

Flooding of Copenhagen Metro, Denmark



The new Metro under construction in Copenhagen, Denmark, is a billion Euro infra-structure project with COWI having the overall responsibility for the design, procurement and supervision. The tunnels and other permanent structures may be affected by flooding from extreme high sea levels during the 100 year design life. A study of the risks of flooding and measures to protect the Metro was prepared and included in the design basis for the project.

Assessment of the resulting flooding risks over the coming century depends on the probabilities of extreme sea levels and possibilities of flooding from detailed knowledge of levels of present streets, ground, dykes, canals, etc. as well as future projects, and on estimates of costs of damage and associated expenses due to flooding.

The forecast of extreme sea levels was composed of observed statistics of extreme high sea levels in relation to the mean sea level, the rising mean sea level, the rising ground level and a possible rise in high sea levels. The extreme sea level also included the global sea level rise.

The design flood with a probability of $2.2 \cdot 10^{-4}$ will result in flooding of large residential and industrial areas of Copenhagen as well as various main road and rail transportation arteries. An example of the area to be flooded by a flood from South is depicted in the map. Flood protection measures for the Metro have been included in the design.

Period period: 1995 - date

Client: Ørestadsselskabet

Financing: Ørestadsselskabet