

Denmark



Name: Danish Tunnelling Society

Type of Structure: non-profit, open association

Number of Members: 34 corporate members, 230 individual participants

ASSOCIATION ACTIVITIES DURING 2021 AND TO DATE

A large part of 2021 was still affected by the COVID-10 pandemic. However, since the re-opening of the Danish Society in the summer of 2021, the first member meetings since 2019 were successfully held.

Through 2021 the Danish Tunnelling Society has been working hard on

organizing the World Tunnel Congress 2022 in Copenhagen. These activities are progressing according to plan, and we look forward to inviting the entire tunnelling community to Copenhagen in September 2022.

CURRENT TUNNELLING ACTIVITIES The Fehmarnbelt Fixed Link

An 18km long immersed tunnel connecting

the island of Fehmarn in Germany with the island of Lolland in Denmark. The tunnel will comprise a four-lane motorway and dual track railway.

The fixed link will close a gap in the rail network between Scandinavia and central Europe and will be supported by the EU as one of the Community's prioritised railway corridors in Europe.

Construction is ongoing on the main civil works contracts, where reclamation works and erection of casting facilities for the immersed tunnel elements in ongoing on the Danish coast. The MEP contract was tendered in 2021.

The Nordhavn Tunnel

A 1.4km road tunnel connecting the existing Nordhavnsvej tunnel with the urban development area in Nordhavn

(Northern Harbour), Copenhagen. Once finished the road will form a 3km tunnel connection with the Elsinore motorway and the road network north of Copenhagen. The project will connect with a new Ring Road going east of Copenhagen. The Nordhavn Tunnel will be constructed as a cut & cover structure through an existing leisure boat harbour. The harbour area will be backfilled to construct a temporary dam, through which the tunnel will be excavated and cast. After construction of the tunnel the harbour will be re-established. In 2021 the tender was sent to the market.

Copenhagen Metro Extension Southern Harbour

Extension of the Copenhagen Metro line M4 by 8km TBM tunnels and five underground stations to bring the southern harbour residential area into the Copenhagen metro network. Construction works started in 2018 and the line is due to open in 2024. Two EBPMs completed tunnelling in 2021.

Strandboulevarden Storm Water Tunnel

In Northern Copenhagen the Strandboulevarden Storm Water Tunnel consisting of 900m of 2m diameter TBM bored tunnel and 220m of 2.5m diameter TBM tunnel including four shafts was completed in 2021.

The Kalvebod Brygge Storm Water Tunnel

A 1.5km long pipe jacked tunnel with ID of 2-3m and three shafts, one includes a outlet pump structure. The construction works started in 2021 and are expected to be completed by 2027. The tunnels will cross under existing railway tracks and in very close proximity to the Metro Circle line.

Underground development of the Copenhagen South Station

Includes a concourse area connecting the metro, regional trains station, S-train station and the Øresund railway.

FUTURE TUNNELLING ACTIVITIES

Tunnelling activity in the coming years will increase with many new projects coming up. Some of the major projects that will start construction within the next 5 years are:

Svanemøllen Storm Water Tunnel

Consisting of 10km bored tunnels, of which 2.5km is a segmental lined tunnel with i.d. of 4.9m and the remaining 7.5km is pipe jacked tunnels with 1.6 – 3.2m i.d. The shafts are circular and vary in



The Fehmarnbelt Fixed Link

diameter from 15m to 20m and from 15m to 30m depth. The Environmental Impact Assessment and design is under preparation and the project is planned to be tendered for construction in 2023. Construction cost is DKK2bn.

The Marselis Boulevard tunnel

A project connecting the harbour to the major road network. The tunnel is planned as a cut & cover structure. An update of the EIA study that was performed in 2010 will be tendered in 2022. Construction work is planned for 2025 -2 029 with a total cost of DKK2.7bn.

A study for a new eastern by-pass in Copenhagen

Designed to close the existing gap and reduce traffic in the City Centre, was completed in 2020. Two corridors have been investigated covering nine different alignments. Cut & cover tunnels, TBM bored tunnels and immersed tunnels have been investigated. The recommended alignment will run through a tunnel from Nordhavn via Lynetteholmen and Refshaleøen and continue as an immersed tunnel along the east coast of Amager Island before joining the motorway network by the airport. The road will be designed for four lanes and a design speed of 80km/hour. The construction cost is estimated to be between €2.6 and €4.1bn (2019) depending on which alignment is selected.

A 3rd connection over Limfjord in Northern Demark

A 23km new road including an immersed tunnel to the island of Egholm has been added to the government's infrastructure investment plan. Construction cost is estimated at €1bn (2019).

H-H Link

Further studies for a road and a rail tunnel between the Danish city Helsingør and the Swedish city of Helsingborg have been performed. Separate alignments are being investigated for the road and rail connection. Both connections include a subsea tunnel below the Øresund sea connecting Helsingborg in Sweden with Helsingør in Denmark.

Copenhagen-Malmö Metrolink

An 18km subsea metro line connecting Malmö in Sweden with Copenhagen in Denmark. The connection will provide a second link between the two cities and reduce travel time from 40 minutes to 20 minutes with departures every two minutes. This will free capacity on the Øresund Railway connection which will be required when the Femern Belt link is put into operation. The fourth phase of the feasibility study was completed in spring 2021.

Copenhagen Metro extension line M5

A study of new metro lines connecting to Lynetteholm Island, a proposed new development area for new housing, was issued in 2020. Three different alignments are being proposed comprising between nine and 11 stations. Construction cost is estimate at €3bn (2019).

The Kattegat Fixed Link

A project connecting Zealand with Jutland passing the island of Samsø for rail and road - several alignments combining bridges, bored and immersed tunnels are being considered. The feasibility report will be published by the Danish Road Administration in 2022.