

Finland



Name: Finnish Tunnelling Association - MTR - FTA
Type of Structure: non-profit, independent association
Founded: 1974
Number of Members: 111 Individual Associate Members, 27 Corporate Affiliate Members
Incomes: Annual fees and conferences as a main source of income

ASSOCIATION ACTIVITIES DURING 2018 AND TO DATE

- Seminar of Urban Development Projects 10.4.2018
- Nordic Grouting Symposium 2019 in Finland: organizing committee work
- 3 Scholarships for students active in studies, working life as well as position of trust
- Participating in the work of FISE Qualification of Professionals in Building, HVAC and Real Estate Sector in Finland
- In co-operation with the Finnish Association of Civil Engineers RIL: Applied and received the host of ACUUS 2020 - Conference to Finland. Agreement under negotiation.

CURRENT TUNNELLING ACTIVITIES

Blominmäki Underground wastewater treatment plant (under construction):

- The treatment plant will process the wastewater of 400,000 residents (2020)
- By 2040: 150,000m³ of wastewater will flow through the new treatment plant daily
- More info: <https://www.youtube.com/watch?v=D9PwTxA4rQ0>

Helsinki Metro Western Extension to Espoo (under construction):

- Helsinki metro will be extended to the west in two phases: 8 + 5 new stations.
- The first phase was ready in autumn 2017.
- The metro will operate on a rail line of

- 21km, all underground in two parallel tunnels.
- In addition to the stations, a total of 23 shafts will be built for pressure equalization, ventilation and smoke extraction. The shafts will also be used as emergency exits.
- More info: <https://www.lansimetro.fi/en/home/>

The Helsinki Olympic Stadium (under construction):

- Modernization and renewal project 2016 - 2019
- Total excavation volume 145 000m³ including tunnelling
- More info: www.stadion.fi

Töölö Parking Facility:

- Underground parking facility in Helsinki City Centre for 800 cars
- Will be ready 2019

Waste Water Treatment Plant Mikkeli:

- The Waste Water Treatment Plant in Mikkeli is responsible for producing drinking water and treating wastewater for about 55,000 inhabitants in the city and its surrounding areas.
- Expected to begin operating in 2020.

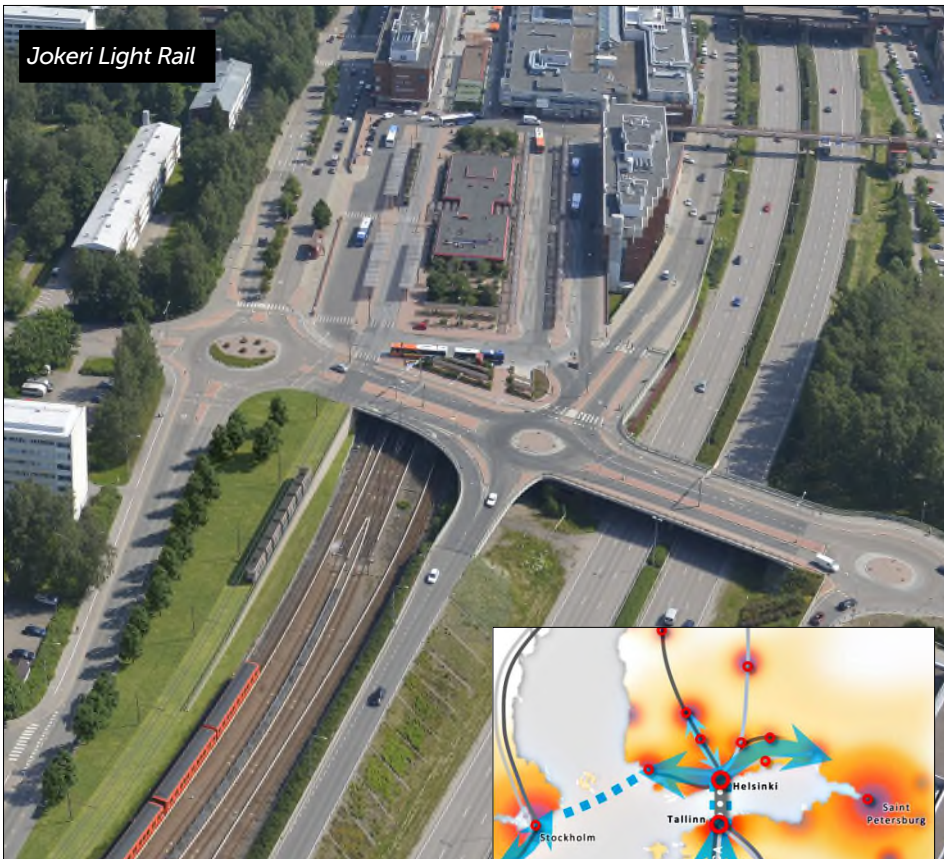
FUTURE TUNNELLING ACTIVITIES

Jokeri Light Rail (Planning):

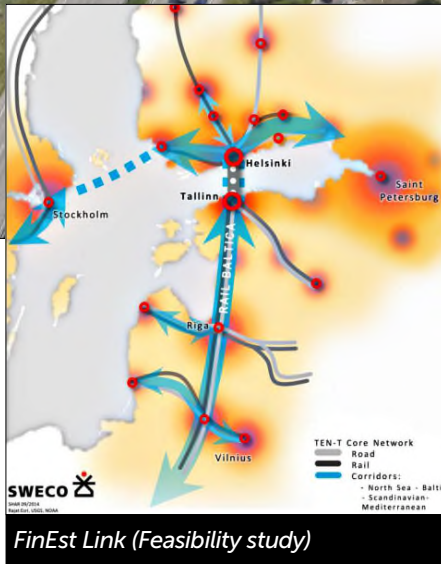
- One of the key projects for orbital cross-region public transport in the capital area
- The City Councils in Helsinki and Espoo approved the construction of the Jokeri Light Rail in June 2016. The aim is to start construction work on the line in 2019.
- The planned length of the line is approximately 25km (15.5 miles), the line will have 33 stops.
- More info: <https://raidejokeri.info/in-english/>



Helsinki Metro Western



Jokeri Light Rail



FinEst Link (Feasibility study)

City Rail Loop Pissarata (Waiting for the decision)

- The City Rail Loop is a planned urban railway line for commuter trains under Helsinki city centre.
- The city plan has been approved but the decision on the construction has not yet been verified.
- More info: <https://www.liikennevirasto.fi/pisara#.WgrnfU32SM8>

FinEst Link (Feasibility study):

- Information, statistics and research about the cities of Helsinki and Tallinn and the increasing mobility between them.
- A proposal to build a 85km under-sea railway tunnel linking Finland and Estonia
- Construction 2035-2045?
- More info: <http://www.finestlink.fi/en/>

Esplanadi waste water tunnel (Planning, waiting for decision on construction)

- Improve the waste water service in the centre of Helsinki
- Length 1km

Underground Parking hall in Katajanokka (Planning, waiting for decision on construction)

- Excavation volume of 90 000m³
- 500 car slots
- €25M
- Construction 2020-2021

Garden Helsinki (Planning, waiting for decision on construction)

- Event arena providing sports and culture events, shopping facilities, apartments
- Private funding
- Excavation volume of 800 000m³
- Construction 2020/2021
- More info: <http://www.gardenhelsinki.fi/en/>

Traffic tunnel in Sörnäinen (Planning, waiting for decision on construction)

- Two parallel tunnels
- Length of 800m
- Excavation volume of 270 000m³
- €160M
- Construction 2021-2025?

Underground Distributor Street Project (Planning, waiting for decision on construction)

- Located in the central city
- Excavation volume of 2 000 000m³
- Length of 4.2km
- Construction: 2027 - 2032?

STATISTICS

Underground (UG) Spaces in Helsinki:

- Area 2 073 725m² = 2,074km²
- Volume 12 657 457m³
 - UG spaces altogether 336 pieces
 - Helsinki's surface area 215,12km²
 - 1m² UG space for each 100m² surface area i.e. 1 %
- Tunnels altogether 293km
 - 194km of technical tunnels
 - 34km of traffic tunnels
 - 30km of tunnels with secondary purpose as emergency shelters
 - 14km of parking caverns
 - 22km of tunnels for other purposes.

EDUCATION ON TUNNELLING IN THE COUNTRY

Aalto University

- GEO-E1010 Engineering Geology
- GEO-E1040 Rock Excavation
- GEO-E2030 Rock Mechanics
- GEO-E2040 Rock Construction
- GEO-E2060 Seminar in Geoen지니어ing
- GEO-E2090 Project Course in Geoen지니어ing

Tampere University

- RAK-22410 Rock Engineering
- RAK-23410 Advanced Course in Bedrock Engineering

University of Oulu

- Rock Mechanics
- Mining Technology
- Rock Blasting
- Applied Rock Mechanics
- Rock Dynamic and Applications

Lapland University of Applied Sciences + Kajaani University of Applied Sciences

- Rock Excavation and Mining Technology
- Rock Engineering

Metropolia University of Applied Sciences

- Soil and Rock Construction

Saimaa University of Applied Sciences

- Rock Excavation and Safety Regulations for Blasting Works
- Underground Excavation and Rock Reinforcement Methods
- Rock Mechanics

Turku University of Applied Sciences

- Rock Engineering