



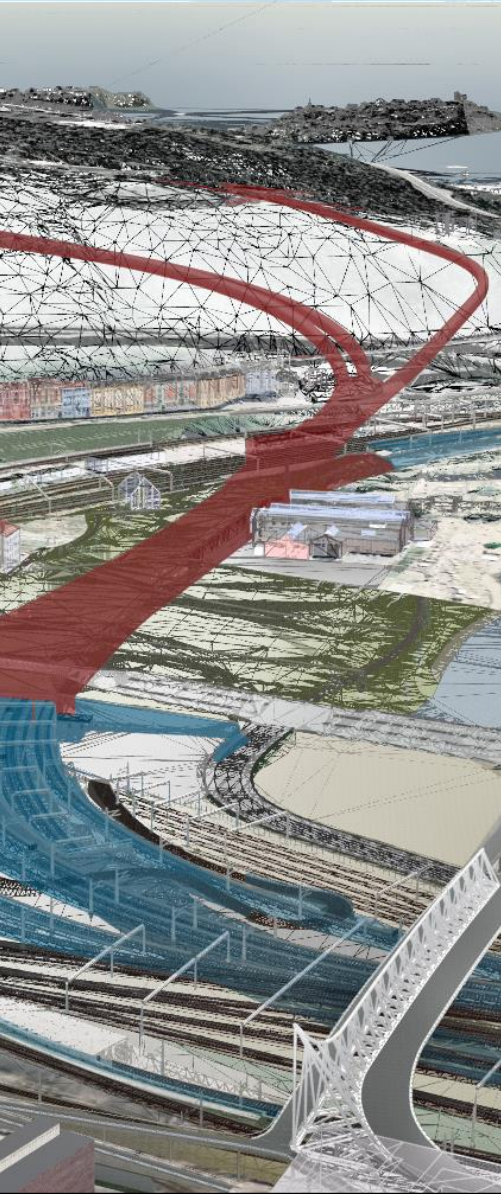
Jernbaneverket

# The Follo Line Project

**Traction Power Supply, 16 2/3 Hz  
and  
Infrastructure Power Supply, 50 Hz**

**Project Scope  
and  
Contract content**

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# Facts and scope

- The largest on-shore project in Norway
- New double-track railway between Oslo Central Station and the public transport centre Ski
- The whole Follo Line project will comprise around 64 km of tracks, while the new double track Oslo-Ski line will be 2 x 22 km long.
- Extensive works at Oslo Central Station
- Construction of a new station at Ski
- The longest railway tunnel in Norway - approximately 20 km
- Designed for speed up to 250 km/h





# Railway Systems

- Permanent Way
- Traction Power Supply (30 kV, 16 2/3 Hz)
- Overhead Contact Line (15 kV) (OCL/OCR)
- Signalling
- Infrastructure Power Supply  
(22 kV and 400 V, 50 Hz)
- Low Voltage Systems (Infrastructure Loads)  
(400 V, 50 Hz)
- Telecom



# Traction Power Supply, 16 2/3 Hz

- 30 kV cables Oslo - Ski
- Feeding substations at Oslo S and Ski
- Substation (load only) at Åsland
- Autotransformers in substations, 5 MVA, 30/15 kV  
8 x 5 MVA in OsloS, Åsland and Ski
- Indoor switchgear, circuit breakers
- Remote control, operation centre at Oslo C
- Extension of 16 2/3 Hz power supply  
(50 to 16 2/3 Hz converter stations)  
is not part of the scope.  
However, some preparations for a new Åsland  
Converter station will be made.

# Infrastructure Power Supply, 50 Hz

- 22 kV cable (3 x 1 x 240 Al) Oslo S - Ski
- Utilities will feed cables in Oslo S, Åsland, Vevelstad and Holstad Substations
- Approx. 20 Distribution Substations (22/0.4 kV) with 500, 200 or 50 kVA transformers
- Indoor switchgear, 22 kV circuit breakers in feeding substations, load disconnector in Distrib. Substations
- UPS-units connected to 400 V switchboards
- Remote Control, operation center in Oslo S



# Contract Strategy

- **The Follo Line Project will have EPC contracts (Engineering – Procurement – Construction) including Substructure and Railway Systems.**
- **EPC Oslo S: Connection from Oslo S platforms to rock tunnel through a large concrete tunnel. 5 phases**
- **EPC TBM: Twin bore tunnels (2 x 20 km) with single track from Oslo to Ski through Ekeberg Hill.**
- **EPC Ski: New station with 3 platforms, 6 tracks connecting Follo Line tracks, Østfold Line tracks, both Western and Eastern tracks. 3 phases**



# Contract Award

- **Tender Documents were sent to Prequalified contractors during 2014.**
- **Tenders will be received 2014-Q4 / 2015-Q1**
- **Contract Award will be made 2015-Q2**
- **Engineering of Railway systems will start 2015-Q3**
- **Installation, testing and Part Handovers will take place from 2016-Q3 until 2021-Q2**
- **Opening of completed Follo Line is scheduled to 2021- Q4.**

# PreQualified Contractors

## EPC TBM:

1. Acciona Infra (Spain) – Ghella (Italy)
2. Gülermak (Turkey) – Samsung (Korea) – Pizzarotti (Italy)
3. Implenia (Norway) – Hochtief (Germany) - Dragados (Spain)
4. NCC (Norway) – Vinci (France) – Wayss&Freitag (Germany)
5. Obrascon Hauarte Lain (Spain) – SK Engineering (Korea)
6. Skanska (Norway) – Strabag (Austria)

## EPC Oslo S:

1. Veidekke (Norway)
2. Bilfinger (Germany)
3. AF Gruppen (Norway)
4. Salini (Italy)
5. Condotte (Societa' italiana per condotte d'acqua) (Italy)
6. Skanska (Norway) – Zublin (Austria)

## EPC Ski:

1. Veidekke (Norway)
2. AF Group (Norway)
3. Obrascon Hauarte Lain (Spain)
4. Condotte (Societa' italiana per condotte d'acqua) (Italy)
5. Skanska (Norway)