is greatest. For example, bank strengthening will result in bank heights increasing by up to 60 cm. Bank widths will increase where the gradient of their slopes is too steep and they need to be reduced to about 1 in 3. Here, the larger banks will be up to 3 metres wider.</p> <p>Soke dykes will be widened to enable clay material to be sourced locally. To allow long-reach machinery to maintain them in future, these cannot be wider than 18 metres. To enable them to be well integrated back into the landscape, BESL will construct new and widened soke dykes so they have berms on both sides. BESL will establish reed fringes on both sides: these will reduce the visible area of water and help to integrate the dykes into the surrounding landscape.</p> <p>BESL do not believe that these changes, by themselves or in combination with adjoining bank works, will be detrimental to the character of the wider landscape. However, proposed changes will always need to be evaluated on a site-by-site basis.</p> <p>The Broads Authority is currently working on the development of a Broads landscape characterisation study. This is expected to help the flood defence project by identifying elements that make up the local character that require sensitive and specific consideration.</p>	
<p>28 Specific attention will be given to small scale features and details in the wider Broadland landscape.</p> <p>Careful attention will be given to the treatment of small scale details (gates, stiles, fences, cattle pens etc.) where these are directly affected by flood defence improvement works. Consideration in the first instance will be given to the re-use of existing materials.</p>	
<p>29 The use of 'soft' sustainable flood defence materials and techniques will be maximised throughout the project. The use of 'hard' engineering techniques and materials should be minimised.</p> <p>The overall aim of the project is to pursue sustainable flood defence improvements and maintenance in ways that work with natural processes and maximise the use of 'softer' more natural solutions. Similarly the use of 'hard' materials and heavily engineered solutions will be minimised. The use of sheet piling or concrete for erosion protection will be replaced by measures such as reed rond, alder pole piling, coir logs, reed rolls, earth covered gabion baskets, and asphalt matting. 'Hard' flood defence solutions will only be used where there is no viable softer alternative.</p>	

<p>30 CULTURAL HERITAGE</p>
<p>31 The project will avoid significant adverse effects to the condition of known features of historic, cultural or architectural importance.</p> <p>BESL will investigate the presence of heritage sites when planning improvement works. Improvement works will be designed and planned in such a way as to avoid, as far as reasonably practicable, any adverse impact. Any unavoidable impacts should be evaluated on a case-by-case basis in consultation with the appropriate statutory advisors and other appropriate organisations to manage and mitigate and impacts.</p>
<p>32 The existing level of flood defence to features of known historic, cultural or architectural importance will be retained wherever this is appropriate.</p> <p>BESL will examine how each of its detailed proposals will affect known features, such as riverside windmills. Their present condition varies significantly and while some have been (or are proposed to be) restored, others are in an advanced state of dilapidation with no prospect of re-use. BESL will plan, design and implement its proposals in a way that enables future work to windmills by owners and/or relevant organisations, such as the Norfolk Windmills Trust or the Broads Authority, to be carried out.</p>
<p>33 The project will evaluate the potential for archaeological interest in development sites. Where required, BESL will agree and implement a watching brief and a mitigation strategy in the event that significant finds are discovered.</p> <p>Consistent with current policy and practice, BESL will examine archaeological potential on a case by case basis as part of the planning process. However, because little development has taken place in many parts of Broadland there is no widespread understanding of the archaeological resource in the area. Where planning proposals involve below-ground excavation, an evaluation will be determined with an appropriate advisor. BESL will rely on the advice of the Broads Authority and Norfolk and Suffolk County Councils regarding important unlisted buildings to enable these features to be taken into account.</p>
<p>PARTNERSHIP BENEFITS</p>
<p>34 BESL and the Environment Agency will seek to maximise the delivery of non flood defence benefits in association with the Project.</p> <p>The term ‘enhancements’ is used to describe all the positive effects, or benefits, which the Project will deliver <i>in addition to improved flood defences</i>. BESL and the Environment Agency have developed a joint approach to the consideration and delivery of non-flood defence benefits throughout the Project Area.</p> <p>BESL recognises that the delivery of such benefits, in conjunction with the design and implementation of flood defence improvements, represents an opportunity to further the Agency’s environmental vision for a healthy, rich and diverse environment. BESL is keen to explore stakeholder aspirations on behalf of the Agency, with a view to identifying such opportunities.</p> <p>In practice, a number of these non-flood defence benefits will be delivered directly through the Project. For example, footpaths will have wider, safer floodbanks; the removal of failed piling will reduce potential hazards to navigation; and the use of ‘softer’ erosion protection methods will create a more natural looking landscape. These are all benefits that can be designed into the Project at little or no extra cost.</p>

35 Where opportunities exist to deliver Partnership benefits in the Broadland Project area, the Agency will consider whether it can play a role in their delivery. Wherever possible, it will work with others to maximise the potential benefits to the Project area.

A number of stakeholders have identified other possible benefits that it will only be possible to deliver with additional funds. Examples of these include the provision of new moorings, improvements to public rights of way, and the provision of community facilities, such as river frontage improvements (lighting, seating, surfacing etc). In these situations, the Agency is keen to work in partnership with other lead agencies.

BESL's primary interest is the improvement and maintenance of flood defences. In planning and implementing these works it will have due regard to the potential for enhancement through partnership opportunities. Such opportunities, however, will not be allowed to delay the overall project programme.

36 BESL and the Agency will work with the relevant stakeholders in order to develop a strategic approach to other possible benefits, so that Project and Partnership funds can be used in a co-ordinated fashion to maximise the overall benefit of the available resources.

In most cases, the distinction between Project benefits and Partnership benefits will be straightforward, but from time to time there will be some 'grey areas', for example the maintenance of existing flood defences to protect disused drainage mills or similar historic structures.

A strategic approach to partnerships will ensure that consideration is given to possible opportunities in the early stages of scheme design, allowing the necessary lead-in time to develop initiatives where appropriate. It is envisaged that specific objectives will be developed through the Agency's involvement in current stakeholder initiatives, such as the County Council's new Rights of Way Improvement Plan, and the review of the Broads Authority's Broads Plan. In this way, it may be possible to facilitate a range of Partnership benefits, including for example, the following:

- Improvements to public access, including disabled access, in suitable riverside locations
- The provision of public moorings and other facilities for public recreation on or near the river
- The provision of improved flood defence, in conjunction with access or other improvements, to protect features of known historic, cultural or archaeological importance.