

JAYWICK SEA DEFENCE SYSTEM



NRA

*National Rivers Authority
Anglian Region*

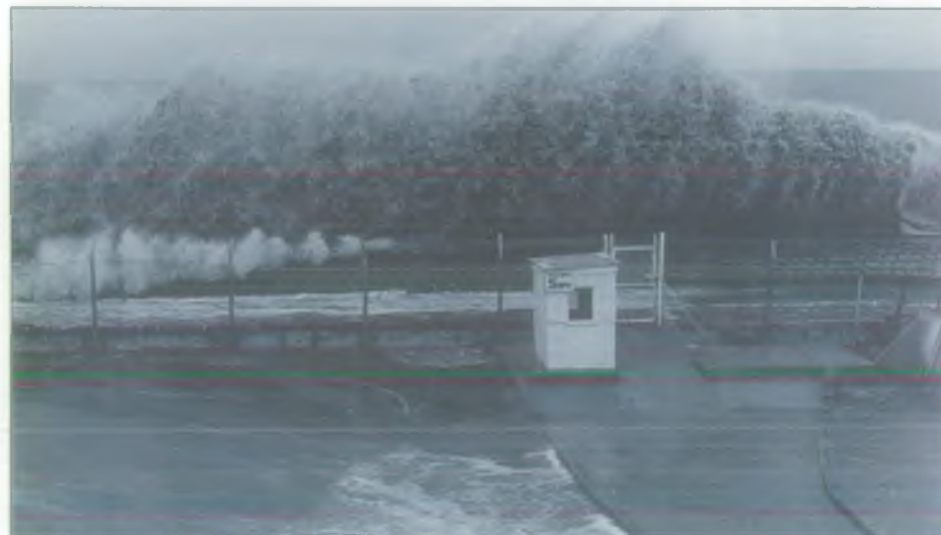


HISTORY

For Jaywick, a popular summer resort on the Essex coast, the night of 31 January 1953 was one of horror and disaster. A surge tide breached the sea wall; long lengths west of Cocketwick were destroyed and many areas were

inundated. In that night 35 people were drowned and 600 made homeless.

Twenty-five years later, on New Year 's Eve 1978 an easterly storm inflicted severe damage on 100 metres of the Jaywick wall. This time 320 people were evacuated and only weather improvement and emergency repairs averted another major disaster.



Jaywick, 1979.

STATE OF DEFENCES PRIOR TO RECONSTRUCTION

The existing defences totalled approximately 5 kilometres of sea wall from West Clacton to Cocketwick.

Built in the 1930s, the oldest section of the wall at Jaywick was in poor condition. Years of buffeting by the North Sea had not only damaged the wall, but eroded the sand and shingle beaches which had provided some protection. Ever-shifting shingle had worn away and exposed the wall's toe piles and the subsequent lowering of the beach level meant increased wave energy crashing against and over the wall.

The existing sea wall was mainly a reinforced concrete wave parapet with a sloping seaward

New Year's Eve 1983 saw a further incident when 35 hectares of low-lying residential area was flooded up to 1.5 metres and evacuations were again necessary.

Almost every winter, prior to the scheme, minor flooding occurred several times due to wave overtopping.

Between 1986 and 1988 major work, at a cost of £11 million, was carried out to prevent further damage.



Lion Point, Jaywick, 1939.

apron of concrete steps or revetment blocks and sheet steel pile toes. Much of the wall dated from 1940 to 1950.

Some remedial work had been undertaken without lasting effect. Timber groynes installed in 1972 had largely fallen into disrepair by 1984.

CONSIDERATIONS

Serious action was necessary while keeping disruption to the area and its amenities to a minimum.

An adequate level of protection was deemed to be 1 in 1000 year (i.e. - that would withstand the combination of high tide and wave action expected only to occur once in a 1,000 years) with allowance for sea level rise expected during the working life of the scheme.

A hard defence, the first option and the most expensive, was not only the least acceptable environmentally, it did not solve the problems of the eroding foreshore, increased wave reflection, scour and beach loss.

Beach recharge, rebuilding the natural beach, had been discussed as early as 1970 but not enough was known about the long-term effect of this operation. By 1983 more information made it a possibility but it still did not provide protection against longshore drift or storm waves and was likely to need regular replenishing.

THE SOLUTION

A combination of beach recharge, together with large rock-armoured, breakwaters was decided upon. This would reduce the longshore drift to a minimum while the existing sea wall would need only minor changes.

It was only the second similar scheme to be implemented in Britain and involved extensive surveys to establish crest levels, major vulnerable points and appropriate materials and designs.

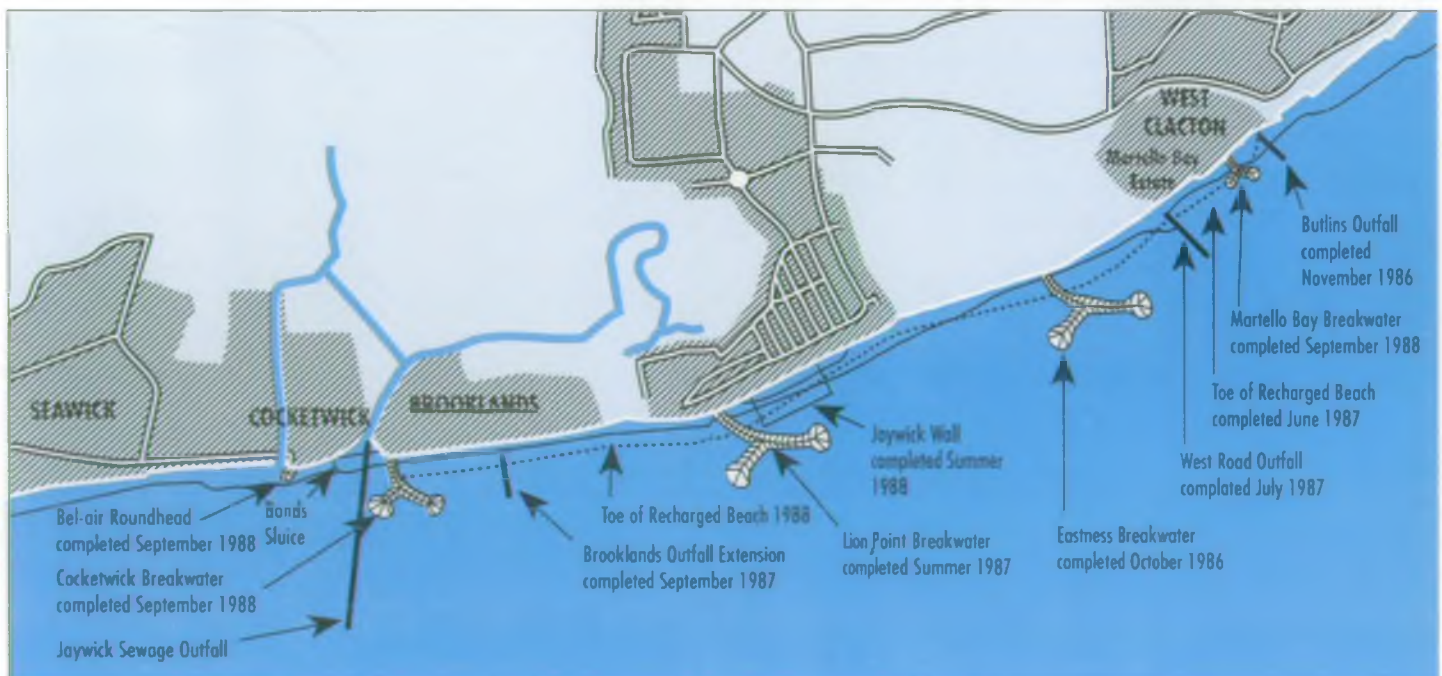


Lion Point, Jaywick, 1985.



Butlins, 9th February, 1974.

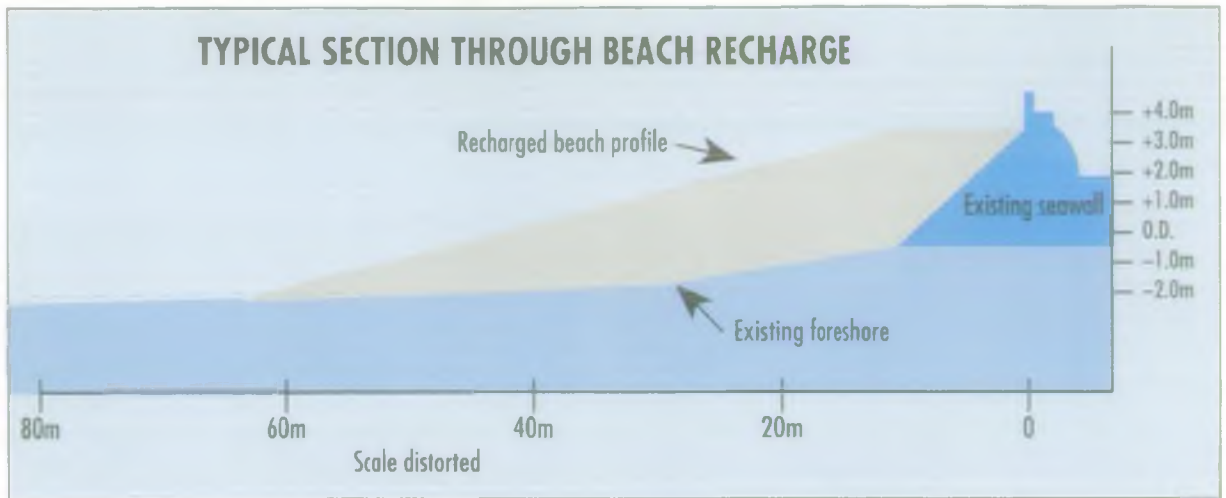
Stable beaches in the area were surveyed and sampled; data on tide levels and currents, wave height and direction and wind speed were researched and recorded. Marine surveys were carried out and a numerical model transferred tidal currents and offshore wave data inshore.



Beaches were recharged with a marine source mix of sand and medium gravel, slightly coarser than the existing beach. Fish-tail breakwaters, the most effective and economic

shape, were constructed from 6 to 8 tonne rocks imported from Scandinavia.

Beginning in 1986 the Eastness breakwater was built and the Eastness to Lion Point beach recharged. The following



year saw the construction of Lion Point breakwater and the beach from Martello Bay to Eastness was recharged. Finally 1988 saw the building of the Cocketwick/Martello breakwaters and the recharging of the stretch of beach from Lion Point to Cocketwick.



Barge delivering granite rock.

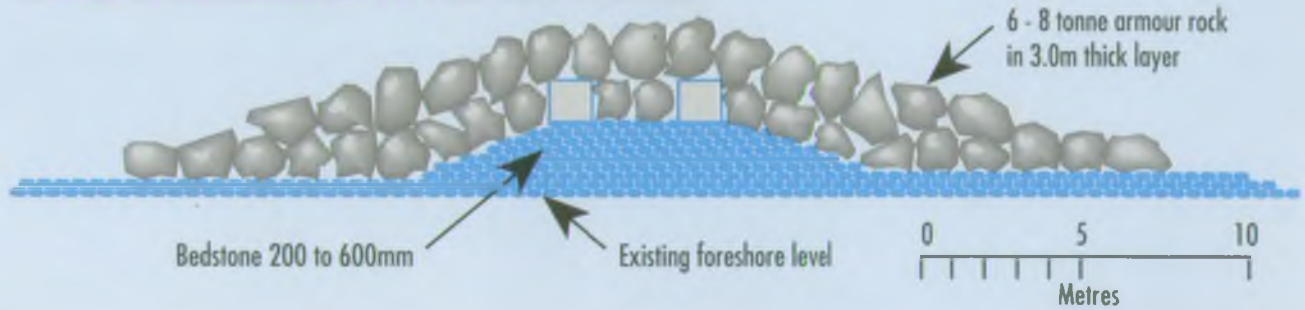


Building a beach.



Eastness Breakwater, 1987.

EASTNESS BREAKWATER: TYPICAL CROSS SECTION

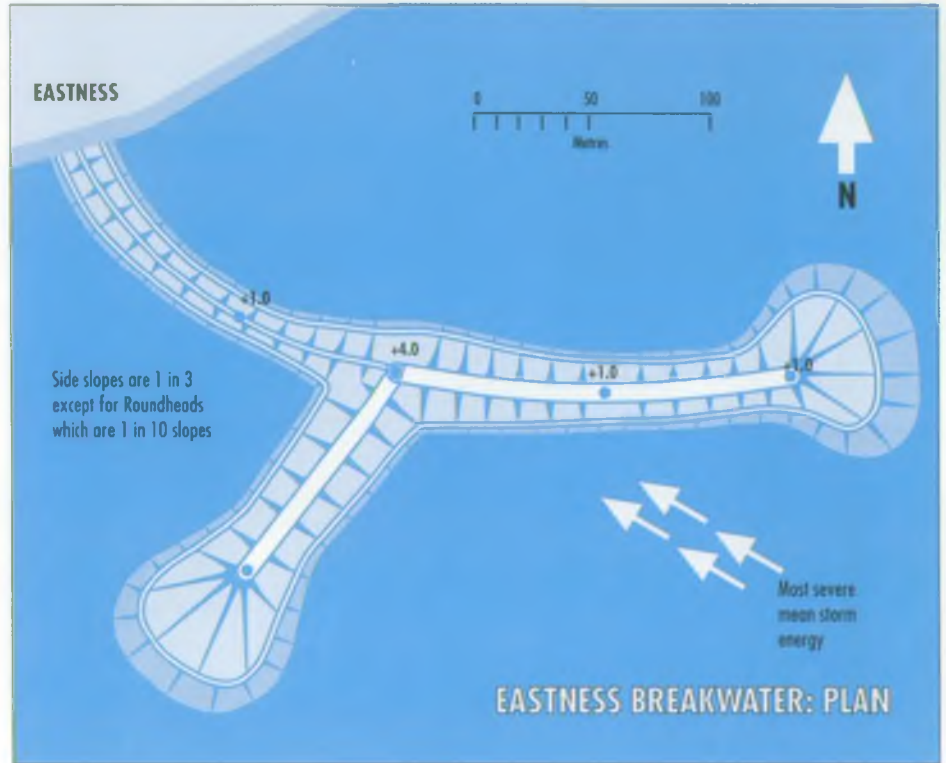


BENEFITS

Continuing spring and autumn surveys show the scheme is operating as predicted. Beach loss is minimal.

The western limit of the scheme has caused some concern. Beach levels in front of the Cocketwick wall adjacent to the Roundhead, have continued to fall over an 80 metre length. A line of rocks was placed here in early 1993 to secure beach levels. Minor works may also be needed at the eastern end of the frontage.

The scheme gives protection to a 1 in 1,000 year standard to an area of 200 hectares which includes 2,000 houses and hundreds of holiday chalets and caravans. At the same time the residential and tourist value of this stretch of coastline has been enhanced.



A new beach.

The National Rivers Authority

Guardians of the Water Environment

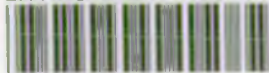
The National Rivers Authority is responsible for a wide range of regulatory and statutory duties connected with the water environment.

Created in 1989 under the Water Act it comprises a national policy body coordinating the activities of 8 regional groups each one mirroring an area(s) served by a former regional water authority.

The main functions of the NRA are:

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| Water resources | — The planning of resources to meet the water needs of the country; licensing companies, organisations and individuals to abstract water; and monitoring the licences. |
| Environmental quality and Pollution Control | — maintaining and improving water quality in rivers, estuaries and coastal seas; granting consents for discharges to the water environment; monitoring water quality; pollution control. |
| Flood defence | — the general supervision of flood defences; the carrying out of works on main rivers; sea defences. |
| Fisheries | — the maintenance, improvement and development of fisheries in inland waters including licensing, re-stocking and enforcement functions. |
| Conservation | — furthering the conservation of the water environment and protecting its amenity. |
| Navigation and Recreation | — navigation responsibilities in three regions — Anglian, Southern and Thames and the provision and maintenance of recreational facilities on rivers and waters under its control. |

ENVIRONMENT AGENCY



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