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# *Protecting Perranporth*

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# PERRANPORTH

## PROTECTING PERRANPORTH

The seaside resort of Perranporth, on the north Cornwall coast between St Agnes and Newquay, has a long history of flooding.

The town lies at the end of Perrancoombe Stream, where the stream flows onto Perran Beach and out to sea. On the beach it is joined by the Bolingey Stream that flows down through Bolingey to the east of Perranporth. A thriving summer tourist industry centres on the beach.

The Perrancoombe Stream has its source adjacent to Mithian Church and flows north through a mainly rural steep-sided valley to Perranporth. Perrancoombe is an outlying residential area of Perranporth, about half a mile upstream of the beach.



# HISTORY OF FLOODING

Perranporth has regularly experienced flooding from the Perrancoombe Stream and the Environment Agency recognised the need for a flood defence scheme. To reduce the risk of flooding from the Bolingey Stream improvements were carried out in Bolingey and Perranporth in the early 1980s.

Serious property flooding from the Perrancoombe Stream occurred most recently in October 1988, December 1993 and January 1994, with up to 90 properties affected.

The floods of October 1988 were considered to be the worst in living memory. Properties were flooded for between two and five hours, but, for example, the Tywarnhayle Hotel in Tywarnhayle Square suffered around 12 hours of flooding.

There are many abandoned mine shafts and adits in the area around Perranporth and historic realignment of the Perrancoombe Stream may have contributed to flooding problems.

The course of the stream was moved to its present day position when the local tin mining industry was flourishing in the 19th century. However properties alongside the Perrancoombe Stream flooded quickly due to lack of channel capacity.

There was also regular localised surface water flooding in a low-lying part of the town centre to the west of the stream near the Green Parrot public house. This area lies on the original course of the Perrancoombe Stream before it was diverted because of mining activities.

There were no existing flood defences along the stream, except for a raised river wall along Tywarnhayle Square. This wall was raised by Carrick District Council to help reduce overtopping of the left bank of the river.



▲ October 1988



◀ Channel improvements where the Perrancoombe Stream outfalls onto the beach at the promenade

## Scheme options

The Environment Agency appointed Halcrow consulting engineers to investigate a flood defence scheme for the Perrancoombe Stream, and they drew up a number of scheme options.

In April 1995 a questionnaire was hand-delivered to all properties in the flooded area. The return was high and information was collected on the dates, duration and levels of flooding. The key flood defence options were presented to the public at an exhibition in Perranporth in July 1995.

Engineers considered the following options:

- A bypass pipeline with channel re-profiling;
- Bypass pipeline;
- Bypass pipeline with a single flood detention reservoir (Water can be retained in the reservoir and safely let downstream when floodwaters have subsided.);
- Bypass pipeline with two flood detention reservoirs;
- Multiple flood detention reservoirs;
- Canalisation - channel widening and regrading, and raising of defences along both banks of the stream, from one end to the other;
- Flood relief channel;
- Catchment transfer.



Following the public exhibition, various changes were made to the options and the preferred option - the **bypass pipeline with channel re-profiling** - chosen.



## Building the flood relief culvert through the town's boating lake



▲ The culvert under construction



▲ The boat lake drained, enabling the culvert to be built

▼ A new road bridge built at the upstream extent of the Perrancoombe Stream



◀ Culvert construction through the town centre



▲ The completed project - the culvert lies beneath the grass adjacent to the lake

## The chosen scheme

The main elements of the scheme include:

- The construction of a 650 metre long culvert from the Bolenna Lane area to the Promenade at Perranporth Beach. This new bypass culvert only operates in times of flood. The existing channel between Bolenna Lane and Tywarnhayle Square is retained and continues to convey all but flood flows.
- Above the inlet to the culvert the left bank of the channel has been widened for a length of 140 metres and re-profiled to form a split-level channel. Existing block work on the right bank was strengthened.
- Below the culvert outfall the stream was widened for 75 metres with improvements to the existing river wall. The two car park bridges were replaced and emergency access to the beach altered.
- Work in the town centre to alleviate the surface water flooding problem.

Work began on the £2.2 million scheme in October 1997, and was completed in August 1998. Contractors were T J Brent of Bodmin.

*Beach Road - the culvert under construction* ►



▲ *Culvert construction, looking down Beach Lane towards the beach from the town centre*

▼ *Local stone was used wherever possible to build the defences*





▲ *Bolenna Fields play area - post construction*

## *Enhancing the area*

The scheme has had minimal impact on the ecology and archaeological value of the town and local recreational facilities have benefited from the work.

Materials excavated on site and surplus to requirements were used to level and landscape the town's football field in Bolenna Park and the children's play-area was relocated and improved. There was close liaison with Perranzabuloe Parish Council throughout this work.

Opening up and widening the stream channel, and tree and shrub planting have generally enhanced the area. As the construction work disrupted the town's tennis courts, several were later resurfaced and improved.

▼ *The exit from the new culvert in Beach Lane*



To reduce disruption to residents and visitors, construction work in the town centre was carried out in the winter and work in the residential areas was largely carried out in the spring.



▲ *The new culvert now lies beneath where these cars are parked in Beach Lane*

The flood defences were grant-aided by the Ministry of Agriculture, Fisheries and Food, with contributions from Cornwall County Council, Carrick District Council, Perranzabuloe Parish Council and South West Water. Remaining funds came from the Environment Agency. The scheme was approved by the Agency's South West Regional Flood Defence Committee.

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