



Project portfolio

Infrastructure Construction Division

About Bane NOR

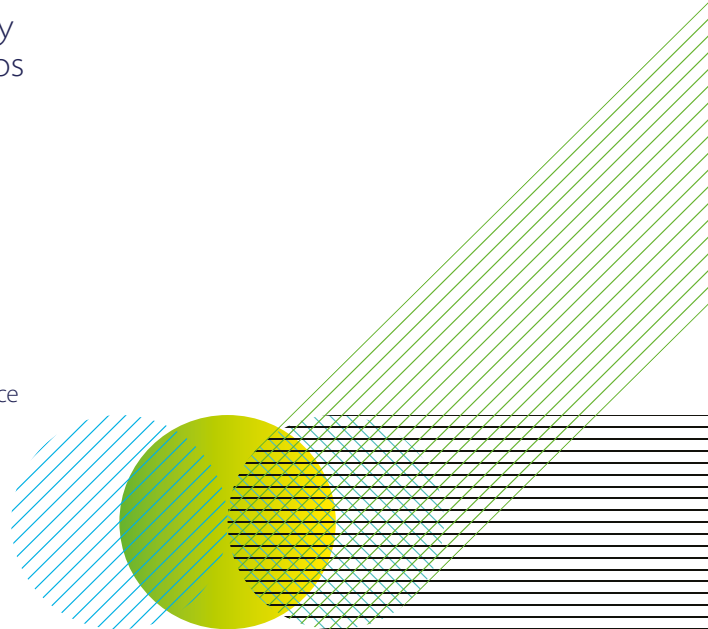
Bane NOR is a state-owned company responsible for the national railway infrastructure. Our mission is to ensure accessible railway infrastructure and efficient and user-friendly services, including the development of hubs and goods terminals.

The company's main responsibilities are:

- Planning, development, administration, operation and maintenance of the national railway network
- Traffic management
- Administration and development of railway property

Bane NOR has approximately 4,500 employees and the head office is based in Oslo, Norway.

All plans and figures in this folder are preliminary and may be subject for change.



The large increase in rail investments and the InterCity rollout as described in this folder consists of several projects.

These investments create great value for all travelers. In the coming years, departures will be more frequent, with reduced travel time within the InterCity operating area. We are living in an exciting and changing infrastructure environment, with a high activity level. Over the next three years Bane NOR plans to introduce contracts relating to a large number of mega projects to the market. Investment will continue until the InterCity rollout is completed as planned in 2034.

As of today, the Follo Line and Venjar-Langset are in production, and Sandvika-Moss-Såstad, Drammen-Kobbervikdalen and Nykirke-Barkåker are out for tender. In 2019 and 2020 our plan is to start the pre-qualification process for Kleverud-Sørli-Åkersvika and The Ringerike Line and E16 highway.

Additionally, Bane NOR plans together with The Norwegian Public Roads Administration, to build a safer and faster rail and road system between Arna and Stanghelle on the Bergen Line (western part of Norway).

We fully rely on close cooperation with the supplier market to achieve all this in a cost-effective manner.



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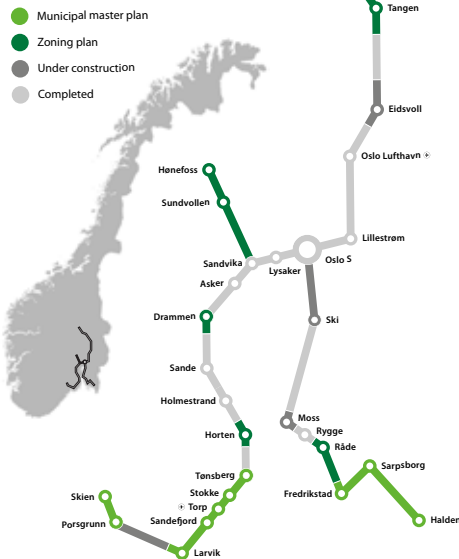


Photo by Hilde Lillejord, Bané NOR

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Planning status InterCity



The InterCity Projects

Bane NOR is planning 270 km of new double-track between Oslo-Lillehammer (Dovre line), Oslo-Halden (Østfold line), Oslo- Porsgrunn (Vestfold line) and Sandvika-Hønefoss (Ringerike line).

The InterCity Development in South-Eastern Norway involves building 270 km of new double-tracks and 25 stations. The new tracks will be designed to accommodate speeds of up to 250 km/h. The total cost of the investment is estimated at NOK 150 billion.

The InterCity area consists of planned lines, lines under construction, and lines which are already complete. The total InterCity network will be completed with double-tracks by 2034.

Norway is expecting strong population growth in the coming years. With shorter journeys and increased frequency,

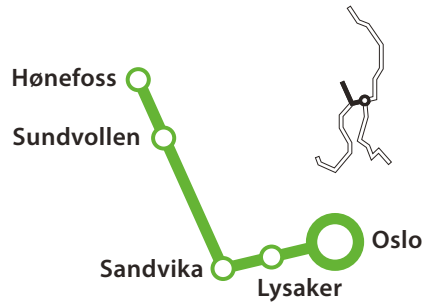
development will make it easier to live in one city and work in another. When the market for housing and labour expands, the pressure on the capital Oslo will be reduced. InterCity also provides higher capacity for improvement in freight services.

For this major investment to benefit as many people as possible, most stations will be located near urban centres.

Planning and construction of the remaining infrastructure will take place in four phases. These phases are delineated in the Norwegian National Transport Plan (NTP) for the period 2018-2029.



Photo: Hilde Lillejord, Bane NOR



Ringerike Line and E16 highway

Bane NOR and the Norwegian Public Roads Administration are working together to establish double-track railway and four-lane highway between Sandvika and Hønefoss.

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The joint project's main goal is to develop and increase the commuter area around the capital of Oslo, including Hønefoss and Ringerike in the Norwegian InterCity railway network.

When completed, the project will increase road security and significantly improve road travel conditions. "It will also substantially reduce train travel time between Bergen and Oslo, Norway's two biggest cities, to around five hours. Today, air travel between these two cities is one of the busiest connections in Europe.

The works include big structures: several bridges and tunnels, including one of the longest railway tunnels in Northern Europe, comprising soil and rock movements of as much as 10 million m³. Part of the project plan includes areas with particularly challenging geotechnical conditions.

The works on the main contract are scheduled to begin in 2021/2022. Project completion is slated for 2028/29.



The area of Sundvollen with both the highway bridge and the railway bridge crossing Kroksund.

Railway and highway

- 40 km new double-track from Sandvika to Hønefoss designed for 250 km/h
- 15 km four-lane highway, designed for 110 km/h
- A new railway station at Sundvollen
- Complete rebuild of existing railway-station at Hønefoss
- Three - or possibly four - highway intersections:
- Elstangen
- Styggedalen
- Ve
- Helgelandsmoen (possibly)

Tunnels and bridges

- 23 km double-track railway tunnel with parallel escape and service tunnel from Sandvika to Sundvollen
- 3 km double-track railway tunnel at Vik
- Aprox. 800 m double-track railway bridge across Kroksund
- Aprox. 600 m four-lane highway bridge across Kroksund
- 2 x 3 km highway tunnels at Vik
- River and wetland crossings at Mælingen:
 - Several major bridges

Major contracts

The project will be divided into 8 major EPC contracts for construction of rail-ways and roads. The different contracts will cover works in open field, tunnels, bridges, stations and railway technique.

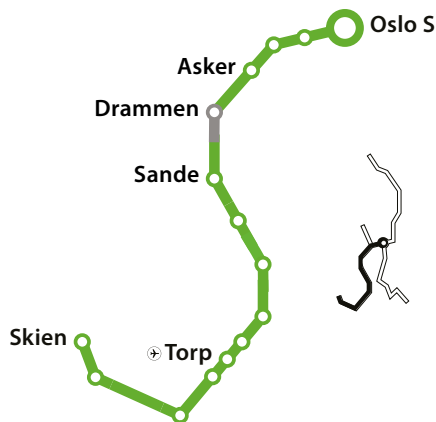
Planned schedule

2020: Start preparatory works

2020: Prequalification Main Contracts

2021: First Main Contracts are awarded

2022: Construction start on first Main Contracts



Drammen- Kobbervikdalen

Bane NOR is planning the construction of 10 km of double-track from Drammen to Kobbervikdalen and from Drammen and Gulskogen, as part of the ongoing modernisation of the Vestfold Line.

The project is complex, with extensive groundwork and substructure works, multidisciplinary technical railway works, and a number of demanding construction phases.

Much of the works will be undertaken in densely populated areas, especially the contracts UDK 02, UDK 03 and UDK 05.

The project includes 10 km of double-track from Drammen to Kobbervikdalen and from Drammen to Gulskogen, a 6 km rock tunnel, an 850 m concrete tunnel (cut and cover), a 270 m soil tunnel, and a branch line towards Nybyen. Drammen station and Gulskogen station will both be rebuilt, with new platforms and tracks.

The construction works are split into several contracts:

UDK 01 – Rock tunnel and UDK 02 – Concrete and soil tunnels

Negotiations on these contracts are ongoing, and the contracts are both expected to be signed late in the fall of 2019.

UDK 03 – Groundworks Drammen-Sundhaugen. Construction contract.

Groundworks between Drammen and Sundhaugen, as well as the reconstruction of Drammen station. Notification is expected in the second quarter of 2020, and the contract to be signed in January 2021.

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The railway station in Drammen city will be rebuilt with new platforms and tracks

UDK 05 – Superstructure and catenary system Drammen-Sundhaugen and tunnels

Superstructure and catenary system for the stretch between Drammen station and Sundhaugen, as well as in the project's tunnels.

Notification is expected in the second quarter of 2020, and the contract to be signed in January 2021.

UDK 06 – Electricity and telecom

Electrical and telecom works throughout the project, including the tunnels.

Notification is expected in the second

quarter of 2020, and the contract to be signed in January 2021.

UDK 07 – NSI-63 signalling system

Adaptation and construction of NSI-63 signalling system throughout the project.

Notification is expected in the third quarter of 2020, and the contract to be signed in January 2021.

UDK 07 – NSI-63 signalling system

Adaptation and construction of NSI-63 signalling system throughout the project.

Notification is expected in the third quarter of 2020, and the contract to be signed in January 2021.

UDK 08 – Groundworks Sundhaugen-Gulskogen

Groundworks between Sundhaugen and Gulskogen station, as well as the reconstruction of Gulskogen station.

Notification is expected in the spring of 2022, and work is to begin in 2023.

UDK 10 – Superstructure and catenary system Sundhaugen-Gulskogen

Superstructure and catenary system for the stretch between Sundhaugen and Gulskogen station.

Notification is expected in the spring of 2022, and work is to begin in 2023.

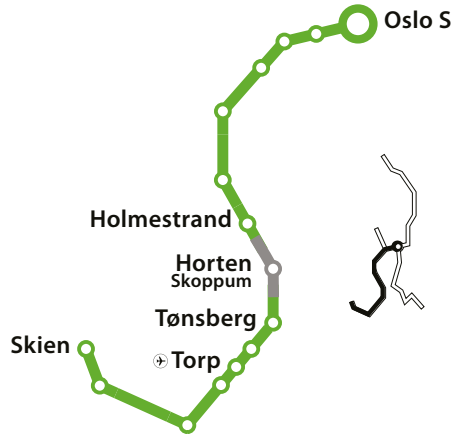
Other contracts

The project includes several smaller contracts, including:

UDK 33 – preparatory groundworks

UDK 30 – local noise reduction

UDK 31 – removal/demolition of existing track



Nykirke-Barkåker

Bane NOR is planning to build 13,6 km double-track from Nykirke to Barkåker, and a new station at Skoppum outside Horten, as a part of the ongoing upgrade of the Vestfold Line.

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The new line consist of two bridges, four tunnels totaling 5.2 kilometres, and a new modern station west of Skoppum.

The new station is planned with an ample parking lot for both cars and bikes.

There will be good connection to the existing road network for all road user groups. Changeover to alternative transportation modes has been facilitated with both bus and taxi stops close to the main entrance.

Bane NOR is planning to divide the work into two large EPC (engineering, procurement, construction) contracts for this project, one civil works contract and one railway system contract.

Preparatory works started in 2018.



The new railway station in Skoppum outside the city of Horten. Illustration: Vianova/Aas-Jacobsen

Facts and numbers

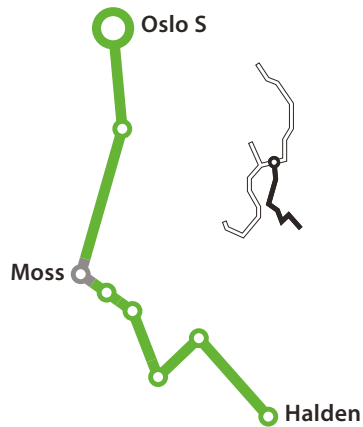
- 13.6 km double-track designed for 250 km/h
- Kopstadttunnelen 900m (concrete)
- Skottåstunnelen 2.3 km (rock) and 700m (concrete)
- Gråmunkentunnelen 1.1 km (rock)
- A bridge crossing Rv. 19
- New station at Skoppum
- Solerød bridge over Fv. 665
- Tangsrød wildlife crossing

New station at Skoppum

- Partly located on a bridge crossing rv. 19
- Connection to existing road network for all road user groups
- 3 tracks to platform
- Service track for machines and equipment
- Passing track for freight trains and trains in deviation
- Parking for cars and bikes
- Bus stop, taxi stop and kiss & ride

Planned schedule

- Autumn 2018: pre-qualification for civil work contract (UNB01) and railway system contract (UNB10)
- Autumn 2019 contract award both contracts
- 2019-2024, main construction work
- End of 2024, new infrastructure in operation



Sandbukta- Moss-Såstad

The Sandbukta-Moss-Såstad (SMS) project is part of the Intercity development. This section includes 10km of new double-track railway and is situated on the Østfold Line.

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The 10 km SMS-section covers three open stretches and two tunnels, including 630 m substructure for double-track railways on the open line at Sandbukta.

The Moss tunnel is a 2,720 m long tunnel from Sandbukta to Moss center, including a 420 m long concrete culvert.

The new Moss station includes an 800 m long station area.

The Carlberg tunnel is a 2,350 m long tunnel from Kleberget to Carlberg, including a 200 m long concrete culvert.

A 3,850 m substructure for double-track railway on the open line. It will connect to the existing double track at Såstad in Rygge.



The new railway station in Moss city

Facts and numbers

- 10.3 km double-track
- The Moss tunnel: 2.3 km (rock) and 420 m (concrete)
- The Carlberg tunnel: 2.15 km (rock) and 200 m (concrete)
- A new station in Moss

Moss Station - a new meeting place

- 4 tracks to platform south of the Moss tunnel
- A connecting track towards Moss harbor
- An indoor waiting area and bike hotel
- Easy access to public transportation
- Easy access for pedestrians and bikes

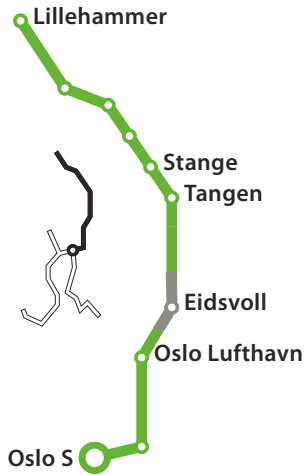
Main contracts for SMS:

- SMS 2A EPC substructure, Contract award 2019 (ongoing tendering)
- SMS 2B Railway system, tracks and catenary, Contract award 2021
- SMS 2C Railway system high power and telecom, Contract award 2021
- SMS 3 Framework agreement Thales, Class B signaling system, Call-off 2022
- SMS 5 Preparatory works, Contract signed
- SMS 6 EPC Demolition of buildings, Contract signed
- SMS 7 Local noise, Contract award 2019

- SMS 8 Settlement measurement, Contract signed
- SMS 9 Building survey, Contract award 2019

Planned schedule

- Fall 2019 Construction start
- End of 2024 New infrastructure in operation
- 2025 Estimated project finish



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Venjar- Eidsvoll-Langset

Upcoming project on the Gardermoen and Dovre Line in Eidsvoll municipality, north of Oslo, part of the InterCity double-track development.

The project consists of upgrading a 9 km stretch of railway from Venjar to Eidsvoll North from one to two tracks, and extending an existing track (filling in to Vorma) including a new 4 km double-track railway from Eidsvoll north to Langset.

The project also consists of four smaller railway bridges, and the second longest railway bridge in Norway (Minnevik bridge, 836 m), and one soft-soil tunnel at Eidsvoll to be constructed in parallel with the existing one.

The project also includes adjustments of track system at Eidsvoll station, and modification of the existing signal system on the stretch Venjar to Eidsvoll (Siemens). Further, new power supply infrastructure and a new signal system (Thales) will be installed on the stretch from Eidsvoll to Langset.

Construction contracts consist of substructure, track structure, overhead contact system, power supply and tele.



At 836 metres long, the Minnevika Bridge will be the longest railway bridge in Norway, until the completion of Tangenvika Bridge

Planned schedule:

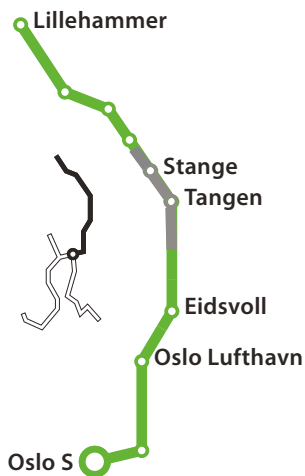
2016: Local development plan submitted
 2017: Preparatory work started
 2017: First budget approval in Parliament

Venjar-Eidsvoll:

2018: Contract awarded and commencement of work
 2022: New Infrastructure in operation
 2023: Estimated project finish

Eidsvoll-Langset:

2019: Contract award and commencement of work
 2023: New infrastructure in operation
 2024: Estimated project finish



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Kleverud- Sørli-Åkersvika

A part of the InterCity double-track railway development on the Dovre Line in Stange municipality, north of Oslo.

Kleverud- Sørli

The new line consists of 15.8 km double-track railway, designed for 250 km/h (235 km/h in the Hestnes tunnel).

Included in the project is the construction of the longest railway bridge in Norway, Tangenvika bridge, which connects Espå and the Tangenvika bay.

The project also includes one rock tunnel, the Hestnes tunnel and a new station at Tangen.

Sørli-Åkersvika

The new line consists of 14 km of double-track railway, designed for 250 km/h.

A new station at Stange is included in the project.

Part of the stretch includes areas with particularly challenging environmental considerations (Åkersvika Wetlands, Ramsar-area).

Facts and numbers

- Ca. 30 km double-track railway
- The Hestnes tunnel: 3,1 km
- The Tangenvika railway bridge: 1070 m
- 19 other large constructions
- Two new stations - located at Tangen and Stange.



Tangenvika Bridge (1070 m) will be the longest railway bridge in Norway when it's completed

Main contracts for Kleverud-Sørli-Åkersvika

- KS-1 The Hestnes tunnel. Civil - EPC contract. Planned prequal. Q4 2019
- KS-2 The Tangenvika railway bridge. Civil – EPC contract. Planned prequal. Q4 2019
- KSÅ-3 Open landscape including two stations. Civil – EPC contract. Planned prequal. 2020
- SÅ-4 Open landscape. Civil – EPC contract. Planned prequal. 2020
- KSÅ-5 Contract(s) for consultancy commissions – (Integrated with Bane NOR project team)
- KSÅ-6 Tracks and catenary. Railway technique – Construction contract. Planned prequal. 2021
- KSÅ-7 Electro and tele. Railway technique – Construction contract. Planned prequal. 2021

Signal: Call-off from Framework agreement with Thales.

Planned schedule

2018: Approved contract strategy
 2019 (Q4): Start prequalification of first main contract
 2019: Start preparatory works
 2020: Planned government funding (K-S)
 2020: First main contract award
 2021: Planned government funding (S-Å)
 2026: New infrastructure in operation



Arna- Bergen

Bane NOR is constructing a double-track railway between Arna and the centre of Bergen. The main part of the section passes through a tunnel under Mount Ulriken where Bane NOR is building a new, parallel tunnel - New Ulriken tunnel.

Construction of the tunnel started in November 2014, and the double track will be completed in 2024.

Construction between Arna and Bergen consists of two projects; Arna-Fløen and Nygårdstangen- Bergen-Fløen.

The main contracts in project Arna-Fløen are: "The New Ulriken tunnel, Arna Station, a railway-technical contract, and the upgrading of the existing Ulriken tunnel".

Upgrading Ulriken tunnel - Contract UUT23

The original Ulriken tunnel opened in 1964. The cross sections in the tunnel are 25 - 30 m². The water- and frost-proofing in the tunnel consists of patches of uncovered PE-foam.

When the new Ulriken tunnel opens in December 2020, the original tunnel will be temporarily closed for the upgrade.

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One of the 16 cross passages between the new and the original Ulriken tunnel (to the right). Left: New Ulriken tunnel. Photo: Ingvild Eikeland, Bane NOR

Scope of work:

- Tunnelling: Breakthrough for two diagonal tunnels between existing and new tunnel in Arna
- Back-ripping (enlargement of profile) for fans in the tunnel ceiling in Fløen
- Dismantling of existing PE-foam
- Back-ripping for new water and frost proofing at different locations throughout the tunnel
- Replacement of existing PE-foam, fireproofing with shotcrete
- Supplementary work in cross passages (blasting/road heading/cable ducts)

- Installation of bolts for signs and fans
- Maintenance/adjustment of existing drainage system, emergency lighting and cable ducts
- Planned tendering is set for 2020 and start-up is set for spring 2021

Project Nygårdstangen-Bergen-Fløen

The distance from Fløen to Bergen railway station and the freight terminal at Nygårdstangen is 1.3 km. The project is complex, due to limited space in the city centre, and coordination with other projects in the same area.

Bane NOR is reviewing the scope and the progress plan of the project. Tendering of contracts is due to take place between 2020 and 2022.

Bergen-Fløen

- New double-track from Fløen to Bergen railway station
- Optimisation of track layout
- New electronic interlocking system

Nygårdstangen/Bergen freight terminal

- Reconstruction and upgrading/ Optimisation of the freight area
- Building new track
- New freight buildings



Arna- Stanghelle

This is a joint project collaboration with the Norwegian Public Roads Administration in the lead. The main purpose of the project is to build a safer and faster railway and road between Arna and Stanghelle.

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Large parts of the section will be parallel railway and road tunnels with shared cross-passages for evacuation between the tunnels.

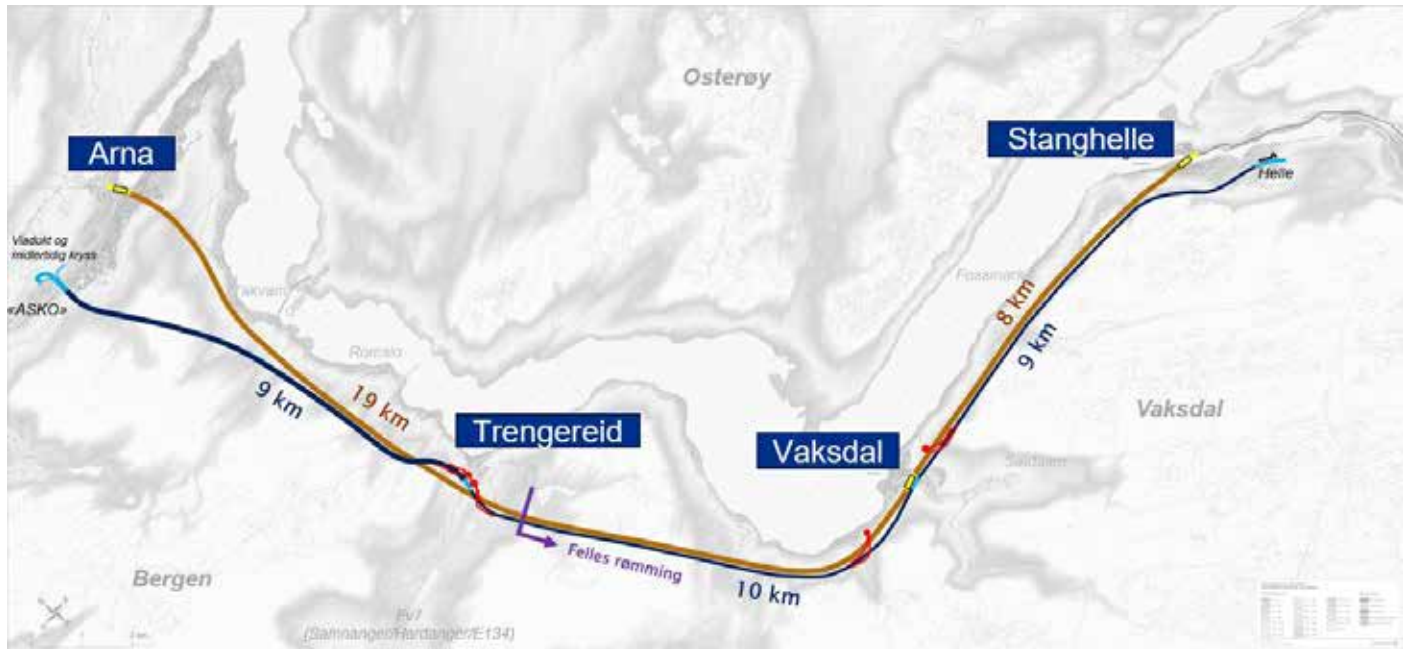
The railway part will have 2 tunnels, one of 18.7 km and the other 8.0 km. Two new railway stations will be built.

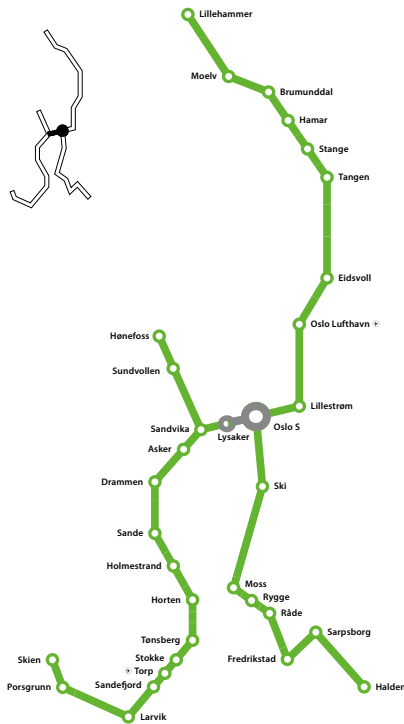
The road part includes 3 tunnels of 9-10 km.

Planned schedule:

The local development plan will be completed in the spring of 2020 and will most likely be approved by the planning authorities by end of 2020.

Start-up is planned in 2022 (road) and 2024 (railway).





Oslo S-Lysaker and Nationaltheatret-Bislett

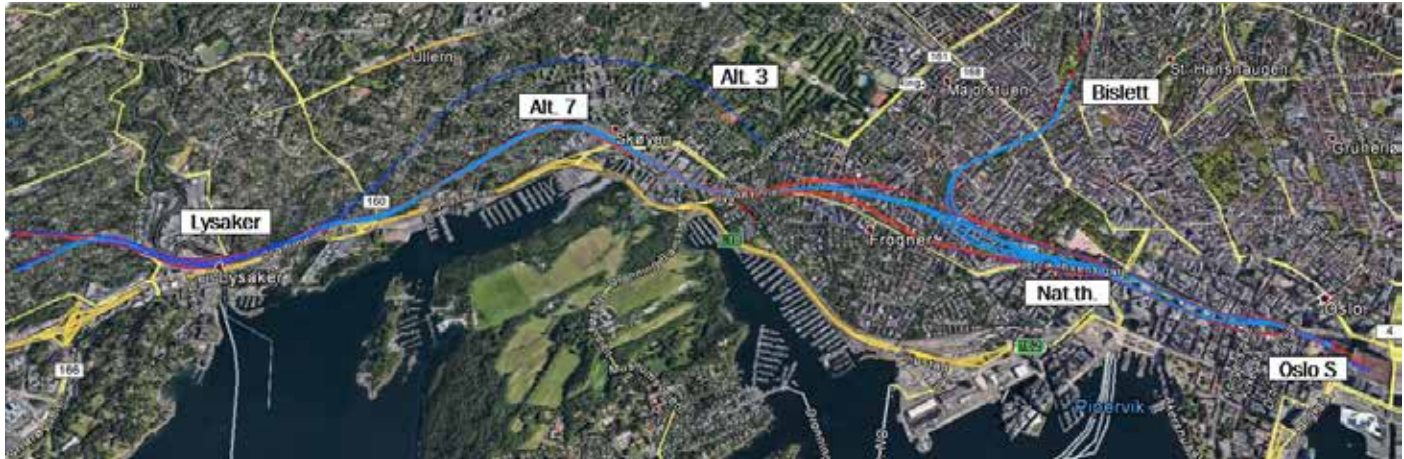
New double-track railway Oslo S–Lysaker and Nationaltheatret–Bislett is, together with the new metro and tram, a key component in the Concept Study Oslo Hub infrastructure projects.



Photo by Øystein Grue, Jernbanedirektoratet

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Realisation of these projects will meet demand for transport capacity in the Oslo area towards 2030 and 2060.

New double-track railway enables separation of local and regional trains and higher frequency for both local, regional and freight traffic. This project has high priority in the Norwegian National Transport Plan 2018-2029.

The project has a high complexity due to

construction in the historical part of Oslo city and coordination with other projects in the same area.

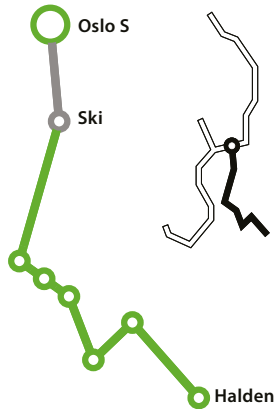
Facts about the project:

- 1.8 km new double track in tunnel from Oslo S to Nationaltheatret
- Extension of Nationaltheatret station with four new tracks
- New double-track between Nation-

altheatret and Lysaker and extension of Lysaker station

- Development of new train turning operations area.

It has not yet been agreed which line will be recommended for construction between Nationaltheatret and Lysaker.



The Follo Line Project

When the Follo Line Project is completed in December 2022, the Bane NOR will offer a 22 km long double track line between Oslo Central Station and the public transport hub at Ski.

This big scale project includes extensive works at Oslo Central Station, a 20 km long tunnel, the construction of a new railway station and necessary realignment of tracks for the existing Østfold Line. The project comprises in total the construction of around 64 km new railway tracks.

The Follo Line is designed for speeds up to 250 km/h to make it possible to reduce travel time by 50 %, from 22 minutes to 11 minutes.

The Follo Line forms the core part of the Norwegian InterCity rail development south east of Oslo. In combination with local trains on the existing Østfold Line, the highspeed trains non-stop on the new Follo Line, will make it possible to double the train services.

An urban challenge

The construction of four new tracks to Oslo Central Station and this densely trafficked metropolitan area of the capital, is a challenge and must be executed without disrupting the daily traffic. In addition, restrictions must be considered concerning important cultural heritage in Oslo Medieval Park.

In the long tunnel, the so far longest in the Nordic countries, a highspeed mobile network will be offered, set to be among the fastest networks in tunnels around the world.

As a modern, efficient, safe and eco-friendly train service, the Follo Line will contribute to further development of the residential and commercial areas southeast of the capital.

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The new Ski station.

The Follo Line; entrance for the 20 km long tunnel from Oslo Central Station.

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Holmestrand station, photo by: Anne Mette Storvik, Bane NOR

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