CUSTOMER STORY

E16 Kløfta – Kongsvinger

Norway

EMerald Geomodelling

Project facts

Location: Akershus and Innlandet, Norway

Customer: Nye Veier AS

Project duration: 2019 - 2021

Project type: Road

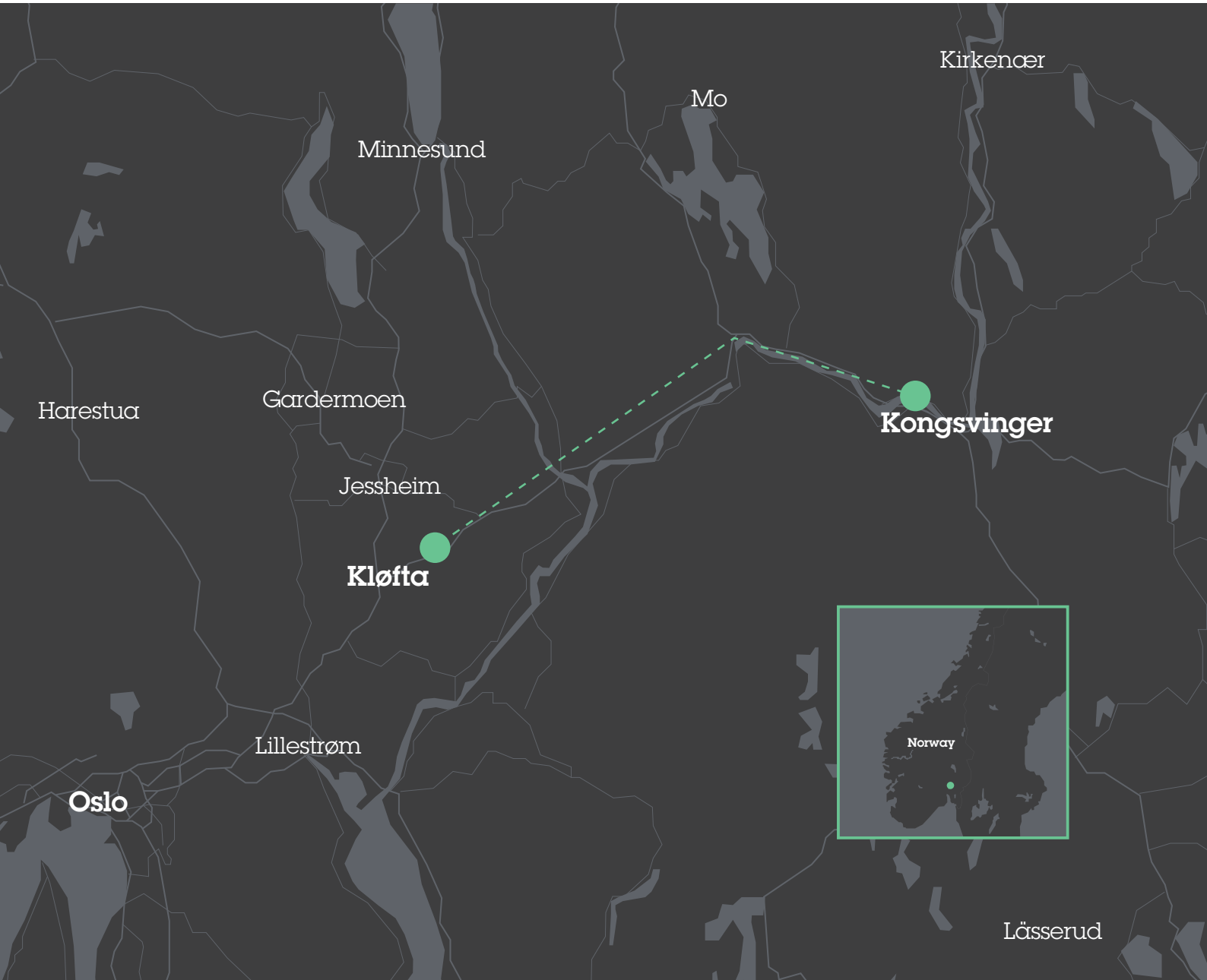
Project size: 160 km, flew 500 line-kilometers

Key results

- Estimated cost savings of up to 135%

1. Background

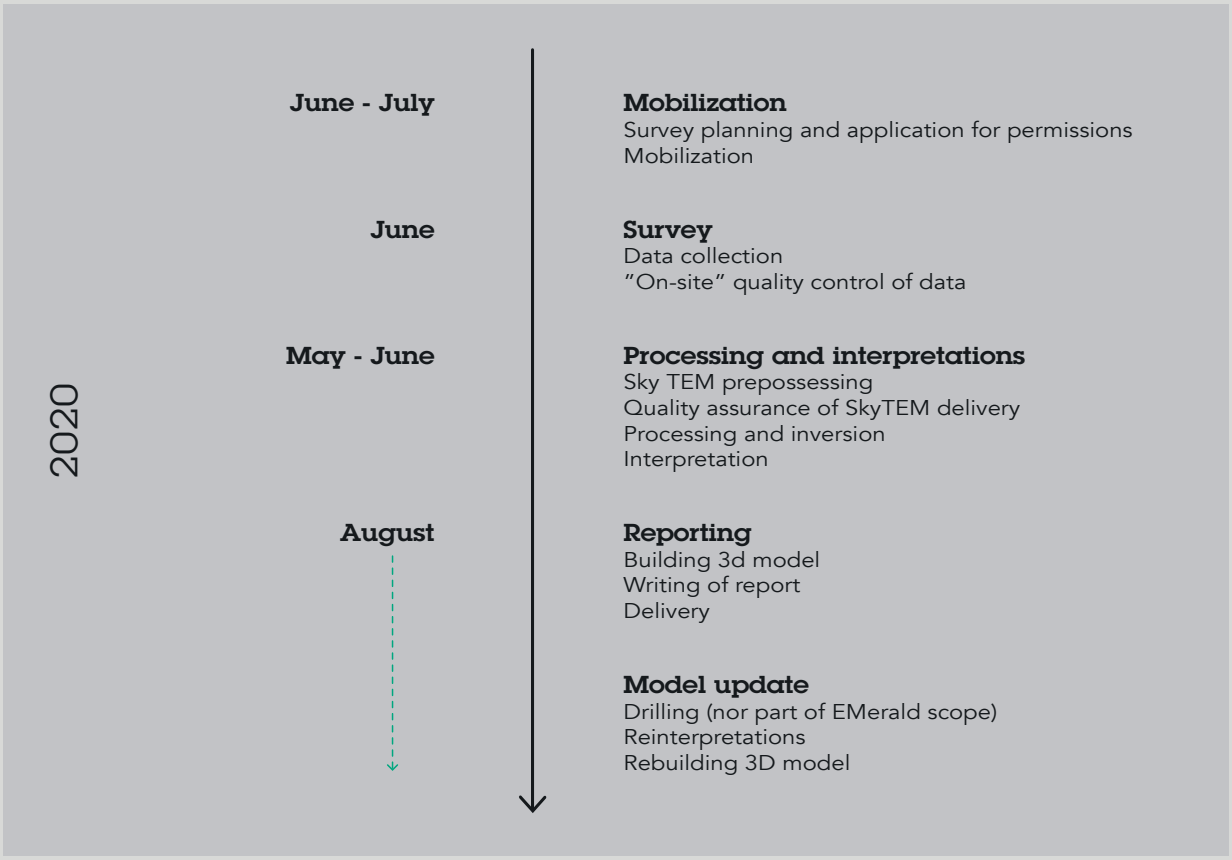
In 2019, Nye Veier began the work to plan and build the new E16 highway between Kløfta and Kongsvinger. The new highway is 60 kilometers long and goes through four different municipalities: Ullensaker, Nes, Sør-Odal and Kongsvinger. It is an important route connecting east and west, while at the same time being an important link between residential areas and workplaces in one of Norway's fastest growing region. EMerald Geomodelling was commissioned to investigate the geological conditions for the road section.



2. How it was done

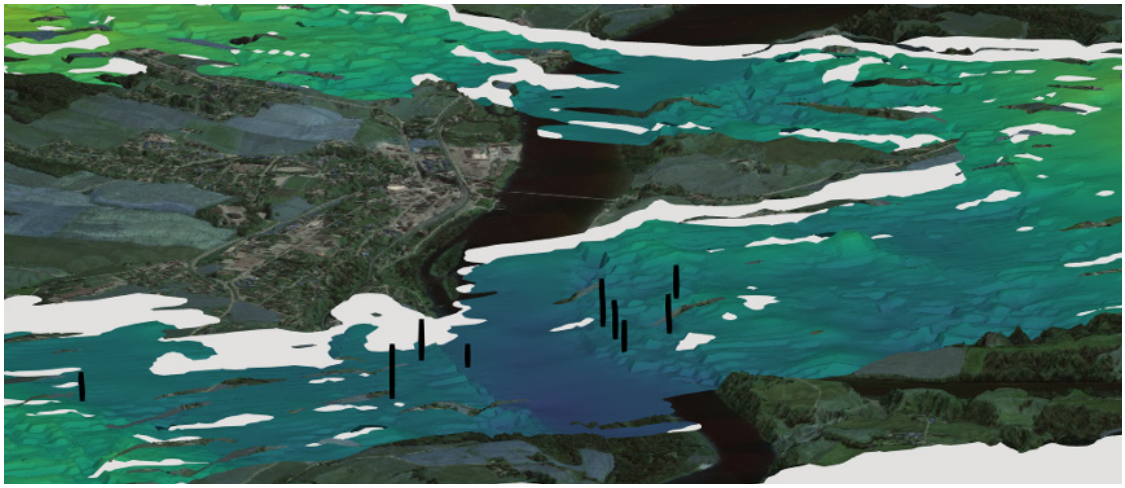
Between 2013 and 2019, the Norwegian Public Roads Administration (Statens Vegvesen) performed many geophysical surveys for an alternative route option for the new road. When EMerald Geomodelling was engaged in 2019, the target was to provide an overview of other areas with potential. Using airborne geoscanning, 500 line-kilometers were scanned within three days. However, only a handful of drillings had been conducted in these new areas, meaning that data was scarce. EMerald Geomodelling was able to train the machine learning algorithm on the boreholes from the section in focus between 2013 and 2019, making it possible to create a bedrock prediction for the new areas despite insufficient data.

Project timeline

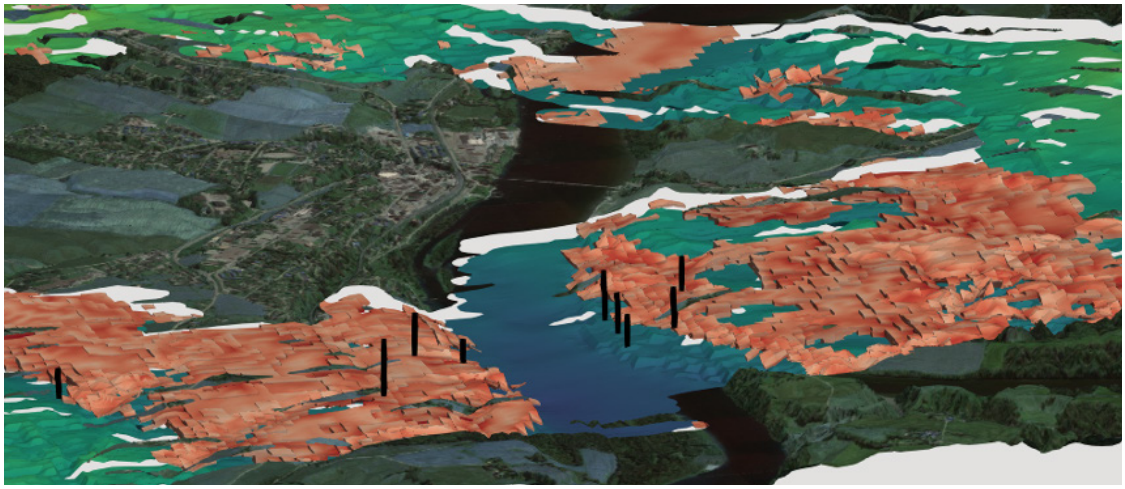


3. Deliveries to customer

Bedrock model



Bedrock and quick clay models



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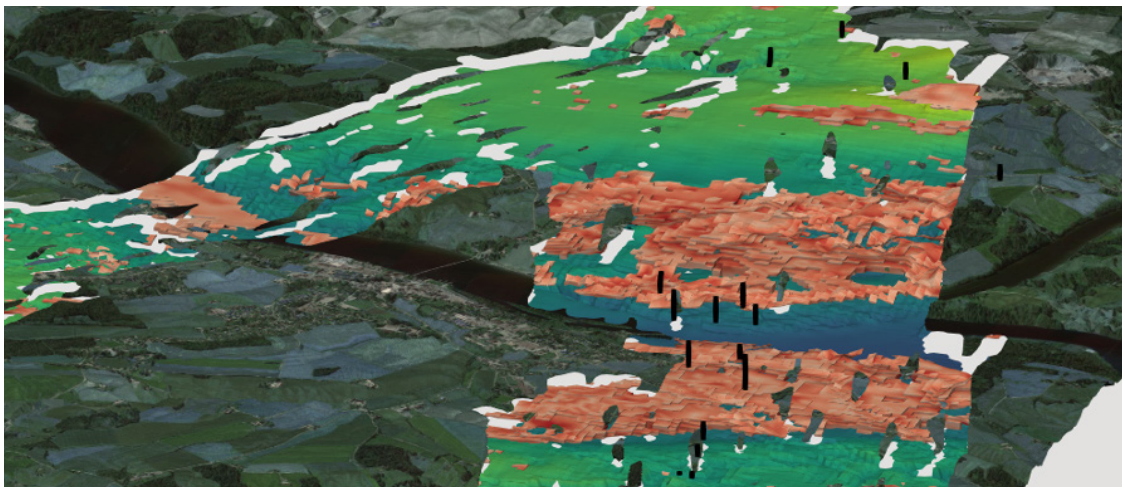

4. Customer results + actions taken

Based on these new insights, the customer was able to choose a more optimal route. Asplan Viak and Rambøll estimated cost savings of up to 135%, compared to a scenario in which the road section was built in the originally planned location from 2013.

This was managed despite very challenging ground conditions in the area where the road was planned built. With bedrock depths of approximately 60 meters and thick layers of sensitive marine deposits in the form of clay, sampling data was not a straightforward task. Lack of information about such ground conditions is the biggest challenge in infrastructure projects and usually contributes to both delays and cost overruns.

By delivering reinterpretations of previously collected data combined with new helicopter scans of the alternative routes proposed by Asplan Viak and Rambøll, EMerald Geomodelling provided an overview of the ground conditions with ever-increasing accuracy that spurred a project re-design and ultimately, a more cost efficient and safe route.

> *While leading the road planning, the information we received from EMerald Geomodelling was very useful, especially related to bedrock mapping. The information we received from EMerald Geomodelling largely confirmed that the ground conditions were as we had assumed, and we could therefore, with a high degree of certainty, move the road alignment. The information has given us a sense of security throughout the project.*

Håvard Glosli
Road Planner in Rambøll

How we can help your company

1

Fast survey for large-scale project area

We collect electromagnetic data by conducting an airborne geoscanning survey. This delineates the subsurface and generates a resistivity model.

2

30-40% fewer drillings by utilizing high data accuracy

Based on the collected data and calculations, drilling is strategically executed by our customers at optimized locations, based on the uncertainty map.

3

Intelligent and efficient decision-making leading to substantial cost savings

We build a 3D model powered by the machinelearning algorithm to provide critical geological insights.

Interested in learning what we can do for your project?

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