

CLEY SEA DEFENCES



NRA

*National Rivers Authority
Anglian Region*

EXISTING DEFENCES

A combination of natural and man-made defences provide flood protection for Cley. A natural shingle embankment to the north takes the brunt of the seas energy. Tides find their way down the River Glaven as far south as the Cley Sluice at New Road (A149). Embankments protect agricultural land and freshwater marshes and a concrete wall protects most of the village.

At the east end of Cley properties along the coast road are outside the line of protection of embankments and walls. Here protection is provided by the shingle ridge across the marshes.



Shingle bank.

1953

Most of the present defences were constructed or improved after the 1953 East Coast Floods which devastated much of the low lying parts of Cley.

TIDE PROTECTION LEVEL

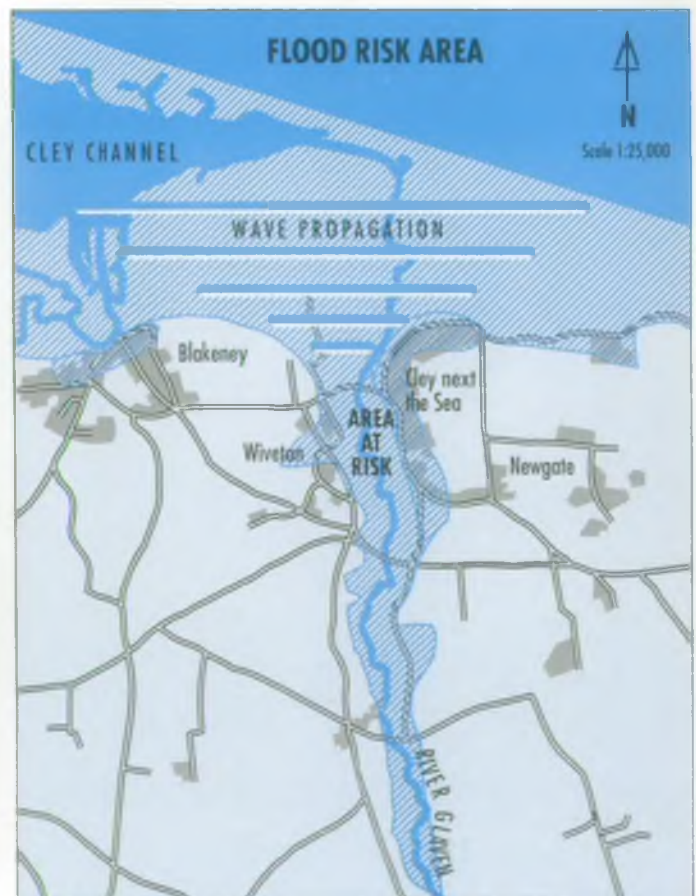
Wave action is normally dissipated at the shoreline by the shingle embankment which is maintained at a level at 8.0m

A.O.D. In extreme events waves can overtop the embankment and water finds its way onto the marshes behind.

This defence arrangement is effective for flood events with estimated return periods up to 30 years. For more extreme events the deeper water and stronger winds could result in waves developing across the marsh and damaging the concrete wall and embankment at Cley Sluice.



1953 floods.



OVERTOPPING AND FAILURE

FAILURE: The Concrete wall and the Cley sluice embankment will withstand conditions of still water up to 5.4m A.O.D., or lower water levels plus wave action. In a 1 in 100 year event, more severe than the 1953 conditions, it is expected that severe gales would accompany a tidal surge and 2m high waves would break on these defences. Under these extremes there would be considerable overtopping of the embankment and wall and consequential failure.

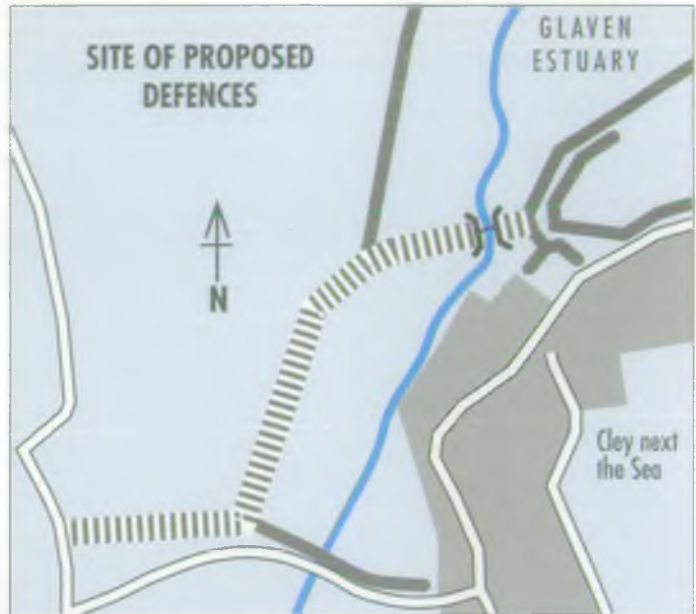


Existing town defence.

RISK: Failure, or even overtopping of these defences would have serious and sudden consequence. Because of the proximity of residential properties, there is a real risk of loss of life during flooding of the area immediately behind the wall.



Aerial view of Cley next the Sea



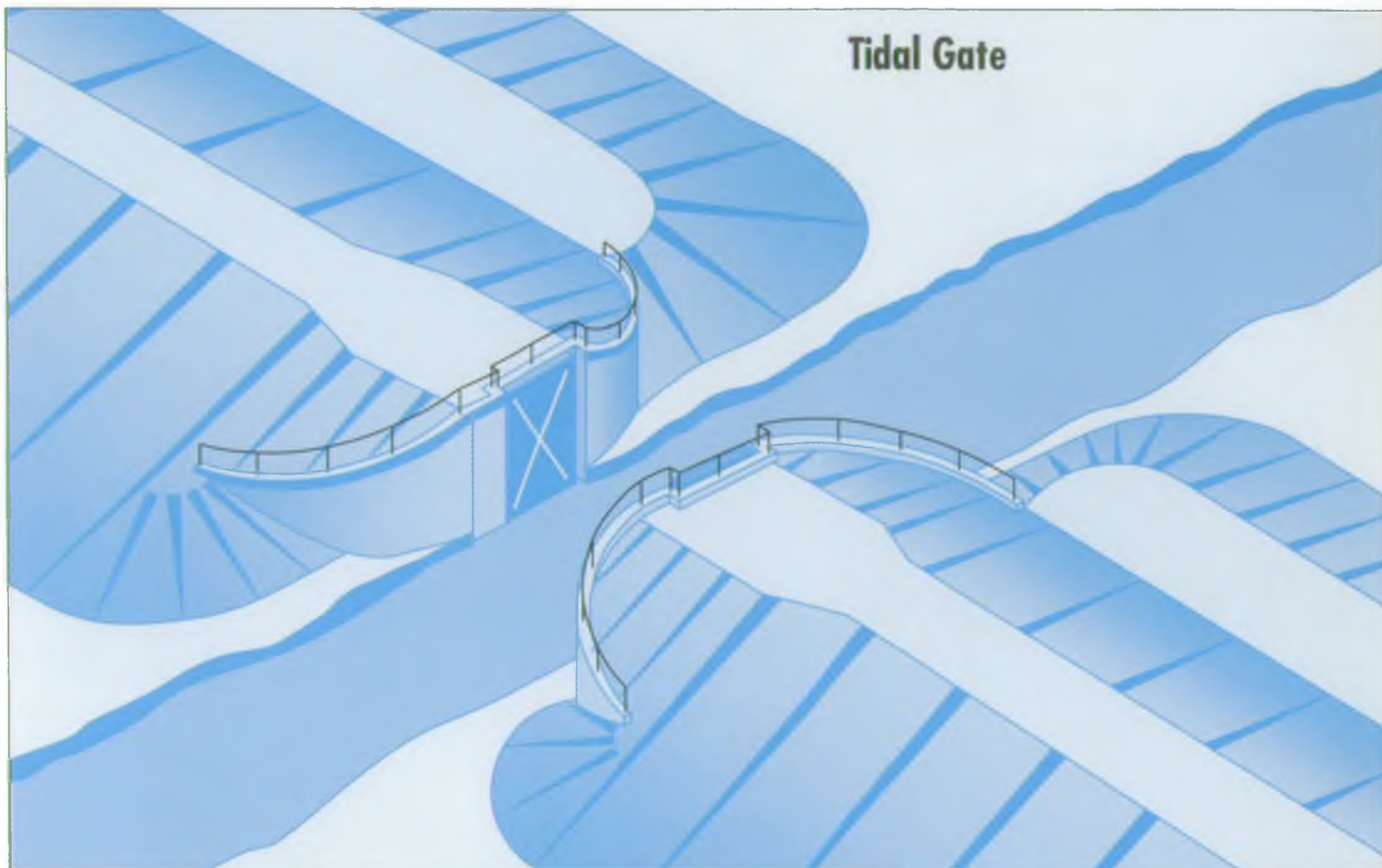
PROPOSED IMPROVEMENTS

The proposed improvements are designed to reduce this flooding risk. Using locally excavated clay, an outer 'ring' embankment would be constructed between the high land to the West and the existing closure bank North-East of the town. Most of the new defence would follow the line of the existing low embankments, but where it crosses the estuary a tidal gate structure would be incorporated to continue the existing navigation rights. The gates would be constructed in timber and suspended from a reinforced concrete deep-piled structure which would be clad in suitable brickwork to soften its appearance. Due to the nature of the underlying soft soils, construction for the

banks would be in two phases and will include soil reinforcement. The design standard for the combined existing and new defence is protection against a repeat of the 1953 event (1 in 100 years). This scheme will provide additional flood protection for 122 properties which include 25 listed buildings and the national landmark Cley Mill.

ENVIRONMENTAL CONSIDERATIONS

The area of works has national and international designations for conservation status. Extensive consultation has taken place with local groups, local authorities and statutory consultees.



A full Environmental Statement that addresses the impact of the works has been produced, and matters such as timing, method and mitigation measures agreed. The proposals were advertised and no fundamental objections have been received.

SPECIFIC MEASURES INCLUDE

- Restoration of enclosed reedbeds
- Removal of dredgings
- Provision of wider embankment crest along route of

long distance footpath on completion of the works.

SCHEDULE OF WORKS

PHASE 1: Earth works/embankment raising, preparatory work. Autumn-Spring 1993.

PHASE 2: Structure construction of tidal sluice gate and embankment work. Autumn 1993-Spring 1994.

PHASE 3: Revetment work/reinstatement work. Autumn 1994-Spring 1995.



ENVIRONMENT AGENCY



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Cley Mill overlooking reed beds in conservation area.