

When Geology Drives Innovation: The Channel Tunnel

Opened in 1994, the Channel Tunnel links France and Great Britain over a distance of 38 km beneath the sea floor - a technical feat made possible thanks to in-depth knowledge of the rocks below the Channel.

SCANNING UNDERNEATH THE STRAIT

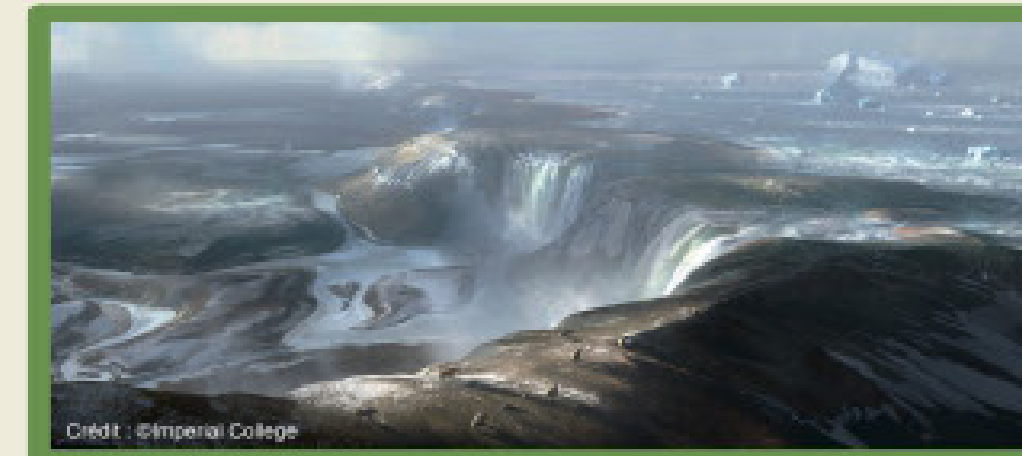
In the 19th century, geologists studied the seabed of the Strait using core samples, followed in the 20th century by offshore drilling from oil platforms and seismic reflection techniques. This work helped to find the right path for the tunnel.

Though primarily composed of chalk, the rocks under the Channel vary in clay content and permeability (how much water passes through them). To ensure the tunnel's long-term stability, engineers chose to dig through a thick, continuous, and impermeable layer of blue chalk.

A SHARED PAST BETWEEN TWO CLIFFS

450,000 years ago, before the Strait of Dover opened, chalk hills connected France and England. Today, the white cliffs of Dover and Cap Blanc-Nez, both made of chalk, are remnants of this geological connection.

It took two centuries of detailed study for geologists to confirm that this similarity was no coincidence: the rocks beneath the Strait have the same chalk composition as the surrounding cliffs.



Credit: Imperial College

Two Nations, Two TBMs, One Tunnel

Six tunnel boring machines — three French, three British — dug toward each other beneath the Channel. Their symbolic meeting on December 1st, 1990, marked the completion of the undersea connection.



MILESTONES OF A HISTORIC TUNNEL

- 1802 : First tunnel proposal by Albert Mathieu-Favier
- 1880 : Initial exploratory drilling
- 1886 : Official agreement signed
- 1988 : Start of construction
- 1990 : TBM breakthrough
- 1994 : Official inauguration



THE FOND PIGNON BASIN: AN ARTIFICIAL LAKE THAT TELLS A STORY

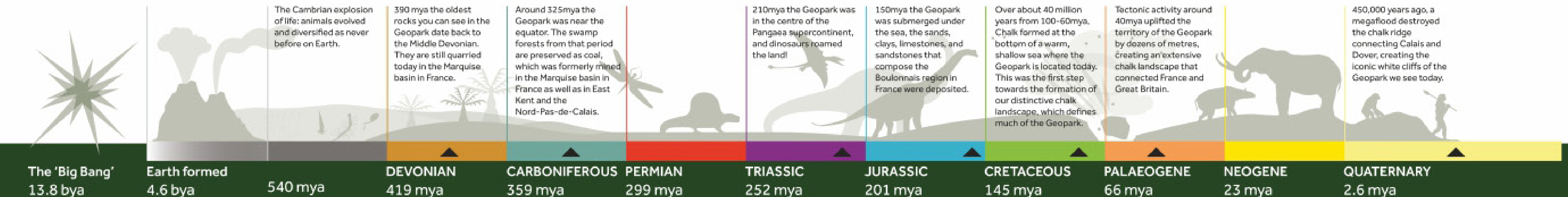
In front of you lies the artificial lake of the Fond Pignon site, created between 1988 and 1994 to receive the spoil extracted during the tunnel's construction.

Today, this body of water stands as a lasting reminder of the scale of this 20th-century engineering achievement.



Credit photo : © Maxime Bodhuin

This is a Cross-Channel Geosite



*mya = million years ago



The Channel Tunnel is a remarkable geological site, recognised as a "geosite" within the Cross-Channel Geopark Transmanche. This initiative is led by the Parc naturel régional des Caps et Marais d'Opale in France and the Kent Downs National Landscape in England. It aims to highlight and promote the geological heritage of the area as part of a future application for UNESCO Global Geopark status.

This project is co-financed by the Green Fund



Ce projet est co-financé par le Fonds vert

