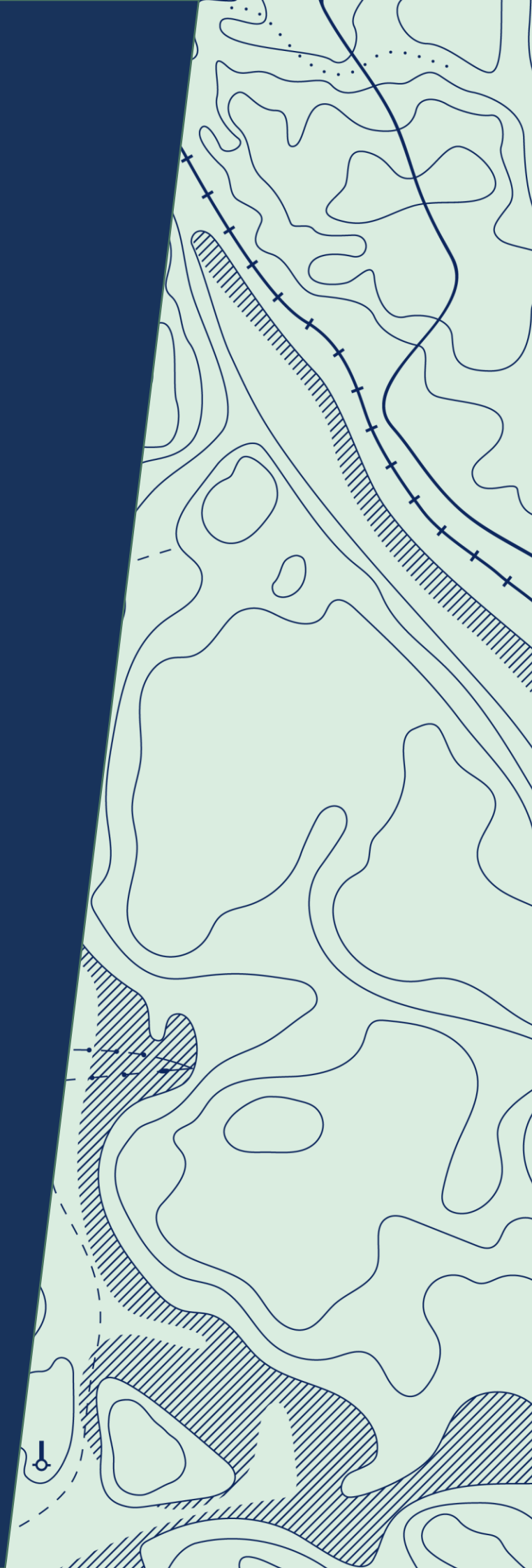


Status report of the Stenungsund landslide

23 September 2024



About the Swedish Accident Investigation Authority

The Swedish Accident Investigation Authority (SHK) investigates accidents and serious incidents from a safety point of view, regardless of whether they have occurred on land, at sea or in the air. The Authority's accident investigations shall disseminate knowledge and provide a basis for action by authorities, companies, organisations and individuals to improve safety and reduce the risk of accidents. The activities will also contribute to people being able to feel safe and trust in society's institutions and transport systems. The mandate also includes assessing the efforts made by the civil rescue services at an accident site. Importantly, investigations shall not apportion blame or liability, whether criminal, civil or administrative.

SHK's investigations aim to provide answers to three questions:

- What happened?
- Why did it happen?
- How can we prevent a similar event from happening in the future?

SHK has no supervisory tasks, nor does it have any role in apportioning blame or liability or in matters of damages. This means that liability and guilt issues are neither investigated nor described in connection with an investigation. Issues of guilt, liability and damages are dealt with within the judicial system or by, for example, insurance companies.

In addition, the part of the investigation that deals with the rescue operation, SHK's mandate does not include examining how people taken to hospital have been treated there. Nor is society's activities in the form of social care or crisis management investigated after the event.

Status report

The results of the investigation will be presented in a final report. It shall be published, where possible, within 12 months of the accident. If such a report is not completed within that period, a status report shall instead be published within the same period. This status report fulfills this requirement. The status report contains a preliminary account of the course of events and information on the progress of the investigation.

The status report has not undergone the consultation procedure prior to the publication of a final report. It follows that SHK cannot guarantee that everything presented in this report will be included in or identical to the content of the final report of the event which will subsequently be published.

The status report is also available on the SHK website: www.shk.se

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Table of contents

About the Swedish Accident Investigation Authority.....	2
Status report	2
The Investigation.....	4
1. Sequence of Events.....	4
2. Investigative measures.....	4
3. What happens in the future?.....	5

The Investigation

On 3 October 2023, the Swedish Accident Investigation Authority decided to open an investigation into the landslide that occurred on the night of 23 September 2023 at 1.39 a.m. in Stenungsund, Stenungsund Municipality, Västra Götalands County.

SHK is represented by Jenny Ferm, Chairperson, Alexander Hurtig, Lead investigator, Per Jakobsson and Tony Arvidsson, Investigators.

SHK has been assisted by experts from the following authorities and organizations.

- Swedish Geotechnical Institute
- Geological Survey of Sweden
- Uppsala University
- Royal Institute of Technology
- COWI Sverige AB

1. Sequence of Events

On 23 September 2023 at 01.39 a.m. a landslide occurred on the eastern outskirts of the urban area of Stenungsund. The landslide covered an area of about 400 x 600 metres. Property damage was considerable with the destruction of a section of European road 6 (E6), trading facilities and other important infrastructure in the area. The landslide also had an impact on the environment, with large soil mass movements and damming of local watercourses. A total of seven vehicles drove in and down into the landslide area, which led to mainly milder injuries. Several lorry teams were parked at a rest area in the western part of the area affected by the landslide. The lorries and the contents of the containers could not be taken care of immediately, resulting in the destruction of cargo and property.

Before the landslide, development work was underway on both sides of the motorway at the properties Hammar 1:14 and Munkeröd 1:98 located in the landslide area. The ongoing construction work consisted of excavation, piling, blasting and adding masses for the foundation of buildings.

2. Investigative measures

The investigation focuses, among other things, on two issues: what triggered the landslide, its course and extent, and how the administrative planning process and the development of detailed development plans have been carried out for the properties in the landslide area. In addition, the rescue operation carried out will be analyzed.

SHK has conducted accident site investigations on several occasions. Furthermore, SHK has collected and reviewed relevant documents and documents from authorities, companies and other stakeholders active in the area. Interviews have been conducted with the mentioned stakeholders and technical studies have been conducted in the landslide area.

Various technical methods have been used to investigate the properties of the soil, for the purpose of determining soil stratification, strength of the soil and groundwater pressure. SHK has also taken part of the geotechnical testing performed by the Swedish Transport Administration as a part of the process of restoring the E6. The technical investigations shall

add to the understanding of the cause, course and extent of the landslide. The geotechnical and geological conditions on the site prior to the landslide contribute to this knowledge. By June 2024, all technical investigations in the landslide area had been carried out and completed.

As regards to the administrative planning process, SHK has collected and taken part of the relevant support documentation for the official planning documents. In addition, a large number of interviews have been conducted with the persons who have participated in the preparation of the documentation and design of the detailed development plan Munkeröd 1:12.

In addition, the services involved in the rescue operation have been interviewed and documentation relating to the rescue operation has been obtained and reviewed.

On 23 September 2024, SHK held a fact-finding meeting for the parties concerned. At the meeting, SHK presented the facts that were at hand at the time.

The fact-gathering activities have largely been completed and the material is now being assessed as the investigation moves into the analysis phase. Part of the continued work is the completion of the experts' analyses and reports, which in turn will form the basis for SHK's final report.

3. What happens in the future?

SHK's work continues as follows:

- Report work and, if necessary, additional fact-finding activities, analysis and the development of possible safety recommendations.
- External referral of the draft of the final report to relevant authorities, organizations and stakeholders in order to eliminate any misconceptions and inaccuracies and to gather any other comments on the report.
- Adjustments may be made to the final report on the basis of the comments received during the consultation process.
- Publication of the final report on SHK's website.

For the Swedish Accident Investigation Authority

Jenny Ferm

Alexander Hurtig