Norwegian Safety Investigation Authority

# Report on collision with a landslide at Finneidfjord between Bjerka and Mo i Rana on the Nordlandsbanen line on 24 October 2024

## Railway report 2026/01

On Thursday, 24 October 2024 at 1414, train 471 collided with large landslide debris at km 472.398 near Finneidfjord on Nordlandsbanen. In the collision, the locomotive derailed, overturned, and continued down an embankment together with passenger carriage 1 and 2 before striking the roadside shoulder and coming to a stop. Carriage 3 derailed, while the remaining two carriages remained on the track. The locomotive driver was killed in the accident, and five passengers sustained minor injuries.

The cause of the accident was a landslide of between 100 and 150 m³, of which approximately 30 m³ blocked the line when the train arrived. The largest rock the train struck was about 15 m³. Prior to the accident, the train was traveling at the line speed of approximately 90 km/h, and its speed had been reduced to about 60 km/h at the moment just before the collision.

The safety investigation is based on examinations on-site. The investigation has also examined previous incidents and activities related to rockfall protection measures carried out in the area. The Norwegian Safety Invistigation Authority has further reviewed Bane NOR SF's handling of weather preparedness and operational measures on sections prone to landslides. The investigation also addresses Bane NOR SF's management of landslide-prone sections, as well as organizational and systemic factors related to this. Additionally, notification procedures, evacuation, and the passengers' experiences of the collision are described. The Norwegian Safety Investigation Authority has assessed that the following factors contributed to the accident:

- Heavy rainfall before the accident contributed to the landslide.
- The landslide remained undetected from the time it occurred until the train arrived.
- Previous rock protection measures were insufficient to prevent the landslide.
- Previous rock protection measures were not assessed or implemented in accordance with

Eurocode 7.

- Implemented safety measures in the area contributed to the removal of risk-reducing measures without the necessary risk assessments being conducted.
- Several organisational factors within Bane NOR SF meant that available information was not utilized in preventive safety work.
- A lack of training for administrative/management roles with safety significance led to changes being implemented without risk assessments or updates to existing analyses.

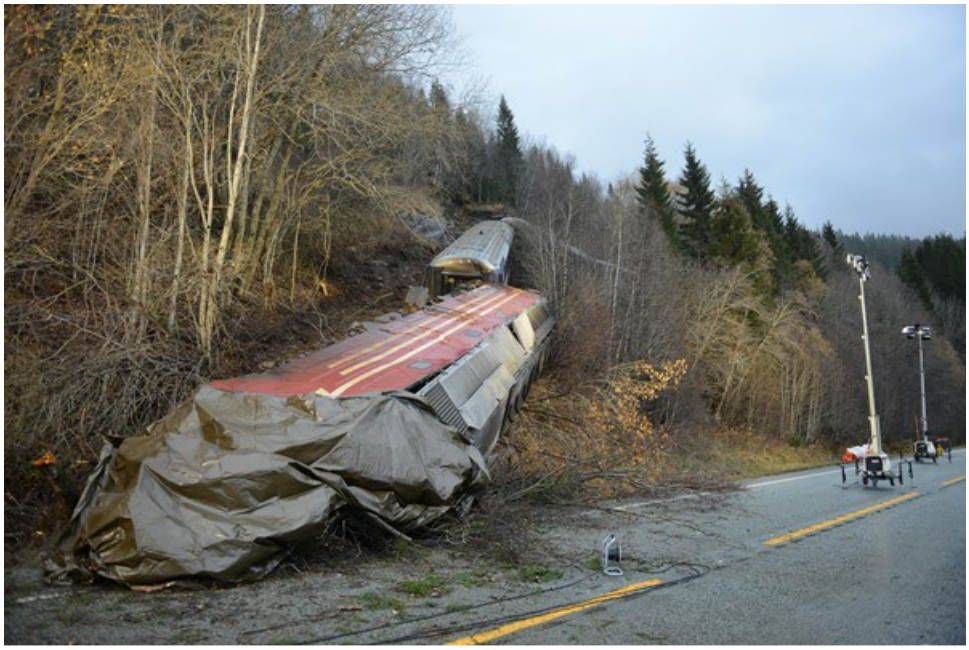
Findings from the investigation indicate safety issues related to safety responsibility and knowledge of Bane NOR SF's safety management system and risk management processes. The Norwegian Safety Investigation Authority therefore recommends mapping competence needs and strengthening expertise in administrative positions with safety responsibilities, to achieve a shared understanding of the role of risk analyses in safety management.

The investigation also reveals safety issues within Bane NOR SF related to the use and sharing of available information relevant to landslide protection work, as well as which professional resources are involved in various maintenance processes. Bane NOR SF has both local resources and a large central staff with expert competence in landslides and rockfall protection, but there are challenges in cooperation between these. The Norwegian Safety Investigation Authority therefore recommends that Bane NOR SF establish an overview of relevant internal knowledge and information sources and facilitate better cooperation between different parts of the organisation in order to carry out landslide protection work more systematically and efficiently.

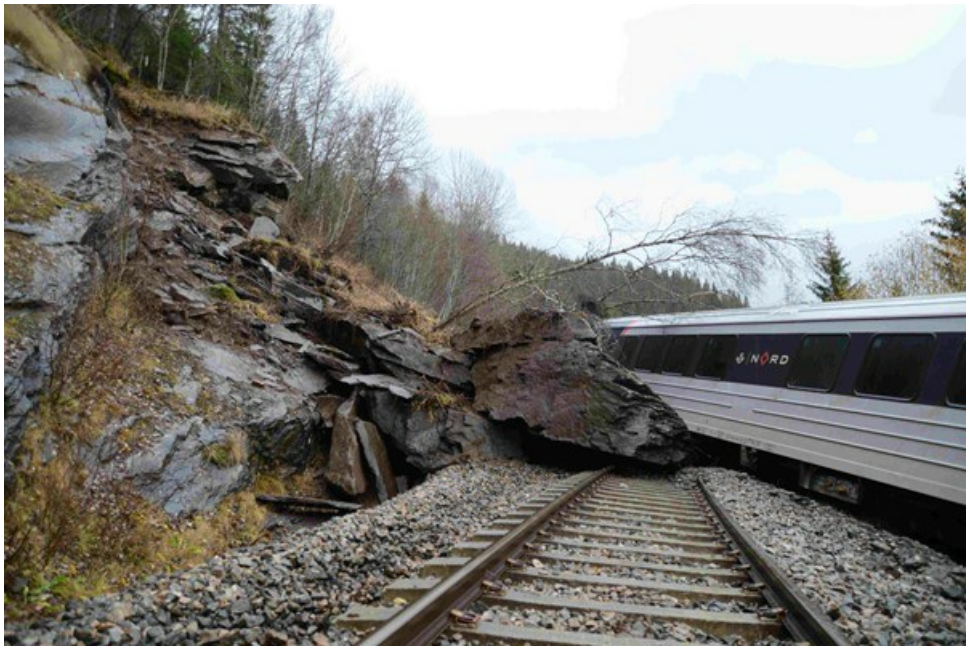
Bane NOR SF's technical regulations require the use of Eurocode 7 for geotechnical design. The investigation has shown that there is differing understanding of how and when Eurocode 7 should be applied to the infrastructure managed by Bane NOR SF. The Norwegian Safety Investigation Authority therefore recommends that Bane NOR SF establish clear guidelines for this.

After the accident occurred, the train's chief conductor immediately ensured that notifications were made and began working to gain an overview of the situation. The café attendant and the chief conductor were unable to communicate with each other because the passage between two coaches was blocked and they lacked communication equipment. The café attendant took initiative and actively helped assist passengers. Two police officers traveling as passengers also became key contributors until additional emergency personnel arrived. The Norwegian Safety Investigation Authority highlights a lesson learned related to ensuring communication capability among on-board staff in emergency situations.

The Norwegian Safety Invistigation Authority has issued three safety recommendations following the investigation.



*The accident site. Photo: NSIA*




*Rock slide at Finneidfjord.  Photo: NSIA*

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# Safety recommendation

## Safety recommendation Rail no. 2026/01T

On 24 October 2024 at approximately 14:14, passenger train 471 ran into a landslide at Finneidfjord between Bjerka and Mo i Rana. The train derailed and continued down an embankment towards the E6 with the first two coaches. The locomotive driver was killed in the accident, and five passengers sustained minor injuries.

The section is highly prone to landslides, and rockfall protection measures had been implemented at the accident site. These measures were not effective in preventing the landslide and may also have contributed to increasing its extent once it occurred. Bane NOR SF has expertise in landslide protection both centrally and locally within the organisation. Over time, substantial amounts of relevant information and data have been collected through various systems and processes, and knowledge has been gained from previous landslide incidents. The challenge lies in making this knowledge accessible and utilising it systematically in landslide protection work.

The Norwegian Safety Investigation Authority recommends that the Norwegian Railway Authority request Bane NOR SF to establish an overview of relevant internal knowledge and data sources, and to facilitate cooperation between different parts of the organisation so that landslide protection work can be carried out in a more systematic and effective manner.

## Safety recommendation Rail no. 2026/02T

On 24 October 2024 at approximately 14:14, passenger train 471 ran into a landslide at Finneidfjord between Bjerka and Mo i Rana. The train derailed and continued down an embankment towards the E6 with the first two coaches. The locomotive driver was killed in the accident, and five passengers sustained minor injuries.

For this section, an overarching risk analysis had been carried out, along with several landslide hazard assessments and risk evaluations. Several of these analyses and assessments, as well as the system for their preparation, accessibility and use, were not sufficiently known within the organisation among administrative and management roles with safety significance. This indicates a need for stronger organisational anchoring and clearer communication of how the safety management system is applied in practice, including how risk analyses form part of the overall approach to hazard management.

The Norwegian Safety Investigation Authority recommends that the Norwegian Railway Authority request Bane NOR SF to ensure that, for positions with safety significance, including management and administrative roles, competence needs are mapped and competence development is carried out in order to achieve a shared organisational understanding of the safety management system and the role of risk analyses within it.

## Safety recommendation Rail no. 2026/03T

On 24 October 2024 at approximately 14:14, passenger train 471 ran into a landslide at Finneidfjord between Bjerka and Mo i Rana. The train derailed and continued down an embankment towards the E6 with the first two coaches. The locomotive driver was killed in the accident, and five passengers sustained minor injuries.

Following a smaller landslide at the same location in 2018, rockfall protection measures were

implemented. There is no documentation indicating that the rock cutting was assessed at that time in accordance with relevant standards for rockfall protection. Bane NOR SF's regulations specify that Eurocode 7 shall be applied; however, there are differing views within the organisation regarding which maintenance measures are of such a scope as to require the use of these standards.

The Norwegian Safety Investigation Authority recommends that the Norwegian Railway Authority request Bane NOR SF to establish guidelines to ensure a common understanding of when the Eurocodes are to be applied in geotechnical design.

# Facts

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| Location | Finneidfjord, north of Bjerka station |
| Occurrence date | 24.10.2024 |
| Type of Transportation | Passenger train |
| Type of occurrence | Collision |
| Rolling Stock | Locomotive, Passenger Carriage |
| Operator | SJ Norge AS |