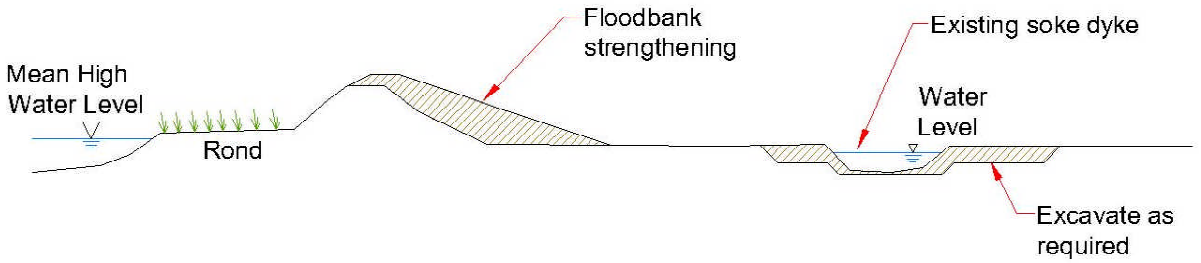
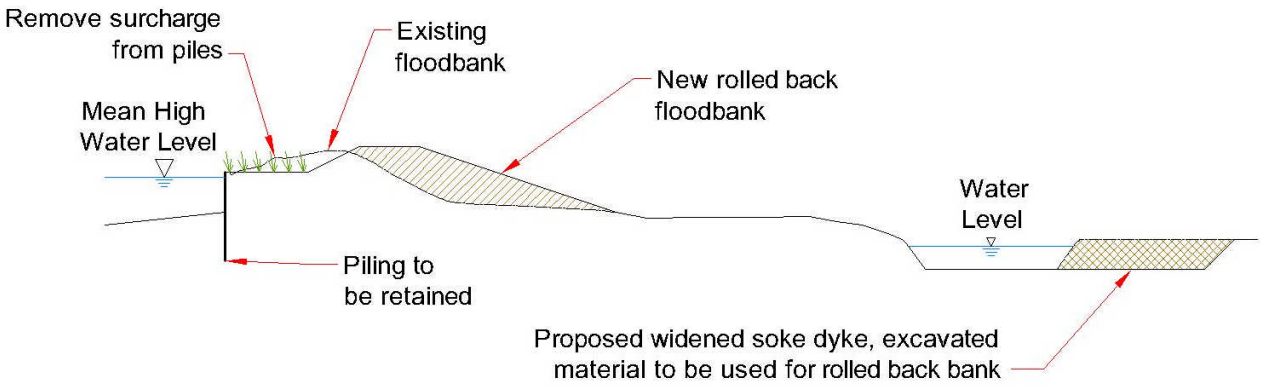
BROADLAND FLOOD ALLEVIATION PROJECT
Cross-sections of generalised flood alleviation improvement solutions

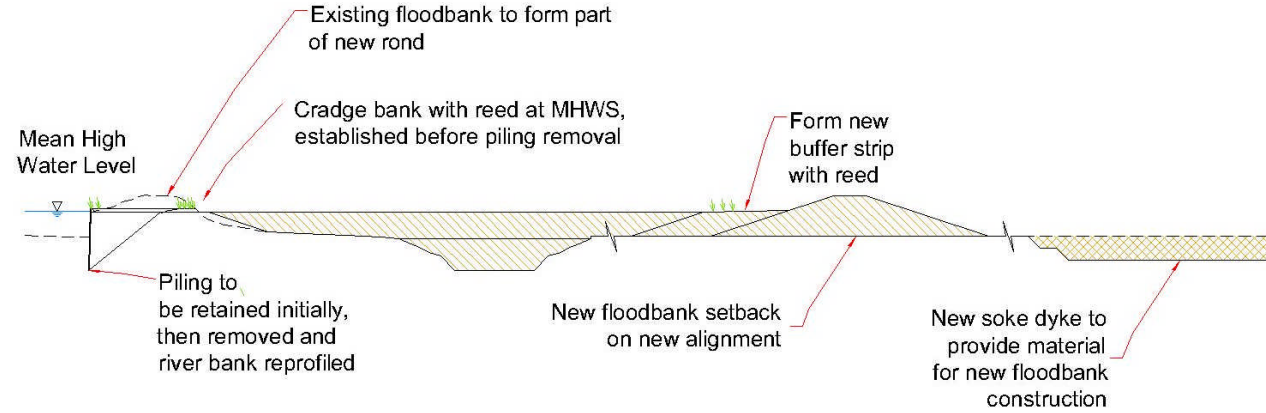
These are the options BESL can consider for each improvement scheme. Selection of the preferred solutions for individual compartments is based on the decision-criteria outlined overleaf.



1) Floodbank strengthening



2) Floodbank rollback



3) Floodbank setback

Description of solutions

- **Floodbank strengthening**

This involves the strengthening of the existing floodbank in its present location by placing material on the front and/or back slope of the bank (Fig.1). Raising the crest level may also be necessary and this is usually achieved by placing additional clay at the time of strengthening. Alternatively steel or plastic crest piling can be inserted. 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 following settlement.

This is a feasible solution when the rond in front of the existing floodbank is sufficiently wide (generally >10m) and or piling/other erosion protection has a remaining life span of 20 years or more.

- **Floodbank rollback**

This option is similar to setback (see below), however, the distance the floodbank is moved inland is considerably less (dependent on existing soke dyke, ground conditions and size of folding) (Fig.2).

This is a preferred solution when rond/erosion protection is insufficient to allow for just bank strengthening and where ground conditions do not permit full setback. It requires less material and land compared to setback and utilises the total lifespan of any existing piling. However, this relies on adequate remaining life of piles.

- **Floodbank setback**

This option consists of construction of a new clay embankment, 20m to 30m behind the existing floodbank (Fig.3). 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 new stable rond.

This is a preferred solution when the bank might become unstable due to failed piling or an eroding reed rond. Its use is subject to suitable ground conditions and availability of sufficient material for construction of a new floodbank.

- **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. Erosion protection is used in conjunction with the above options where needed.

The type of erosion protection that is chosen depends mainly on the existing erosion protection and its lifespan, adjacent land use and long-term sustainability.

- **Material sourcing**

BESL aim to use local material where possible, preferably by widening the existing soke dyke or excavating a new one. BESL use a sequential approach to material sourcing: Local sourcing by widening existing soke dykes or construction of new soke dykes is preferred, followed by local sourcing from adjacent areas and finally importing material from outside the working area, where insufficient material is available locally. Only if there are no reasonable alternatives, will it be necessary to create local borrow pits.

- **Folding**

The width of the folding (area between the floodbank and soke dyke) is important for the stability of the floodbank with a minimum distance of 9m usually required. Where possible BESL prefer to create foldings wider that the minimum as this also provides opportunities for grazing and potential for future material sourcing.