

# **The Stenungsund Clay Landslide north of Gothenburg: When the main artery between Oslo and continental Europe (E6) was torn apart**

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At 1:45 AM on 23 September 2023, alarm reports broadcast that European Route 6 (E6) had disappeared and cars driving over a new scarp in the road and into the dark. When the rescue operation was called off the following morning, it was fortunately concluded that no one was killed or severely injured. Three cars had gone over the edge, a bus and several cars had accidents or had become stranded on broken off segments of the highway. The entire E6 had slid over 50 horizontal meters, a fast-food restaurant was collapsed, a gas station had moved and its buildings deformed, a hardware store was affected, a few other roads were torn apart, a stream rich in fish and other biological values was dammed up, district-heating pipes were broken, and more.

This region in western Sweden is known for instable clays deposited initially in marine water, but following deglaciation were later isostatically uplifted. The terrestrial position of these clays makes them favorable for leaching of salt from the clay, transforming it to 'quick clay'. Additionally, post-glacial transgressions may cause the clay to have more organic rich layers which can contribute to its instability.

In this presentation, geologic setting, stratigraphy, and recent landscape changes of the Stenungsund landslide is discussed. Recent human activity at the site (blasting, fill material, buildings) may have played an important role in the slide event. Some historical and paleo clay landslides from the region are also compared. In order to optimize the prevention of slides in the future we need to increase our knowledge and understanding of how landslide hazards can vary in space and time from a geologic perspective.