

OPS E39 Klett – Bårdshaug Norway's first Infrastructure PPP project.

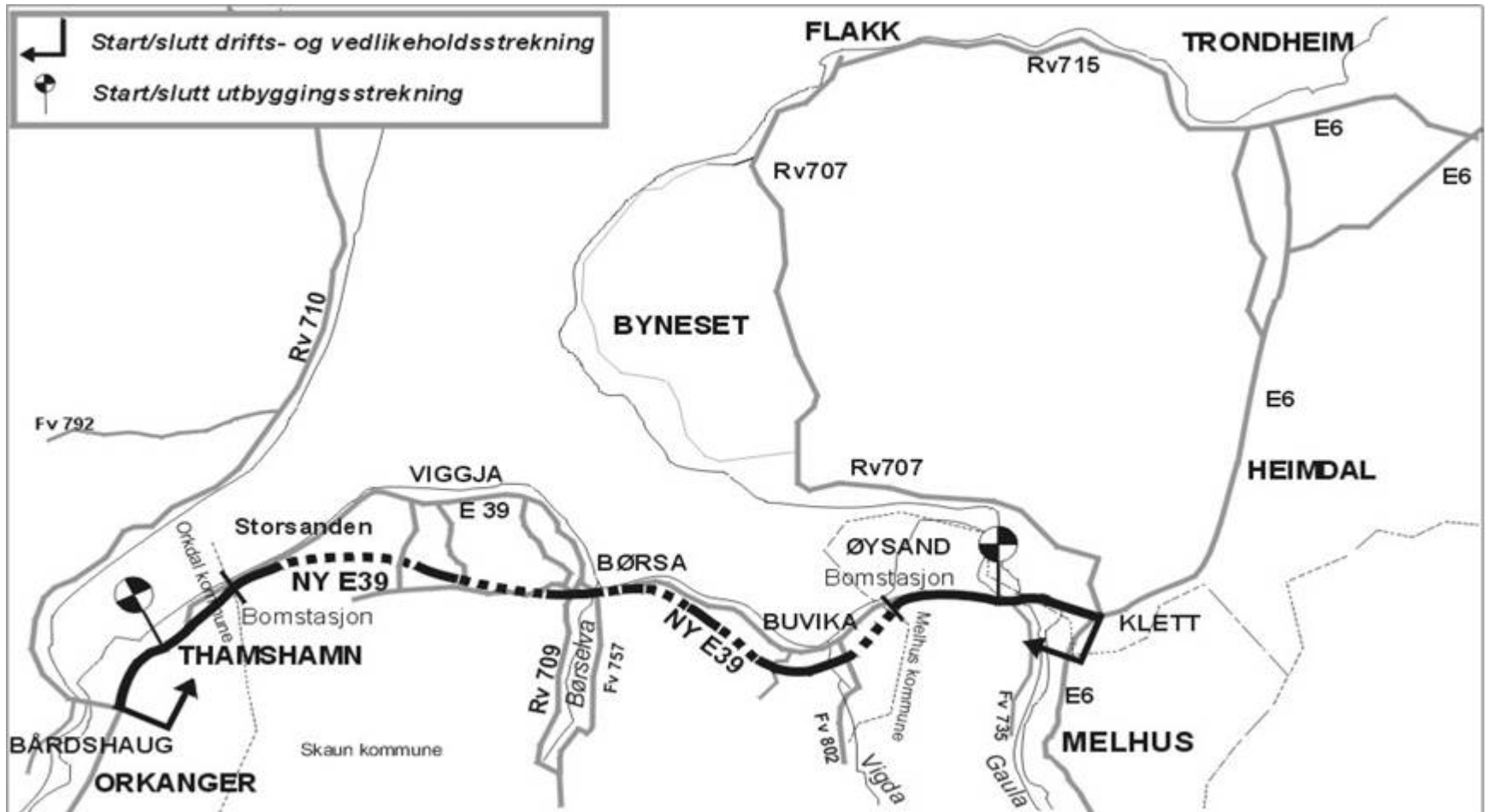


E39 Klett - Bårdshaug

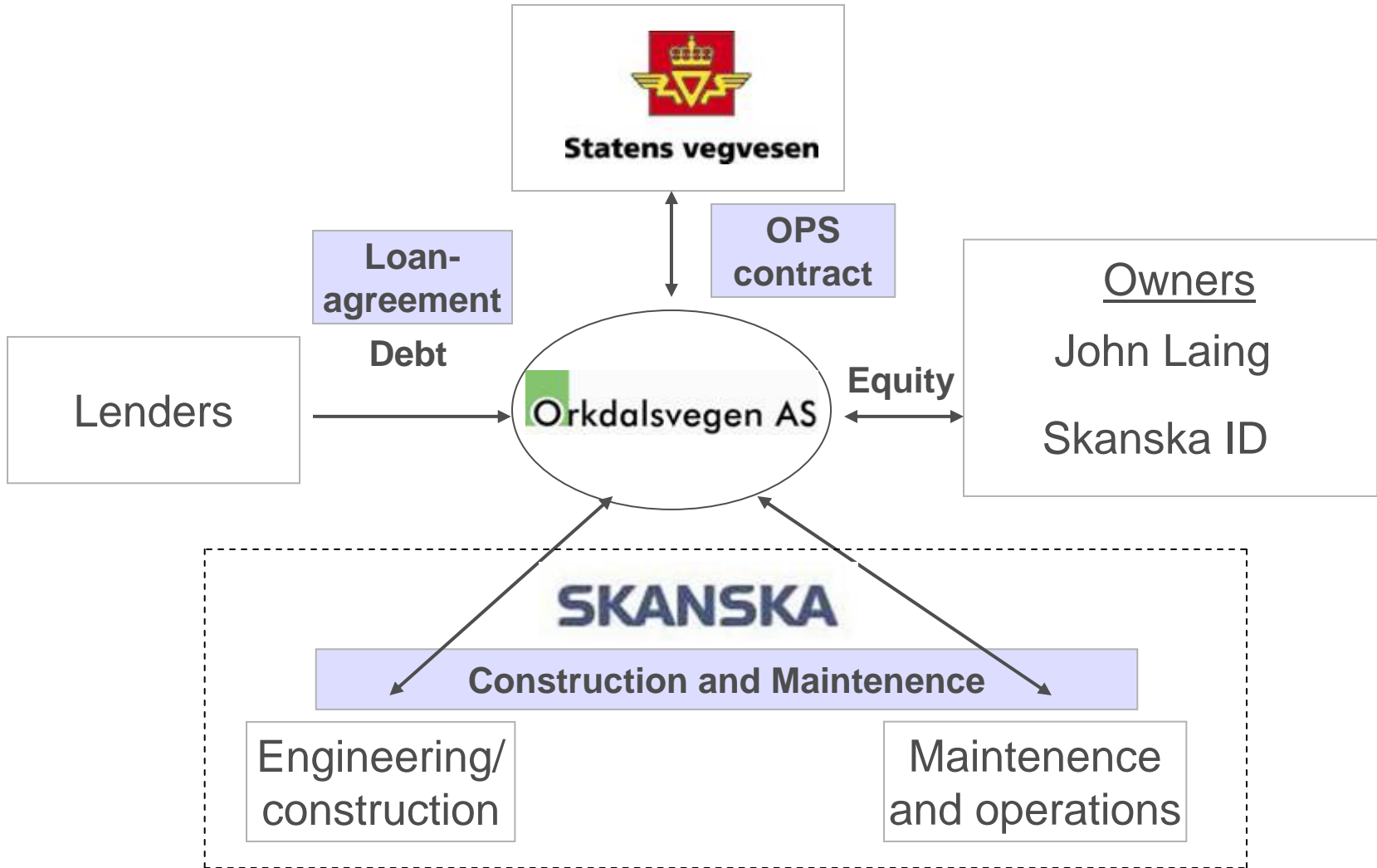


The scope of the project:

- 22 km construction
- 27 km O&M



OPS E39 Klett – Bårdshaug, Contract structure



Technical challenges during construction



- Tunnels, 10,5 km
- Quick clay cuttings
- Optimize resources between sections of the road
- Construction period, 27 Months

Focus areas during construction

- schedule and progress
- methods to reduce construction period was thoroughly analyzed and included amongst others extensive cement/lime stabilization
- we started as soon as possible, design was always on the critical path
- result; 40 % shorter construction period compared to traditional contract model

Optimizations for the operational phase

What I interpret as an optimization is:

to invest *more* during construction, to *reduce* O&M Cost (and possibly increase quality) and consequently have a *reduced total cost*

Our approach was basically:

Use well known, well-proven technical solutions during design, if possible reduce risk for the construction phase.

However,

Optimizations for the operational phase

We did actually accomplish some thoughts and work for the operational phase as well:

- extended road sub-base by 200 mm ⇒ strengthen road foundation/ increase asphalt surface periods.
- rock pitching of 20 000 m² clay slopes ⇒ reduced yearly maintenance to clean ditches/ reduce water problems

Optimizations for the operational phase

- The Storsand tunnel was extended 200 meters ⇒ Predictable maintenance cost and safer road. Reduced risk for rock avalanche down the hillside.
(I only regret we did not propose to prolong the tunnel some additional 400 m)

Optimizations for the operational phase

- We brought in key people in our Operational team one year prior to start of operations, to bring in some practical experience and establish “ownership” to the road.

Experiences from 3 years of operations

- traffic load has increased more than expected; + 15 % above forecast after 3 years
- we have established a small, effective team, locally, to operate the road
- daily maintenance has been as expected incl. winter service
- asphalt surface is better than expected; resurfacing can be delayed

Experiences from 3 years of operations

We work to improve our operations, for instance by

- optimize tunnel cleaning with regards to air quality and visibility
- optimize power consumption

And at last; learn from our experience for the remaining 22 years of the Contract!