

**Undefended coastline**  
 22m of coastline is estimated to have been lost in front of Victoria Hotel since 1895. Eroding now at an average rate of 0.3m per year (according to the Shoreline Management Plan). But this is estimated to increase with global warming by a factor of 2.5; erosion rates could rise to 0.75m per year by the end of the century.

**Direction of prevailing waves, with a fetch of 1,500 miles.**  
 These waves can be incredibly powerful during a storm leading to significant erosion, and sediment is being transported south, so the beaches are shrinking reducing the natural defence offered by sand to the village.

**2001 Rip-rap North of old village**  
 Large boulders brought over from Norwegian quarries, which absorb wave energy rather than deflecting it.

**2000 Rip-rap and concrete wall North of old village**  
 After large land slips in the 1990's, this series of defences was built at a cost of £2 million and included the seawall, backfilling the slope with gravel, regrading the slope behind and rip-rap. It was funded by MAFF (now DEFRA) & Scarborough Borough Council.

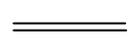
Rock exposure (part of Geological SSSI)

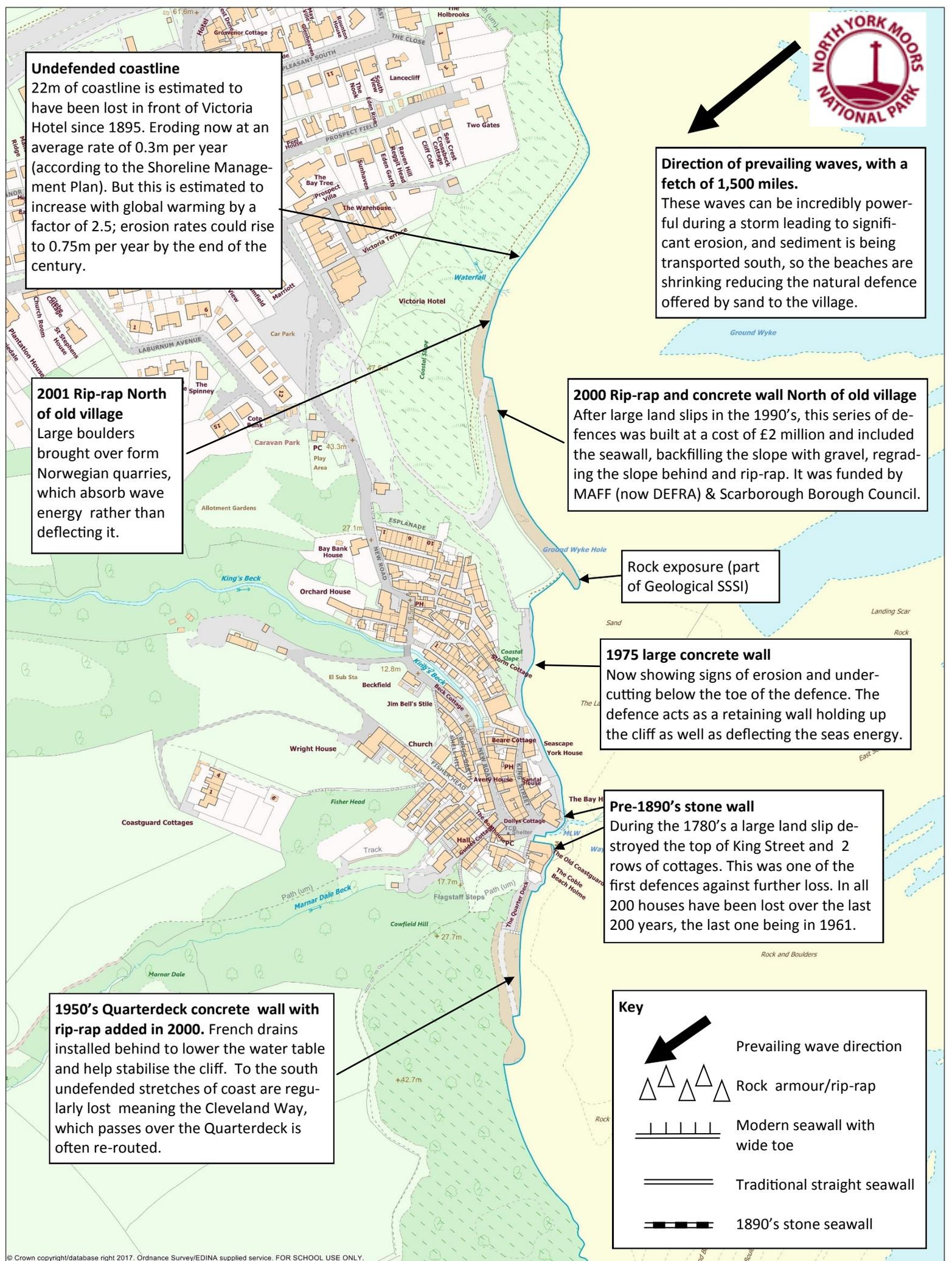
**1975 large concrete wall**  
 Now showing signs of erosion and undercutting below the toe of the defence. The defence acts as a retaining wall holding up the cliff as well as deflecting the seas energy.

**Pre-1890's stone wall**  
 During the 1780's a large land slip destroyed the top of King Street and 2 rows of cottages. This was one of the first defences against further loss. In all 200 houses have been lost over the last 200 years, the last one being in 1961.

**1950's Quarterdeck concrete wall with rip-rap added in 2000.** French drains installed behind to lower the water table and help stabilise the cliff. To the south undefended stretches of coast are regularly lost meaning the Cleveland Way, which passes over the Quarterdeck is often re-routed.

**Key**

-  Prevailing wave direction
-  Rock armour/rip-rap
-  Modern seawall with wide toe
-  Traditional straight seawall
-  1890's stone seawall



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