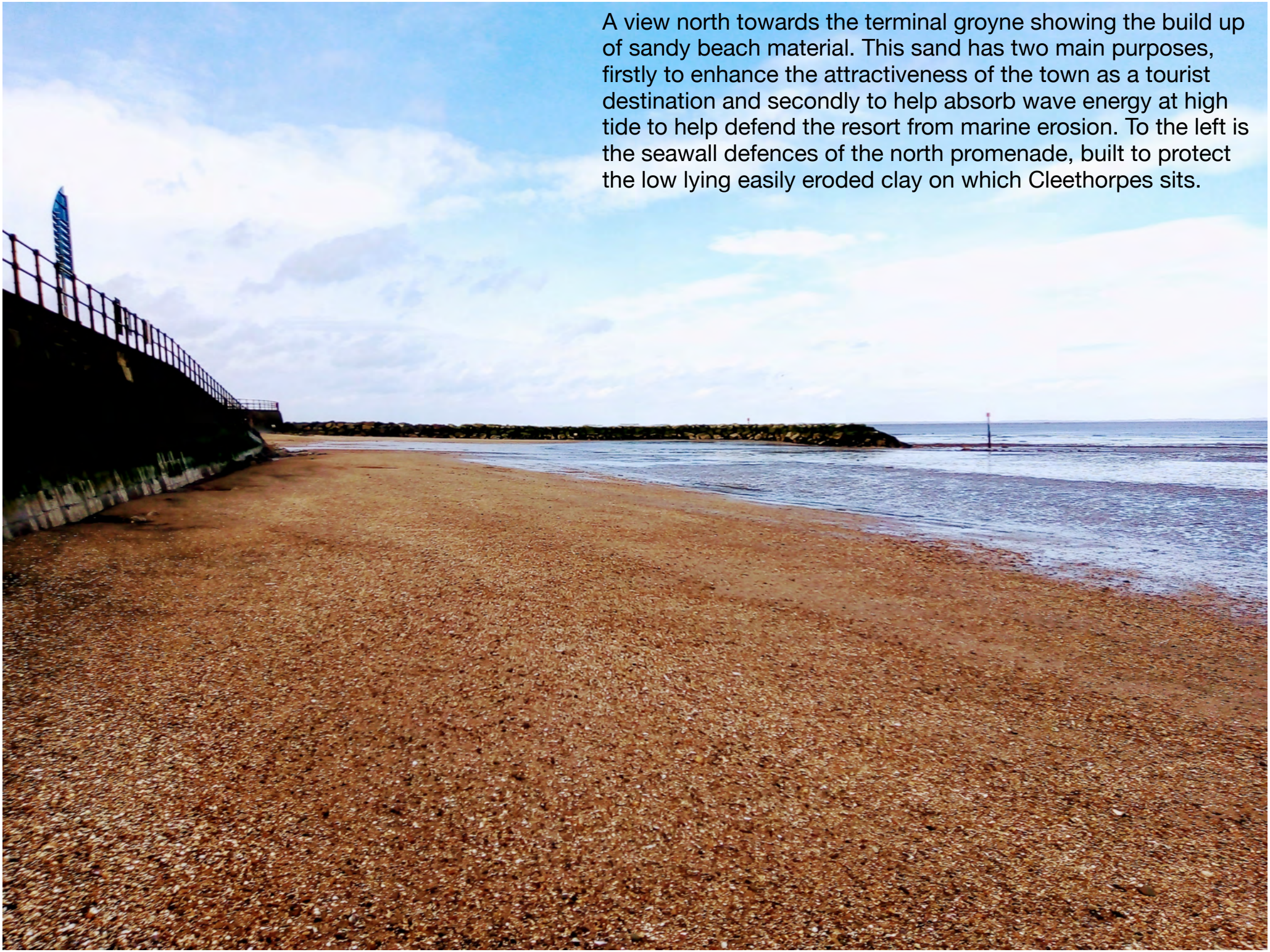
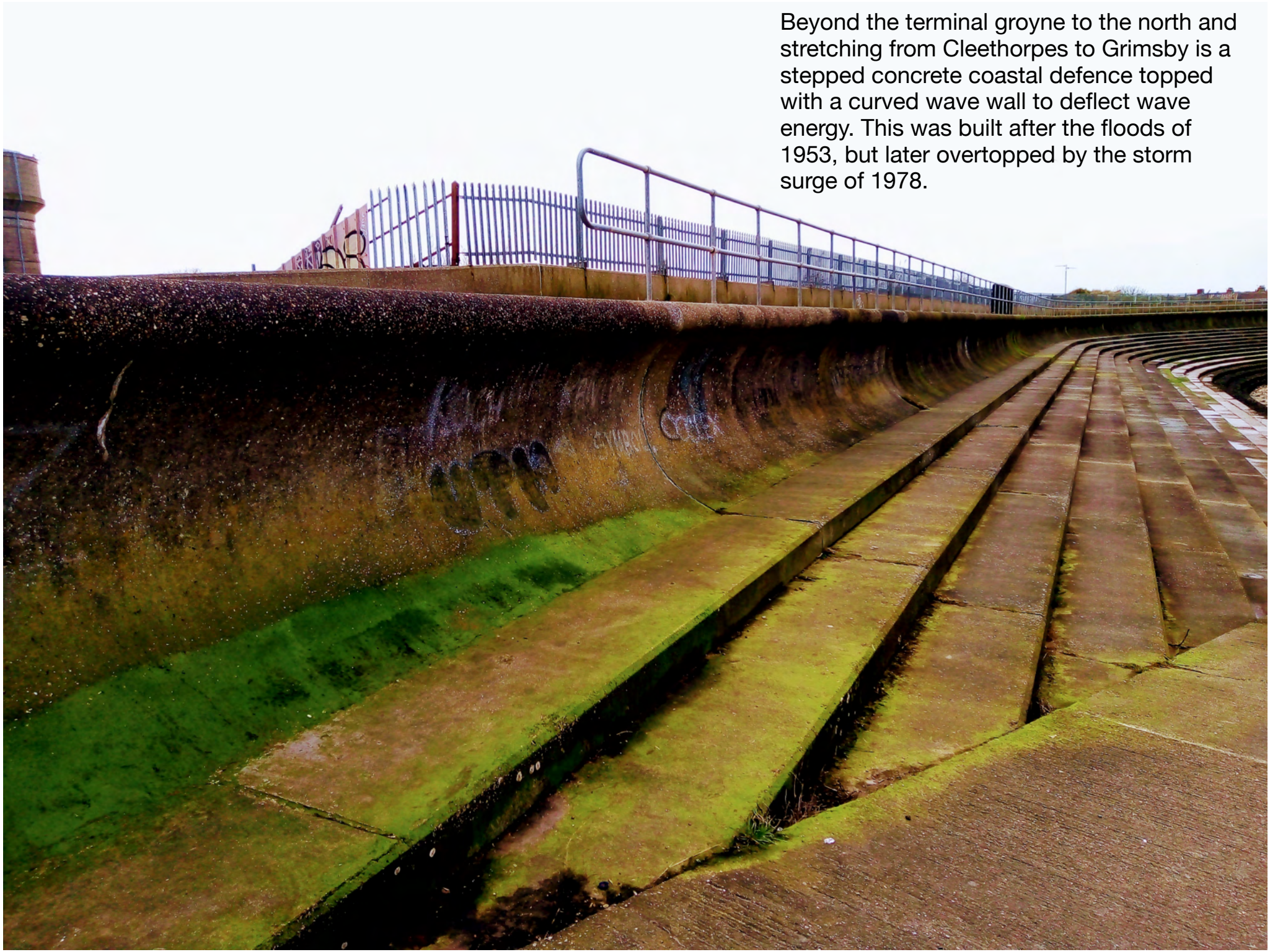
The renewed terminal groyne at the north end of Cleethorpes, a key element in the coastal defence of the town. This fish tailed stone groyne is designed to prevent tidal scour of the sea wall defences, push tidal streams offshore and prevent loss of sand by longshore drift to the north. In this image longshore drift is predominantly from right to left, south to north, and you can see the build up of sand to the right / south.

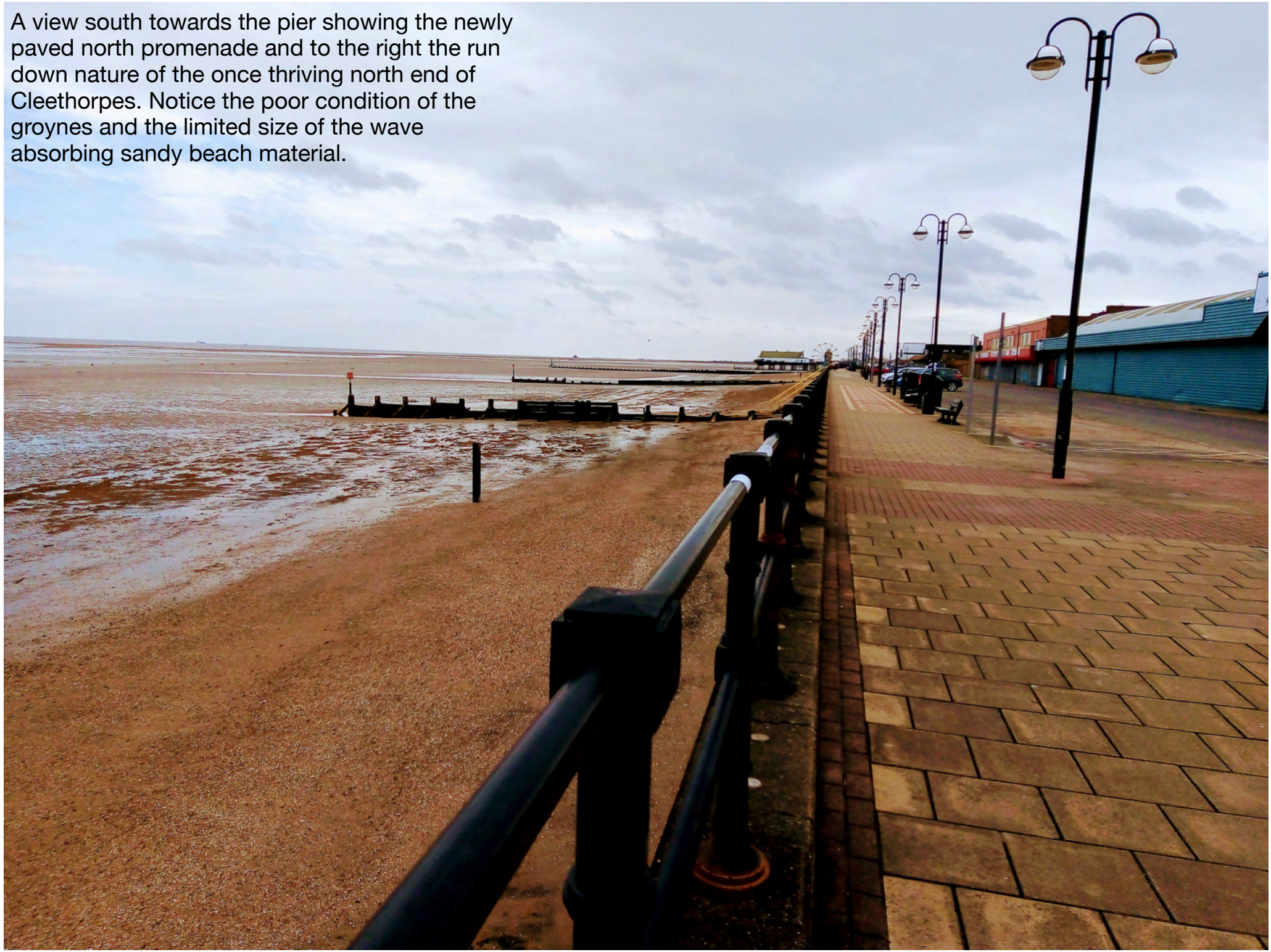


A view north towards the terminal groyne showing the build up of sandy beach material. This sand has two main purposes, firstly to enhance the attractiveness of the town as a tourist destination and secondly to help absorb wave energy at high tide to help defend the resort from marine erosion. To the left is the seawall defences of the north promenade, built to protect the low lying easily eroded clay on which Cleethorpes sits.

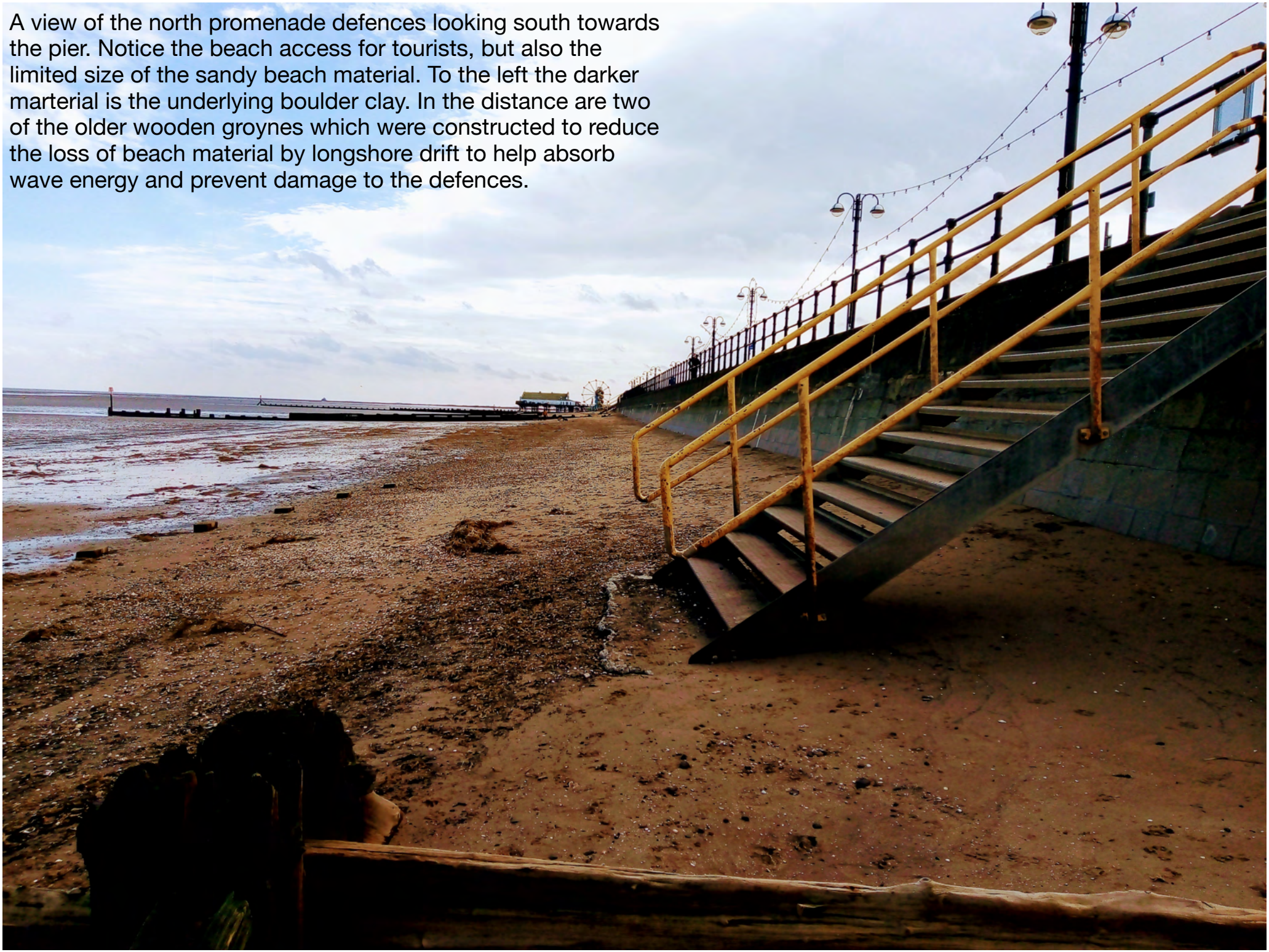


Beyond the terminal groyne to the north and stretching from Cleethorpes to Grimsby is a stepped concrete coastal defence topped with a curved wave wall to deflect wave energy. This was built after the floods of 1953, but later overtopped by the storm surge of 1978.

Here we see the curve of the wave wall that tops the formidable stepped concrete defence. To the left is an extra metre of defence added after the flood of 1978 which has so far defended the north of the town from further flooding.

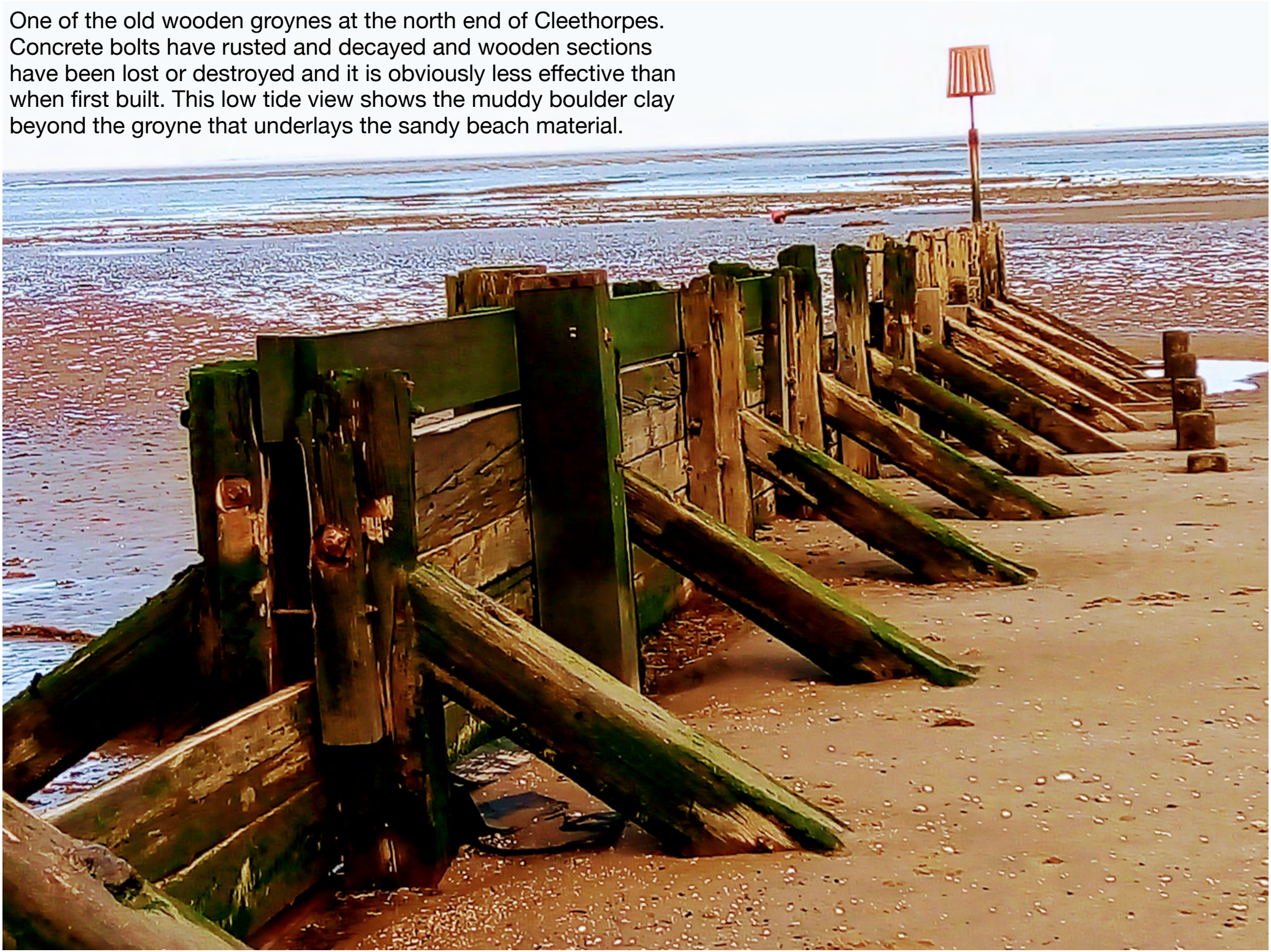


A view south towards the pier showing the newly paved north promenade and to the right the run down nature of the once thriving north end of Cleethorpes. Notice the poor condition of the groynes and the limited size of the wave absorbing sandy beach material.



A view of the north promenade defences looking south towards the pier. Notice the beach access for tourists, but also the limited size of the sandy beach material. To the left the darker marterial is the underlying boulder clay. In the distance are two of the older wooden groynes which were constructed to reduce the loss of beach material by longshore drift to help absorb wave energy and prevent damage to the defences.

One of the old wooden groynes at the north end of Cleethorpes. Concrete bolts have rusted and decayed and wooden sections have been lost or destroyed and it is obviously less effective than when first built. This low tide view shows the muddy boulder clay beyond the groyne that underlays the sandy beach material.



A destroyed groyne in front of the sea wall built in the late 19th / early 20th century. The sea wall is well beyond its design life and shows signs of damage and repair. The new terminal groyne should help build up beach material to help protect the wall.