

5 SAFETY RECOMMENDATIONS

The Safety Investigation Authority recommends that the Finnish Transport Safety Agency (Trafi) should ensure the adoption of the following recommendations:

5.1 Contractor-specific safety management systems in trackwork

The Finnish Transport Agency did not require the contractors participating in the track project to have their own safety management systems; instead, it required the application of the Finnish Transport Agency's safety management system. The adoption of the system on a work site with several contractors and subcontractors was deficient, as was the monitoring of the adoption process. For these reasons, the Safety Investigation Authority recommends that:

Already at the competitive tendering phase for the project, the Finnish Transport Agency should require each main contractor participating in track projects to have its own safety management system that takes the special characteristics of the companies and work sites into consideration, and include monitoring of the realisation of these systems as part of its auditing process. [2018-S1]

The main contractor's safety management system must take the safety objectives set by the Finnish Transport Agency into consideration also with respect to subcontractors.

5.2 Instructions on the locations where rolling stock may be left standing and ensuring that it remains in place

The instructions currently in use do not pay attention to the standing locations and the related procedures for rolling stock. In this respect, the missing instructions give the operators free hands in where and how to leave rolling stock standing, which may at worst lead to a serious accident. The instructions are particularly important in the case of maintenance machines, as their movements and locations are not known by the centralised traffic control. For these reasons, the Safety Investigation Authority recommends that:

The Finnish Transport Agency should add instructions to the safety instructions of track maintenance (TURO) and the rail traffic and shunting work safety rules (Jt) on the locations where rolling stock may be left standing and the required procedures to secure it in place. [2018-S2]

The procedures for ensuring that rolling stock remains in place must specify in which situations the use of stop blocks and in which situations the use of lockable blocks is required in addition to the parking brake.

5.3 Connection of turnouts installed on a track section used by traffic to the monitoring of the centralised traffic control

In the worst case, the inability of the centralised traffic control to see turnouts installed in a track section used by traffic and their incomplete connection to the railway safety system could have caused a serious accident if the maintenance machine had stopped in the turnout

section. Furthermore, the inability of the centralised traffic control to see the turnouts caused a significant slow-down to the post-incident track inspection operations. For these reasons, the Safety Investigation Authority recommends that:

The Finnish Transport Agency should update Part 6, Safety devices, of the Railway Engineering Guidelines (RATO) so that the section of a turnout that sees traffic installed on a track section used by traffic must always be connected to the track circuit of the railway safety system as its own element and connected to the centralised traffic control monitoring immediately when technically possible. [2018-S3]

A turnout on a track used by traffic should always be visible in the centralised traffic control system so that the traffic controller is able to locate the turnout. The visibility of the turnout to the centralised traffic control also improves trackwork safety, as the turnouts and their numbers are carefully specified in the trackwork notifications.

5.4 Development of the commissioning permit procedure for individual machines of the type in use

At the time the incident occurred, the brake system of the maintenance machine was worn and poorly adjusted. This was the case despite a Finnish Transport Safety Agency (Trafi) traffic worthiness and safety inspection that had been conducted on the machine before it was taken into use. At the request of Trafi, extensive tests and measurements were performed on the machine, analysing the characteristics of the machine type, despite the fact that the machine type has been used in Finland for over 20 years. The purpose of these tests remains unclear, as the visibly poor condition of the individual machine was not detected. One factor could have been the missing of the machine's maintenance documentation. The role of the party that conducted these inspections was unclear in the investigated incident, as the company also participated in the refurbishment of the machine. For these reasons, the Safety Investigation Authority recommends that:

The Finnish Transport Safety Agency should specify in more detail the checks required during a traffic worthiness inspection as well as the qualification and independence criteria for the party conducting the inspection. [2018-S4]

In addition to the general safety regulations, the traffic worthiness inspection must be based on the requirements specified by the machine manufacturer; for this reason, the first step of the inspection should always be a check of the maintenance documentation. Based on this documentation, it can be checked whether the condition of the machine meets the requirements for safe use specified by its manufacturer. For example, the monitoring of the regular maintenance of safety-critical brake components is impossible without up-to-date documentation.

5.5 On-site trackwork monitoring

Instructions issued by the Finnish Transport Agency define the parties' responsibilities and tasks related to the safety of railway operations, such as trackwork. The instructions emphasise monitoring that has been defined to be primarily carried out in the form of written forms and reports. Work site monitoring is rarely performed on-site with the exception of separate

inspection visits. Indeed, the on-site monitoring of compliance with trackwork safety regulations should be increased. An increased risk of getting caught for breaches of regulations efficiently directs the behaviour of both organisations and individuals. Along with this measure, actions that comply with safety regulations should be made financially attractive. For these reasons, the Safety Investigation Authority reiterates the recommendation issued in investigation report R2013-02:

The Finnish Transport Agency will increase the field monitoring of trackwork safety regulations by allocating appropriate resources for such work. [R2013-02/S346]