

The Hayle tidal barrier



The River Hayle flows northwards through the village of St Erth - approximately two kilometres south of Hayle, on the north coast of Cornwall - in a raised channel. When it reaches the estuary the river is culverted under a main road.

Four wooden flaps, fixed on the seaward side of the culverts, would shut automatically at high tide to prevent the tide flowing up the river and threatening the low lying surrounding land.

These flaps had been in place for over 50 years and surveys showed them to be deteriorating rapidly and beyond any further repair.

The Environment Agency carried out a scheme in 2001 to remove the old flaps and install new replacements. This leaflet gives a history of the tidal flood barrier, its need, and how the scheme to update the barrier was carried out.

Scene setting

The old tidal barrier - known locally as The Causeway - is a Grade II listed building lying in a site of high conservation value. It is part of the B3301 road crossing.

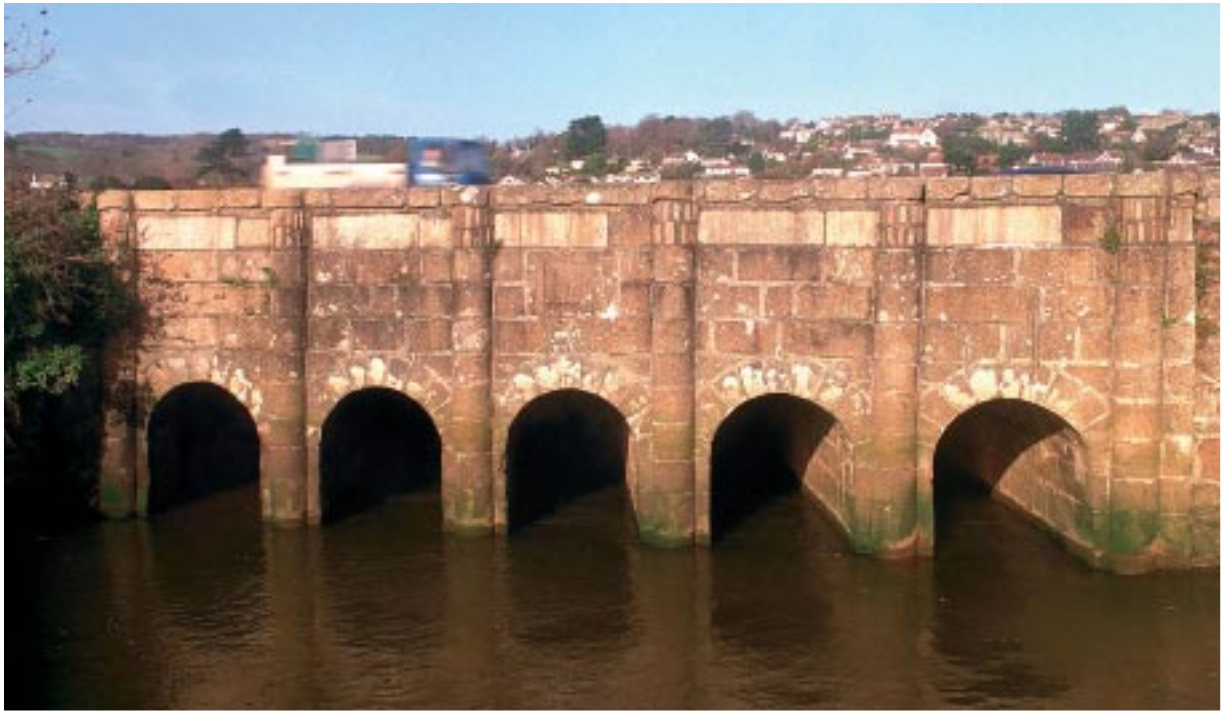
The estuary downstream of the barrier is the Hayle Estuary and Carrick Gladden Site of Special Scientific Interest (SSSI), owned by the Royal Society for the Protection of Birds (RSPB) and run as a nature reserve. There are extensive areas of intertidal mudflats and sandflats, and the Hayle estuary is also part of the St Ives Bay Sensitive Marine Area.

The estuary is of special importance to wintering wildfowl and wading birds. More than 90 species have been recorded on the site.



▲ Curlew

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▲ The Causeway - a Grade II listed building

Immediately upstream of the causeway on the right bank, the wetland area and Ryan's Field form a further RSPB reserve, which is also part of the SSSI. This is an important feeding and roosting site for migratory birds and again of special importance to wintering wildfowl and wading birds. Records show that more than 6,000 birdwatchers visit the Hayle estuary each year.

The tidal flood barrier protects about 20 houses in the village of St Erth, a sewage treatment works and 85 hectares of farmland from tidal flooding.

There have been two breaches of the flood banks along the river since 1997, but due to quick intervention by the Agency's emergency workforce neither failure caused significant damage.

The four wooden tidal flaps on the downstream face of the causeway were in need of almost constant repair and allowed salt water into the River Hayle. The Agency therefore decided it was necessary to replace the tidal flaps.

Detailed history of The Causeway

Prior to construction of a causeway across the River Hayle, the Hayle estuary presented a serious obstacle to travellers in West Cornwall; all traffic from Hayle to Penzance and St Ives had to make a lengthy detour via St Erth Bridge. The river could only be crossed at this point at low tide, by going over the sands and fording the river; records show that many people were caught by the incoming tide and drowned.

The growth of the mining trade during the late 18th century made the inadequacy of the existing roads increasingly apparent.

Proposals for a causeway were made as early as 1798, but construction began soon after an Act of Parliament dated 23 March 1825 and the official opening took place on 26 March 1826. It is believed that the original causeway was built mainly from granular fill material and is faced with a cemented granite block wall. A granite bridge with five arched culverts allowed the River Hayle through the causeway.

In 1975 the causeway was widened to accommodate a dual carriageway, and one of the original five culverts blocked.

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The Scheme

Due to the site's sensitivity, numerous conservation and public bodies were consulted about the scheme, including English Nature, the Cornwall Wildlife Trust and Cornwall County Archaeologist.

The £360,000 scheme to provide the new barrier upstream of the causeway was approved by the South West Regional Flood Defence Committee and grant-aided by the Department for Environment, Food and Rural Affairs. Planning permission was given by Penwith District Council and the Agency's emergency workforce began work on site in January 2001. Following delays due to foot and mouth disease precautions, the construction was completed in July 2001.

During
construction of
the barrier



▲ The emergency workforce used local stone wherever possible

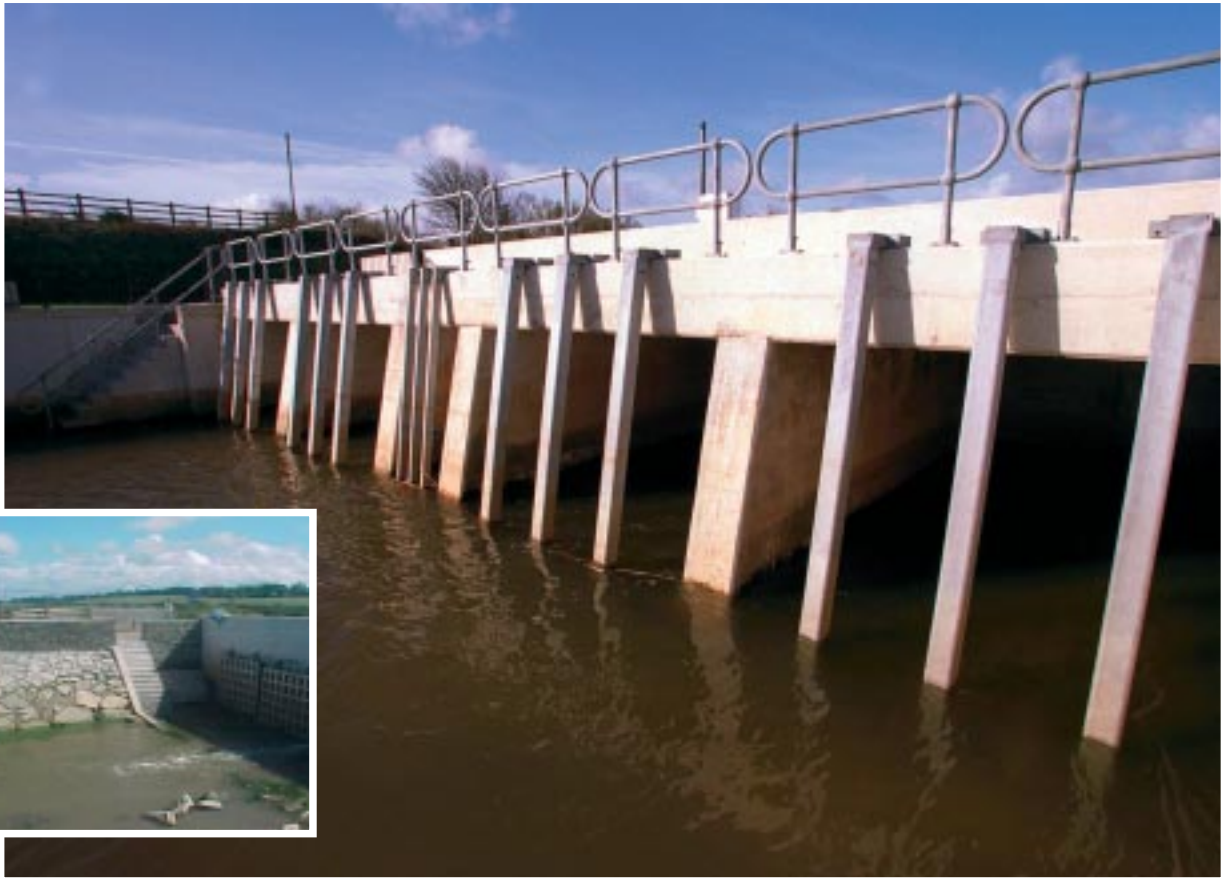


▲ Nearing completion



▲ The four new tidal flaps

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The barrier

The scheme included:

- Four new tidal flap gates supported by a new structure 15 metres upstream of the causeway. The flaps were made from stainless steel and each weigh around one tonne. Views of the causeway were maintained, because of its listed building status.
- Better access for Agency staff to perform maintenance work. There is vehicular access across the river, access into the river, a parking area and lighting.
- A screen to prevent debris blocking the culvert.
- Equipment to monitor river levels, to check operation of the gates and to be used by the Agency's flood warning service.

▲ *Inset - Easy access to the barrier*

Above - The tidal barrier, with screen to collect debris

- Fish pass to allow fish - sea trout and eels - to travel through even when the flaps are in use. Eels are an important food source for other species upstream of the causeway.
- Otter passage over the barrier - designed to minimise the potential for otter road casualties at this location. The old flap gates were difficult for otters to pass over and otters crossed the main road in preference. Otters are now able to travel under the road and over the new tidal barrier.

The tidal barrier was approved by the South West Regional Flood Defence Committee and funded by the Environment Agency and the Department for Environment, Food and Rural Affairs.

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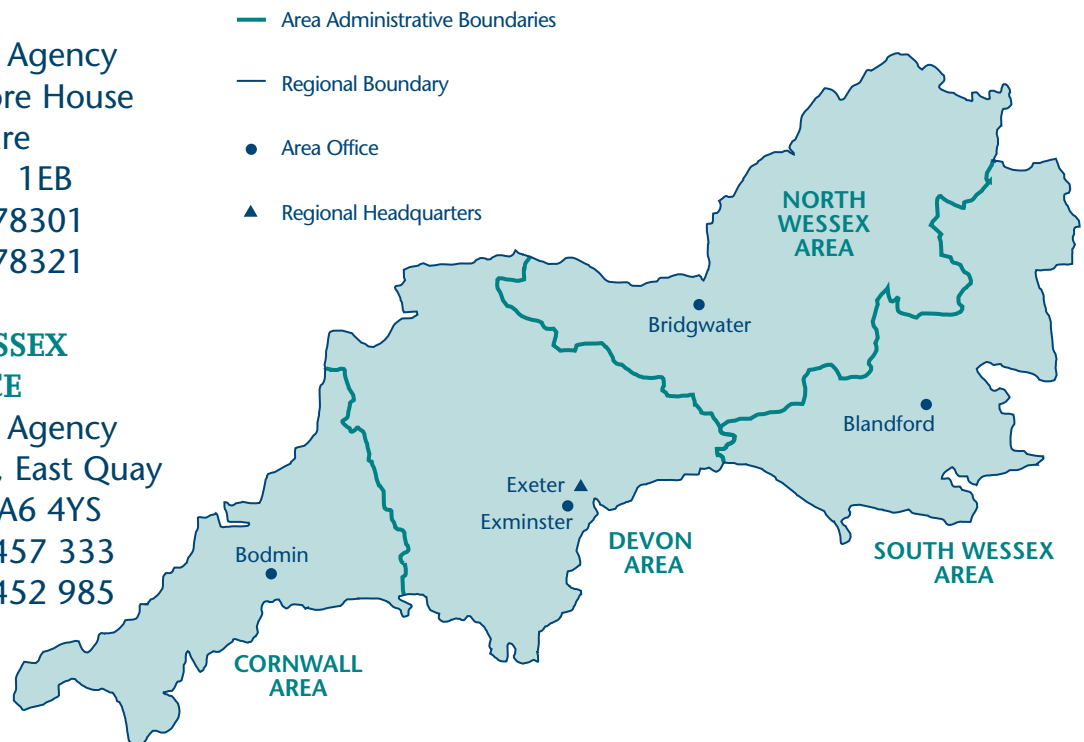
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