Annual Railway Safety Report 2013

Finnish Transport Safety Agency Trafi

A. INTRODUCTION

This Annual Railway Safety Report presents the state of Finnish rail safety and the operations of the Finnish Transport Safety Agency (Trafi) as the National Railway Safety Authority in 2013.

Section 41 of the Railway Act (304/2011) requires Trafi to publish an annual report on rail safety by 30 September each year. The Annual Railway Safety Report is delivered to the European Railway Agency (ERA). The Annual Railway Safety Report follows the structure recommended by the ERA. The version of the report following ERA's annual safety report template is only delivered to the ERA. A version largely identical in content but intended for the general public is submitted to the Ministry of Transport and Communications and published on the Trafi website.

The information in the Annual Railway Safety Report is mainly based on the safety reports submitted to Trafi by railway operators. Collection of data for the present report was successful, and nearly all the required data were available in the operators' safety reports.

B. OVERALL SAFETY PERFORMANCE AND STRATEGY

B.1 Main conclusions on the reporting year

Rail safety remained at a fairly good level in Finland in 2013. No passengers or railway personnel lost their lives or were seriously injured in accidents. There were 12 significant accidents, clearly below the 2007–2012 average of 21.6. The major difference from earlier years was that the number of significant level-crossing accidents and trespasser fatalities was remarkably low. Rail safety has seen a gradual improvement when viewed over the long term.

The most serious rail accident of 2013 occurred at Vammala station in Sastamala on 6 April when 13 wagons in a freight train derailed at a turnout.[1] The accident was caused by the bogies of the 15th and 16th wagons in the train being driven between the switch blades and the stock rails, after which the wagons behind them derailed. The speed of the train at the time of the derailment was 67 km/h. Of the 13 wagons that derailed, two were overturned. The accident caused extensive damage to rolling stock and the track and disrupted traffic for about 11 hours. No personal injuries were caused. The total costs of the accident amounted to nearly EUR 1 million. Two other derailments classified as significant accidents occurred during the year under review.

There were 35 level-crossing accidents in 2013, four of them significant. These accidents caused two fatalities and one serious injury. The number of level-crossing accidents was

[1] Safety Investigation Authority, R2013-01. <*http://www.turvallisuustutkinta.fi/fi/index/tutkintaselostukset/raideliikenneonnettomuuksientutkinta/tutkintaselostuksetvuosittain/raideliikenne2013/r2013-01tavarajunan13vaununsuistuminenvammalanratapihalla6.4.2013.html*>. Retrieved 12.5.2014.

substantially below the annual average for the previous ten years (48). There has been a clearly decreasing trend in the annual number of level-crossing accidents throughout the 2000s.

In recent years, there have been relatively few significant collisions on the railways, from none to two per year. During the year under review, there were no significant railway collisions and also no fires in rolling stock. A significant accident categorised as ‘other types of accident’ occurred in shunting in Tampere on 27 May when a shunting locomotive collided with stationary locomotives. The accident caused significant damage to rolling stock. There is no clear trend detectable in precursors and other railway risk factors.

It would appear that in 2013, as in previous years, Finland attained a level of safety consistent with the national reference values in all risk categories. Finland does not currently have valid national safety targets.

B.2 National safety strategy, programmes and initiatives

Finland does not currently have a valid national railway safety strategy or plan.

The development of tools for operator and traffic risk assessment was begun at Trafi in 2013. The aim is to extend the application of these tools from rail transport to aviation, shipping and road transport. Risk assessment tools involve collecting data from various sources so as to compile risk profiles on operators and on various functions.

Data used for risk assessment include inspection and audit results, operators’ safety management systems, accident and incident reports and operators’ safety reports. Risk assessment tools include operator risk profiles, a risk matrix for evaluating accidents and incidents, and a risk matrix for evaluating individual safety issues.

The data collected will enable Trafi, for instance, to allocate its limited supervision resources to critical high-risk areas. Other Trafi operations such as regulation and communication can also be developed based on the results obtained with the risk assessment tools. The development of risk assessment tools has continued in 2014, and the aim is to have them deployed by the end of the year.

B.3 Review of the previous year

The year 2013 saw a positive development in railway functions at Trafi, particularly in supervision with the full-scale launch of audits of railway operators and infrastructure managers. Experiences from the first audits were used to improve auditing activities for the audits to be carried out in 2014. Scarcity of human resources continues to be a problem for supervision, even though some additional resources have been acquired in recent years.

The handling of safety authorisations and certificates was up to speed and running smoothly in 2013. However, the deadline for applying for a safety authorisation for private sidings caused a last-minute rush, which delayed the processing of applications somewhat. Processing of authorisations to take into service also progressed well in 2013.

Preparations for implementing the OPE TSI and CCS TSI were made in the regulation function at Trafi in 2013. Several national regulations were repealed and replaced with technical specifications of interoperability (TSIs). The provisions enacting the TSIs entered into force at the beginning of 2014. This change will enable a broader development of operations in the sector within the framework of safety management systems.

During the year under review, Trafi also aimed to improve cooperation between the regulation, authorisation, supervision and analysis functions by improving joint meeting procedures and information exchange methods.

B.4 Focus areas for the next year

Trafi will focus on enhancing supervision and analysis functions by developing risk-based methods and tools as mentioned in the section B2. Another focus area is to ensure proper safety information flow between all safety related functions of the organisation.

C. DEVELOPMENTS IN SAFETY PERFORMANCE

C.1 Detailed analysis of the latest recorded trends

Safety of train traffic

Safety of train traffic in Finland remained good in 2013. In view of the traffic volumes, the rate of occurrence of railway accidents is minimal, and railway traffic, along with air travel, is the safest mode of travel. A few accidents categorised as significant, however, occur on Finnish railways every year (Figure 1). In addition, there were a number of incidents and accident precursors, whose number provides a useful tool for the monitoring of safety trends.

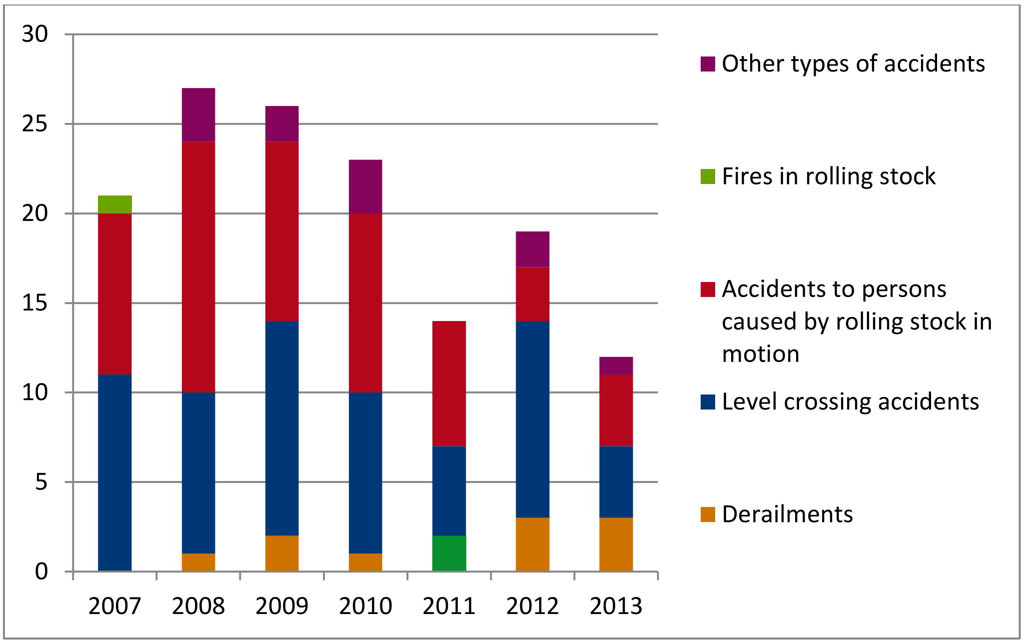

Figure 1. Significant accidents in 2007–2013 by accident type. (Common Safety Indicators, ERAIL database <http://erail.era.europa.eu/>)

Because of the high safety level on railways, significant accidents are rare. As the number of significant accidents is very small, any variation can be attributed largely to random variation, and consequently merely analysing the volume of accidents may not necessarily deliver a reliable view of the development of railway safety. For this reason, it is equally vital to analyse the occurrence trends of incidents, accident precursors and various deviations. As the reporting regime for accident precursors and deviations is a relatively recent procedure that is still under further development, it should be noted that an increase in the reported deviations may indicate not a deterioration in safety but an increased reporting activity.

In what follows, the development of railway safety is reviewed on the basis of significant accidents, incidents and accident precursors.

Derailments

In 2013, three significant derailments occurred on Finnish railways. In 2012, there were also three derailments, and in 2007 to 2011 the occurrence of similar events varied between zero and two. As reviewed over the long term, derailments have clearly decreased from the 1990s onwards, partly due to the introduction of hot box detectors measuring the temperature of the wheels of rolling stock.

Of the railway accidents in 2013, the most serious one occurred on 6 April at the Vammala station in Sastamala, in which 13 wagons of a freight train were derailed at a turnout.[2] In the accident, the bogies of wagons 15 and 16 were directed between the switch blades and the stock rails, causing the rear end of the train to derail. At the time of derailment, the speed of the train was 67 km/h. Two of the derailed wagons tipped over. The wagons that tipped over were damaged beyond repair, while the rest of the derailed wagons sustained minor damage. In addition, 250 meters of track was damaged. The accident caused a disruption in traffic of approximately 11 hours. No casualties were caused by the accident. The total costs from the accident were nearly EUR 1 million.

The immediate cause of the accident was a switch turning underneath the train due to the vibration generated by the train passing over the turnout. A further contributory factor was the incorrect adjustment of the point locking machine in deviation from specifications. The first derailed wagons were Russian-made, and apparently certain structural properties of Russian rolling stock may have contributed to the accident. Failure to report repeated trailing notifications about the turnout in question to the track maintenance organisation can be regarded as a background cause to the accident. It had become habitual to leave trailing notifications caused by the passage of trains unreported because they were so common and, on the other hand, because maintenance personnel had been unable to determine the cause of the trailing notifications. According to the accident investigation report, there were deficiencies in the management of competences related to turnout maintenance, and no training has been provided in turnout maintenance lately. In 2009, a very similar derailment occurred in Toijala, caused by a switch turning underneath a train due to vibration. After the accident in Vammala, the travelling speeds of Russian rolling stock were restricted across the entire railway network until the adjustments of turnouts of a similar type were checked.

[2] Safety Investigation Authority, R2013-01. <*http://www.turvallisuustutkinta.fi/fi/index/tutkintaselostukset/raideliikenneonnettomuuksientutkinta/tutkintaselostuksetvuosittain/raideliikenne2013/r2013-01tavarajunan13vaununsuistuminenvammalanratapihalla6.4.2013.html*>. Retrieved on 12/05/2014.

On 3 January 2013, another accident categorised as significant occurred in Markkala, when a snow plough moving as a train was derailed. Derailment occurred when a driver trainee inadvertently applied a lever lowering the rear plough unit. The plough was lowered at a turnout, causing the train to derail. At the time of the accident, the train was travelling at a speed of approximately 20 km/h. The turnout sustained minor damage in the derailment, but there were no casualties or further damage to rolling stock. The accident was categorised as significant because of the resultant interruption in traffic. Due to the derailment, train service between Pieksämäki and Suonenjoki was interrupted for eight hours.

On 5 July 2013, the first bogie of the first wagon of a train departing at a low speed was derailed in Kokkola. The accident was caused by a spring set becoming disconnected from a freight wagon. The accident can be categorised as significant on the basis of the extensive damage caused to rolling stock. A departing freight train was also derailed in Siilinjärvi on 17 September 2013.[3] The first bogie of the first wagon of a departing freight train was derailed at a speed of approximately 5 km/h at a turnout situated at the interface of a private siding and track managed by the Finnish Transport Agency. The rolling stock sustained only minor damage that did not justify categorising the accident as significant. The blade of the turnout at which the train derailed was not switched to terminal position and was unlocked. Because the traffic controller did not succeed to set the main signal in the departure direction to ‘permission to proceed’, he asked the driver to check the way the point was set. From the locomotive, the point seemed to be correctly set. When passing over the point, the wheels of the locomotive were directed correctly, but the wheels of the first wagon were directed between the point blade and the stock rails. A departing freight train was also derailed on 10 March in Kotka. The derailment of two wagons caused minor damage to the track and the wagons.

Collisions

In 2013, there were no significant collision accidents on Finnish railways. Apart from the two significant collision accidents on Finnish railways in 2011, no collisions categorised as significant occurred in rail traffic in previous years. A total of 15 train collisions occurred in 2013, of which two were collisions with another train and 13 with obstacles on the track. This means that the number of collisions with obstacles in railway traffic in 2013 was slightly higher than in 2010–2011, during which period the number of collisions varied between 5 and 11 (Figure 2). Obstacles on the track are typically fallen trees and vehicles parked too close to the track, for example.

[3] Safety Investigation Authority, R2013-E3. <http://www.turvallisuustutkinta.fi/fi/index/tutkintaselostukset/raideliikenneonnettomuuksientutkinta/tutkintaselostuksetvuosittain/raideliikenne2013/r2013-e3lahtevantavarajunanensimmaisenvaununensimmaisentelinsuistuminensiilinjarvella17.9.2013.html>. Retrieved on 13/05/2014.

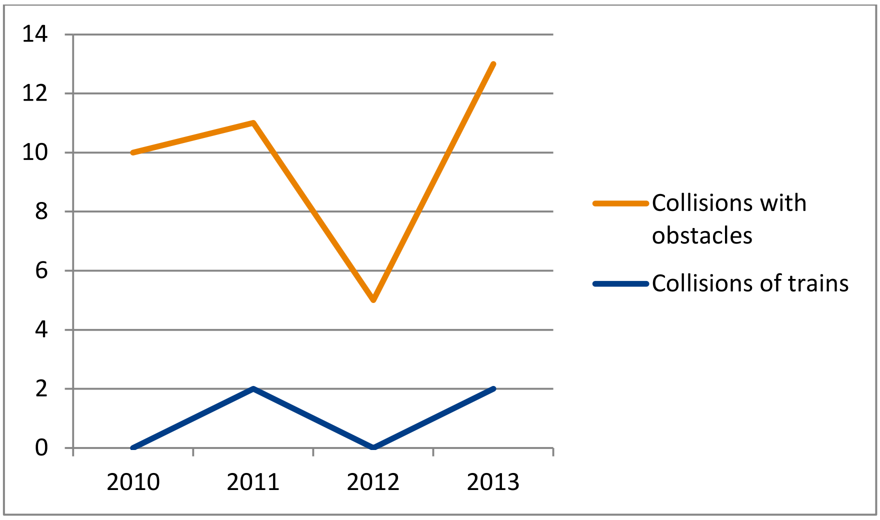

Figure 2. Collisions in rail traffic in 2010–2013. (VR Group Ltd)

The most serious collisions occurred between trains and excavators in Pännäinen on 7 November and in Malminkartano on 17 July. As the causative factors leading to the collision between trains and excavators are related to track work in general, the matter will be discussed in detail in the section dealing with track work safety.

In Kontiomäki, an accident occurred on 27 March in which two locomotives, coming to assist a train carrying timber on an uphill track section, collided with the freight train to be assisted. When the inter-coupled pair of locomotives was being shunted toward the train for assistance, they collided with the train after a failed braking operation. Failure in braking was probably due to hydraulic oil of unknown origin on a section of track of over 200 meters. The accident caused minor damage to the locomotives, but no casualties were sustained.

Other accidents in rail traffic

In 2013, there were no fires in rolling stock meeting the criteria for a significant accident. The latest significant fire in rolling stock took place in 2007. There were 17 minor fires in rolling stock in all. From 2010 to 2012, the annual number of similar events varied between 10 and 16. Typically, fires in rolling stock occur in the engine compartment of traction units or, for example, in the electrical devices of toilets and cafeteria equipment.

Of the other accidents, the accident that occurred on the Jämsänkoski–Sastamala line on 18 April 2013 should be cited: the pantograph of an Inter-City train became entangled with a damaged overhead contact wire. The contact wire and the electric track insulator hit the train window and broke it. One passenger sustained a minor injury from the broken window. The chain of events began with an incorrect coupling made at the electric track operating center, which subsequently caused the contact wire to snap. The operating center informed the traffic control that the section in question must be passed with the pantograph lowered. As a result of faulty assessment of the situation, the location was communicated incorrectly, and the train ran into the damaged section with the pantograph up.

Incidents and precursors

As reviewed over the short term, the number of incidents and precursors would appear to be increasing (Figure 3). Statistics covering a relatively limited period may not necessarily tell the whole truth about the trends in the development of incidents and precursors. In recent years, an increased activity among operators to report deviations, as well as the more clearly specified definitions of incident indicators, can largely explain the increase in incidents in the statistics for 2007–2013. The scope and coverage of information available from the Finnish Transport Agency has developed rapidly during recent years. Concerning certain types of cases, such as broken rails, track buckles and the overall number of signalling errors, the Finnish Transport Agency still receives widely diverging information from various sources, and consequently the reliability of such information is not particularly good. Over the long term, the overall number of incidents is probably declining with the introduction of new safety equipment and the increasingly safe operating methods.

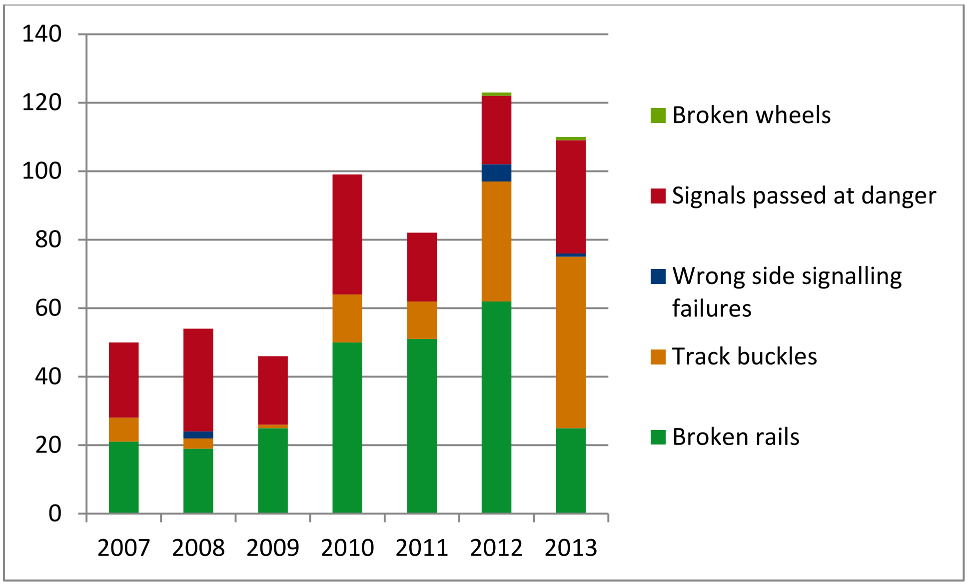

Figure 3. Development of incidents and precursors in 2007–2013. (Common Safety Indicators, ERAIL database)

In 2013, there were 33 instances of signal passed at danger. In 2007–2012, the rate of occurrence varied between 20 and 35. There is no clearly discernible trend in the rate of occurrence of signals passed at danger. In a typical case, the train overshoots the signal by a few meters because of a delay in braking or mistakenly departs without being granted permit to proceed. On tracks with Automatic Train Control (ATC), the system stops the train immediately after a signal passed at danger. However, in a number of malfunction situations, passing a signal at danger involves great risks. In recent decades, signals passed at danger have been the most common cause of fatal derailments and collisions in Europe.[4]

A case in point is an incident where the risks involved in passing a signal passed at danger were almost realised in Arola on 7 March 2013. In the incident, two freight trains approaching the Arola station were heading towards a head-on collision because braking power in one of the locomotives was insufficient under poor weather conditions to stop the train at the end-of-line sign, and the locomotive moved into the path of the oncoming train. Finally, the

[4] Evans, A. Fatal Train Accidents on Europe's Railways: 1980–2013. *<https://workspace.imperial.ac.uk/cts/Public/Docs/FTAE2013.pdf?utm_source=ETSC&utm_campaign=9c5dd0ca8f-Safety_Monitor_91_May_2014&utm_medium=email&utm_term=0_3a7b55edbf-9c5dd0ca8f-103275897>*. Retrieved 14/5/2014

locomotives stopped only a few meters from one another. The ATC system was incapable of preventing the incident because of insufficient braking power. A further cause contributing to the incident in Arola arose from incorrect braking power values and weather information entered in the locomotive’s on-board ATC unit. Another incident due to signal passed at danger occurred on 21 September 2013 when a heritage train departed without permit to proceed. The heritage train was in motion for 10 minutes before contact was established with the driver and the train was stopped.

No broken axles were reported last year either. As in 2012, there was one broken wheel reported in 2013. The alarming increase in the cases of hot boxes in 2012 was contained in 2014. Their number increased from 102 in 2010 to 147 in 2012 and then decreased to 122 in 2013. In the worst-case scenario, hot box may result in derailment. The causes underlying cases of hot box are usually due to inappropriate application of brakes or technical failures, and VR Group Ltd has undertaken measures to reduce potential hot box problems by issuing further guidelines on brake adjustment.

Approximately 20 cases of wagons becoming uncoupled while moving and cases involving deficient wagon locks occur annually. Such uncoupling cases are usually caused by failed coupling devices or inappropriate working routine. There seems to be a slight upward trend in the train uncoupling incidents. Deficiencies in door locking are usually related to doors remaining open or unlocked while moving, or to the sliding doors and covers of freight wagons. The problems with doors have increased slightly in number during recent years.

In an incident that occurred in Malmi on 24 June, a commuter train routed to an exceptional track alighted passengers onto an out-of-use platform with no exit. In the event, some of the passengers made their way from the platform across other tracks and over fences.

In 2013, a single incident caused by technical malfunction occurred, categorised as a signalling failure. A signalling failure is a situation where the signalling system, due to technical failure, issues an excessive permit signal to a train. The only incident in this category occurred in Mommila on 18 March, where the train was allowed free passage despite the fact that the section in question was blocked for traffic. In this case, the criteria for free track were not met, and free passage should not have been authorised by signalling. In 2012, there were five cases of signalling failure. Because of the more detailed new definition of signalling failure, data prior to 2012 are not comparable to the data for 2012 and 2013.

In 2013, there were 13 cases of broken rail. The rate of occurrence of broken rails decreased in comparison to the previous three years, as the number of broken rails varied between 50 and 60 in 2010–2012. The unusually cold winters largely explain the high number of broken rails in the years in question.

Track buckle refers to a discontinuity in rail geometry which requires closing down the track or setting speed restrictions. Typical cases of track buckles are so-called heat curves caused by thermal expansion. In 2013, there were 50 cases of track buckles, a figure clearly higher than in the previous years. The increase can partly be explained by the unusually long and warm summer of 2013, but the more detailed definition and increasing coverage of statistics may also reflect the magnitude of the increase. Soil frost damage and heaves are not considered in the number of track buckles. In 2013, speed restrictions due to soil frost damage were set for up to 229 kilometers of track.

In 2013, a total of 227 acts of vandalism were recorded in the statistics of the Finnish Transport Agency. In 2011 and 2012, there were 215 and 303 acts of vandalism, respectively. The number of cases varies year on year, and there is no clear trend in the rate of occurrence. Cases of vandalism concentrate in and around large conurbations. In a typical case, stones, pieces of wood and other similar items are piled on the track. Damage is also caused to safety equipment, cables and signal posts. Cases of vandalism regarded as extremely heinous are relatively rare, however. Though damage from vandalism is typically rather minor, vandalism always involves a risk of accidents.

Technical safety of infrastructure and other observations

As in previous years, 82% of Finland's state-owned rail network is covered by the Automatic Train Protection (ATP) system, and 98% of all rail traffic is operated on track equipped with the ATP.

After 76 level crossings were eliminated in 2013, 3,505 level crossings remain on the network. Of these, 780 are equipped with warning systems and 2,725 are not.

Costs of significant accidents

The total costs to society of significant accidents in 2013 were EUR 16,786,869, compared to EUR 16,968,715 in 2012. In the accident costs for 2013, damage to rolling stock and infrastructure accounted for EUR 4,547,468 and fatalities and personal injuries for EUR 11,496,530. In 2012, fatalities and personal injuries accounted for about EUR 14 million, meaning that in 2013 the percentage of fatalities and personal injuries decreased, while that of material damage increased.

Safety in track work

Track work means track maintenance or construction work performed on railways. In all cases, track work requires the infrastructure manager's permission. Permission for track work on the state-owned railway network is applied for at the traffic control center. Combining track work and rail traffic seamlessly together without compromising safety and disturbing scheduled traffic requires careful planning and well-functioning cooperation between track work operators and the traffic control center.

For several years now, safety in track work has been a major concern on railways. Multiple incidents arising from combining track work and train traffic together occur every year. Typical problems include operating work machines outside the perimeter of the track work area, deficiencies in lookout procedures, communication problems in releasing the track section in question for regular traffic, and track work performed without permission. In recent years, a number of surveys and studies have been conducted on the improvement of track work safety, resulting in several development proposals and measures. For the time being, the safety impact on track work of the measures cannot be established in terms of the overall statistics, and no upward or downward trends can be discerned in track work safety.

The most serious incidents associated with track work in 2013 included two collisions with work machines and unclear communication about releasing the track section for traffic, which entailed risk of a train collision. In Pännäinen on 7 November, a freight train collided with an excavator operating on the track, which resulted in minor injuries to the excavator operator and damage to both the excavator and the train. As a result of a conditional work permit granted by the traffic controller and unclear communication between the shunting supervisor and the operator of the excavator, the excavator moved onto the track ahead of the designated time. The second collision occurred in Malminkartano on 17 June when an excavator collided with the side of a commuter train. There were no casualties, but the train and excavator sustained minor damage. The accident was caused when the excavator moved from the track reserved for track work to operate within the perimeter of a free clearing area next to a track in active traffic use. In Kilpua on 10 September, unclear circumstances related to the termination of track work resulted in an incident in which two trains were in danger of colliding. A passenger train passed a stop sign on a section where the ATC system was under construction and was in danger of moving into the path of another train. The signal post lying on the ground was not visible to the driver. The driver had not been notified of the missing signal post because of unclear circumstances related to the termination of the construction work.

Further incidents also occurred. In Korkeakoski on 2 November, two men working on the track came close to being hit by a train because one of the men failed in his lookout duty. In Partaharju on 11 December, an excavator moved onto the track in front of an IC train due to an unclear track work permit. The excavator operator noticed the train approaching the machine from the rear and reversed off the track in time. In Kannonkoski on 29 October, track work was initiated on two separate occasions without a permit being issued by the traffic control center. In addition, the train collided with a wrecking bar left in place by the working crew when work was suspended due to a passing train.

In many cases, deviations in track work are related to problematic procedures employed by those responsible for track work, unclear limits of the track work perimeter and shortcomings in technical competence. It would appear that the key factor underlying the problems in track work are shortcomings in the competencies of track workers. The great majority of track workers are qualified professionals, but there are also workers with insufficient skills. In particular, there seems to be a shortage of professionals capable of turnout maintenance, and partly also the maintenance of safety equipment installations.

Increasing employment of subcontractors and leased labour in recent years seems to be a significant cause of shortcomings in competence. A complex subcontracting chain consisting of various consultants and contractors may be engaged in the performance of track work ordered by the infrastructure manager. For the party ordering the work, supervision and management of the skills and competence may be challenging in such a cluster composed of a variety of operators. In order to improve the present situation, the Finnish Transport Agency as the infrastructure manager of the state-owned railway network has launched a reform in competence training and has started evaluating potential alternatives for developing its operations.

To improve track work safety, all deviation cases are analysed with the party in question, and measures are developed to improve safety on the basis of such deviations. In the next version of track maintenance guidelines, several new safety enhancements will be introduced based on past deviations. The Finnish Transport Agency also intends to disseminate information on correct operating methods applicable to construction work carried out in the vicinity of railways by issuing a guide on the subject. In the autumn of 2011, a working group under the direction of the Finnish Transport Agency charted development needs associated with track work safety and proposed a number of actions to be taken. Within the Traffic Safety 2025 Research Programme by VTT Technical Research Centre of Finland, a comparison study was published in 2013 on the methods employed in different countries to integrate rail traffic and track work, as well as to better delimit the track work site. The study delivered several proposals for development, many of which are related to the advance notification system ETJ-2.

As some of the proposed actions are already implemented and others are still under progress, it is not yet possible to determine whether the measures will have the intended safety impact on track work. It is evident, however, that in the present operating environment of track work, involving a large number of contractors, safety management is a challenging task and solving the multi-faceted safety problems requires significant effort on the part of the various parties. It would seem that the key factors in improving safety in track work include functioning communication among the various parties, competence management throughout the organisations engaged in track work and well-organised risk management.

Safety in shunting

Shunting means the transfer and arrangement of rolling stock in support of rail traffic. Shunting is governed by a different set of rules than train traffic. Typically, shunting is performed within a rail yard. The maximum permitted speed is 35 km/h within yards and 50 km/h between yards.

The greater part of accidents and incidents on railways occur in shunting, but due to the low speeds in shunting such events usually result only in minor consequences. Shunting is more prone to human error than train traffic because safety procedures and equipment are employed in shunting to a lesser extent than in train traffic. The physically demanding nature of the work, difficult working hours and demanding conditions also increase the possibility of human error. The high volume of shunting accidents can also be explained by the fact that rolling stock is transferred, coupled and decoupled multiple times within a single working shift. Coupling and decoupling are the critical phases in the operations, and with an increasing number of repeated operations, the risk of accidents also increases.

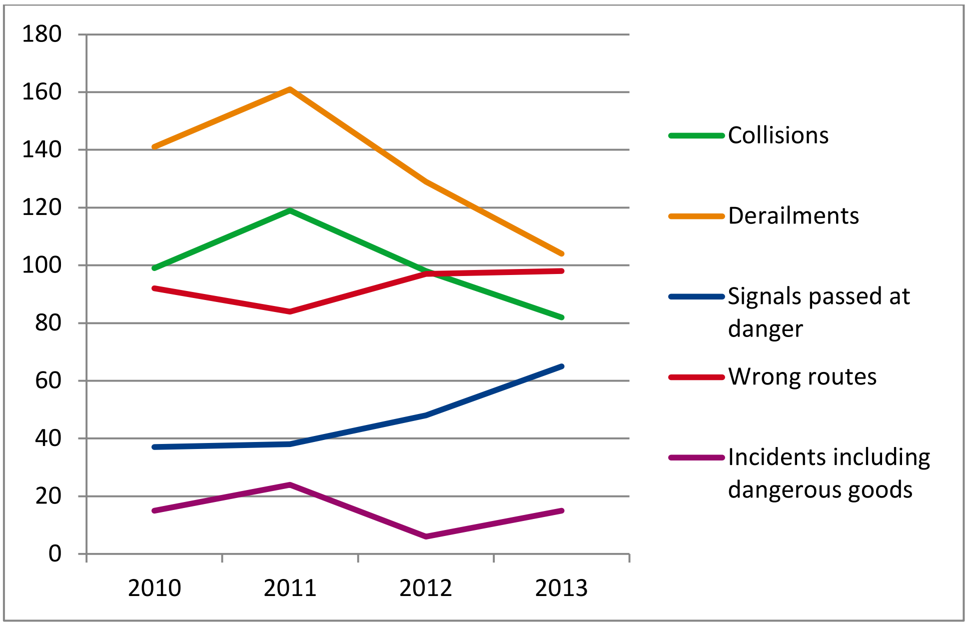

Figure 4. Development of shunting deviation volumes in 2010–2013. (VR Group Ltd)

According to the VR Group statistics, derailments and collisions are the most common type of accidents in shunting (Figure 4). The VR Group statistics cover the greater part of shunting on the railways. In 2013, a total of 104 derailments occurred in shunting, a figure significantly lower than in the previous year. In most cases, derailments occur at turnouts, at level crossings and in channel rails. Brake block holders left in place on the track also cause a couple of accidents annually. A significant percentage of derailments in shunting operations occur on private sidings because of both the poor technical condition of the siding and of snow and ice accumulated in the channel rails due to inadequate maintenance in winter conditions.

In 2013, perhaps the most exceptional shunting accident occurred in Pelkola, Imatra on 13 December when a combination of wagons escaped from a private siding and was subsequently derailed. After leaving the private siding, the combination of eight wagons travelled over 700 meters on the Finnish Transport Agency's railway network. The wagons were routed to a safety track, where the combination was derailed after hitting a buffer stop. Seven of the wagons were derailed, three of them turned sideways across the track. The wagons apparently started moving by the force of a strong wind blowing at the time of the event. The brake block holder locking the combination in place apparently became dislodged from the channel rail.

In 2013, a total of 82 collisions occurred in shunting operations, significantly fewer than in the previous year. The most serious shunting accidents, however, were collisions. One shunting collision was classified as significant accident. The accident occurred in Tampere on 27 May when a shunting locomotive collided with stationary locomotives. The accident was due to a turnout in an incorrect position and caused sizeable economic losses when several locomotives sustained damage from the impact. The accident was categorised as significant on the basis of the costs incurred. Another serious accident occurred in Sköldvik on track under the management of the Finnish Transport Agency on 1 January when a radio-controlled shunting locomotive collided with an empty wagon used for the carriage of dangerous goods (CDG). In the accident, two shunting foremen were injured, and rolling stock sustained minor damage. Typical collisions occurring in shunting operations are collisions with other rolling stock or wagons hitting a buffer stop. Some collisions also occur with obstacles inside the minimum track clearance envelope or with doors and gates of industrial areas.

Shunting resulted in 98 cases of incorrectly set route in 2013. This number has remained roughly constant in recent years. The cases in this category consist of turnouts being forced open by trains or shunting units directed onto the wrong route. In shunting, there were 65 cases of signals passed at danger in 2013. In comparison to previous years, this was the second time when the number of incidents increased for two consecutive years. In a typical case, a signal is passed at danger by only a few meters. The incident records also include shunting operations performed without permit. A typical case of a signal passed at danger results in the points of a switch being forced open by the train, but in the worst-case scenario serious results may be produced when a shunting unit moves into the path of another train.

In shunting, there were 15 deviations associated with the carriage of dangerous goods (CDG), with the number of cases remaining at the same level as last year. VR Group statistics record as CDG collisions and derailments all cases involving CDG wagons, regardless of whether there was any resulting leakage. The CDG deviations comprised eight derailments, four cases involving leakage and three collisions. The CDG collisions and derailments were caused by the same factors as in shunting collisions and derailments. The causes and consequences of CDG leaks are not itemised in the statistics, but typically they are minor leaks from valves. Most of the deviations associated with the carriage of dangerous goods by rail occur in shunting operations. Last year, the CDG deviations resulted only in minor consequences. Though shunting accidents typically cause only minor consequences, due to the low speeds involved, potentially very serious accidents can also occur in shunting when dangerous goods are involved.

Level crossing safety

Level-crossing accidents are the second most common accident type across the entire European Union, whether measured by rate of occurrence or number of fatalities. Level crossing accidents are a grave cause for concern in railway safety. In the European Union, a person is killed or seriously injured in a level-crossing accident every day. In Finland, there were two fatalities in level-crossing accidents in 2013. In all, there were 35 level-crossing accidents. The trend in level-crossing accidents was declining in the 2000s (Figure 5). The trend in fatalities was also declining somewhat. On average, there were 46 level-crossing accidents during the past ten years and 35 cases annually in the past five years. These numbers show that the rate of occurrence of level-crossing accidents is declining.

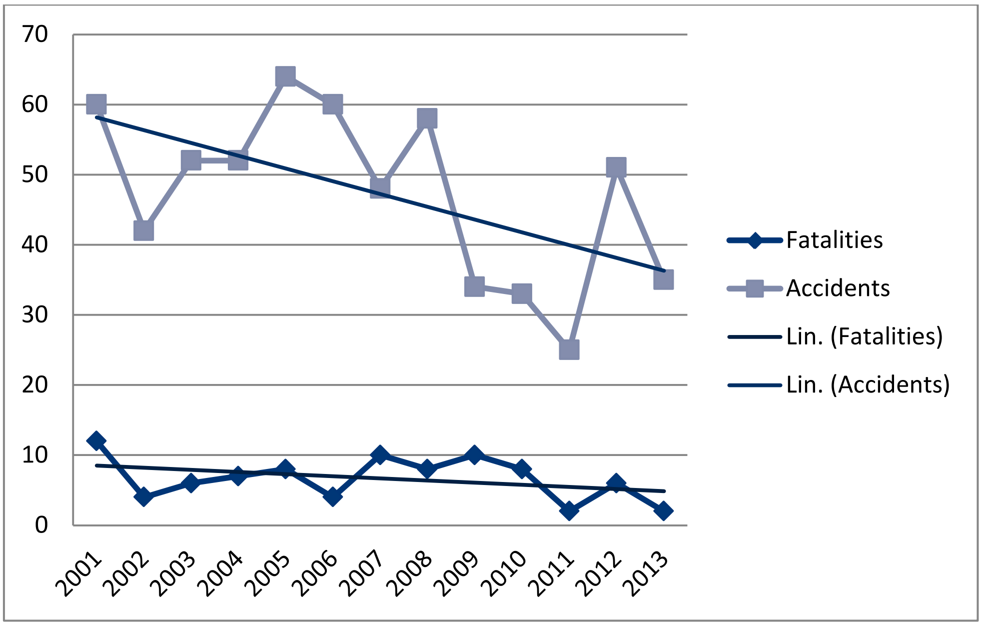

Figure 5. Number of level-crossing accidents, fatalities, and associated trends in 2001–2013. (Finnish Transport Agency. http://portal.liikennevirasto.fi/sivu/www/f/aineistopalvelut/tilastot/onnettomuustilastot/tasoristeysonnettomuudet#.U7Kn5FPWY5Q)

The number of significant accidents (i.e. the most serious ones) is used in the EU-wide statistics. In Finland in recent years, approximately one out of five level-crossing accidents has been significant. There were four significant level-crossing accidents in Finland in 2013.

Improved safety at level crossings requires systematic input from both road and railway infrastructure managers. The United Nations Economic Commission for Europe (UNECE) has appointed a sub-committee of a group of experts tasked with assessing improved safety at level crossings by joint effort of representatives of rail and road traffic. Finland has a representative in the working group.

Safety of heritage rail traffic

In the Railway Act, heritage rail traffic is defined as small-scale rail traffic on railways organised by non-profit corporations. Heritage trains are rolling stock registered in the Trafi register of rolling stock as heritage stock.

In Finland, there are four associations and three companies specialising in operating heritage rail traffic. VR Group also has heritage stock operated on special occasions. The heritage railway operators are usually managed and operated by railway enthusiasts, but the drivers of heritage locomotives, for example, are trained professionals. Drivers include both drivers in retirement and those still on active duty in VR Group. Heritage trains are operated mainly in the summer. Most traffic is available to public, but trips also are organised on demand. Traffic volumes are rather small; a typical operator organises 10 to 20 trips annually.

A number of incidents occurred in heritage traffic in 2012 and 2013, the most dangerous of which were two departures without permission to proceed and one unscheduled passenger stop. In the unscheduled passenger stop, passengers alighted from a heritage train and crossed the adjacent track just ahead of an Allegro train passing the site along that track at high speed. Further accidents and incidents in the past year include at least two cases of signal passed at danger, derailment, unauthorised shunting, two level crossing accidents, collision outside regular traffic operations and fires in steam locomotives.

While no fatalities were sustained in heritage traffic in the past year, there were several high-risk near-miss situations among the reported deviations. According to a rough estimate, the number of deviations occurring in heritage traffic per train-kilometer is many times greater than in commercial rail traffic. Two heritage traffic operators clearly stand out in the rate of occurrence of deviations in heritage traffic, but the entire business should not be judged because of problems with two individual operators.

The effective functioning of the risk management system of the two operators is seriously called into question because of inadequate response to repeated incidents, as well as of recurrence of similar incidents. In safety management system audits conducted by Trafi, deficiencies were also discovered in the risk management of the operators where accidents and incidents tend to accumulate.

Occurrence of repeated deviations and the outcomes of Trafi audits also suggest that certain operators have problems in the management of competencies and skills. Deficiencies in the management of required professional competence become apparent for example when evident deficiencies are discovered in the competencies and skills of personnel performing safety-related tasks and duties. On the basis of reports received about signals passed at danger, it is quite fair to assume that at the time of the incident the train was operated without a person assigned to lookout duty. The lookout has a significant role in ensuring traffic safety in the absence of an ATP system or a dead man’s switch as a safety device in the locomotive.

On the basis of available information, the safety management systems of some heritage operators are not functioning as planned. A prime example of ineffective safety management among certain operators is provided by the fact that the operators in question have not reported all the incidents on their own initiative, without being requested to do so. In certain cases, it would seem that a safety management system is only regarded as a formal prerequisite permitting continued operations and has no practical meaning in day-to-day operations. An ineffective safety management system does not entirely explain the rate of occurrence of deviations, but the employment of appropriate safety management procedures would probably have prevented most of the deviations.

Non-functioning safety management is probably due to management systems created in great haste and on the limited resources of the operators. Even for experts, building a well-functioning safety management system is a demanding and time-consuming process, and small operators may not necessarily have the knowledge and competence required for safety management. Trafi has provided training for operators on safety matters, but such training has focused rather on the prerequisites for obtaining a safety certificate than on actual safety management.

Fatalities and serious injuries in railway accidents

There were six fatalities and three serious injuries in railway accidents in 2013. The number of fatalities and serious injuries was lower than the average for 2007–2012 (Figure 6).

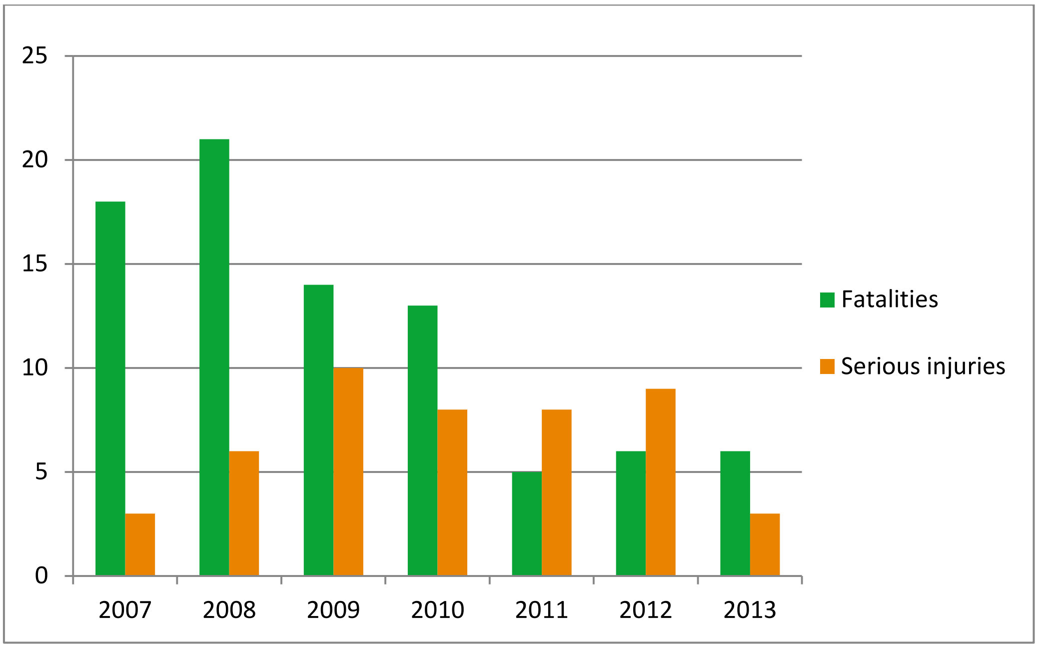

Figure 6. Number of fatalities and serious injuries in rail accidents in 2007–2013. (Common Safety Indicators, ERAIL database)

In 2013, four of the persons who died in railway accidents were trespassers, while two were level-crossing users. In 2007–2012, the number of trespasser fatalities varied between zero and 13 cases. In level-crossing accidents, the annual number of fatalities has varied between two and 12 cases since 2000.

Accidental deaths due to being hit by a train should be considered with a certain degree of caution, since for classification purposes the line between accident and suicide may be rather vague. The majority of fatalities on railways are suicides. Last year, a total of 55 suicides were committed on the railways. In previous years, the annual number of suicides on the railways has varied between 47 and 59. While the rate of other fatalities and serious injuries on the railways is gradually declining, it would seem that the rate of suicides remains fairly constant. A similar trend is observed across the European Union – the rate of suicides is even showing a slight increase.

Between 2007 and 2013, most rail fatalities were level-crossing users and trespassers hit by a train (Figure 7). On average, one railway employee per year has died in a rail accident over the past two years. No passengers have died in rail accidents in recent years.

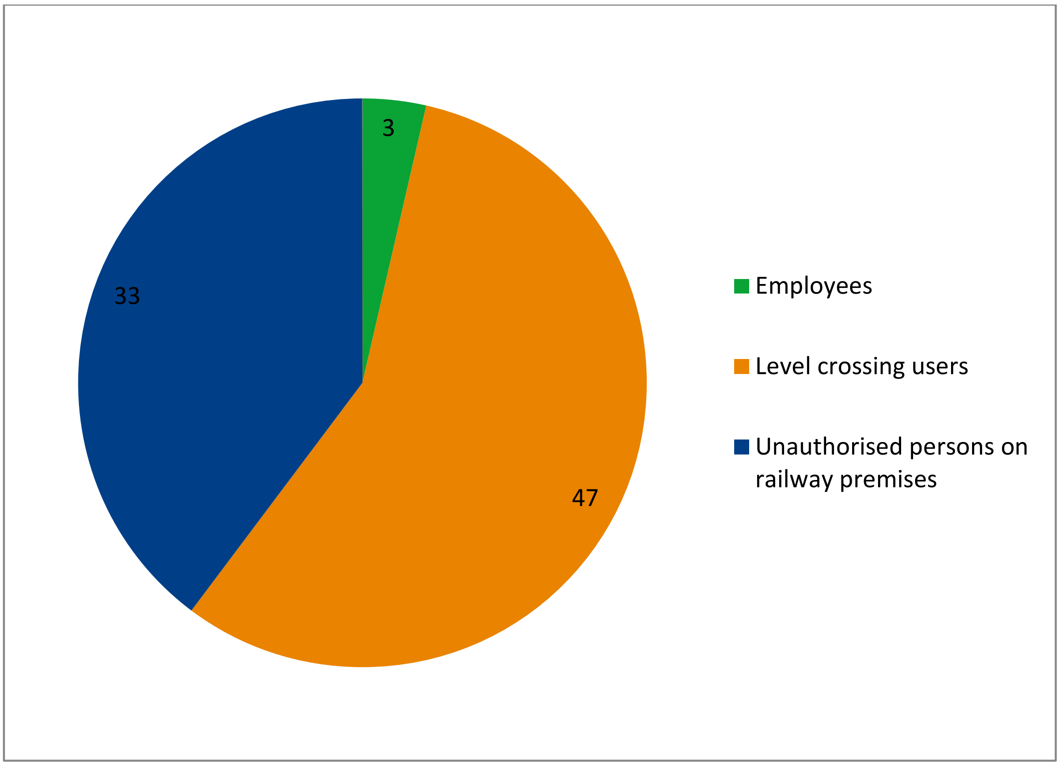

Figure 7. Railway accident fatalities by category in 2007-2013. (Common Safety Indicators, ERAIL database)

The distribution of rail accident fatalities by person category is different from the situation at the EU level, because across the European Union the number of trespasser fatalities exceeds the number of fatalities among level-crossing users. As in Finland, at the EU level the fatalities in the categories of level-crossing users and trespassers also account for over 90% of the fatalities, while fatalities among employees and passengers account for the rest of the cases.

Of the three serious injuries on Finnish railways last year, two were sustained by trespassers and two by level-crossing users. In previous years, the number of persons injured in rail accidents varied between three and ten. Level-crossing users and trespassers have also in past years been the constituted the largest group among those injured. The number of seriously injured should also be regarded with caution. The definition of a serious injury is based on the length of stay in hospital care, but Trafi does not have access to precise information about the length of an injured person's stay in hospital.

C.2 Results of safety recommendations

Safety recommendation	Safety measure	Status of implementation
S326 Stop blocks should be painted a bright colour to ensure that they are noticed, and they should be made more conspicuous in other ways too.	Better paint for stop blocks and storage at lighting and electrical poles.	Done
S327 Working instructions for rail yards should be de-		Incomplete

veloped to take into account all eventualities in practical everyday work. Safety-critical instructions should be formulated as checklists.		
S328 The turnout transport wagon should be altered so that the elements could be transported with a wheel-weight ratio complying with the general loading instructions, i.e. max. 1.25:1.	The wagons and instructions have been altered.	Done
S329 The loading instructions for the turnout transport wagon should be completed so that the instructions are precise and unambiguous, allowing loading to be performed in compliance with the wheel-weight ratio and rolling stock clearance specifications of the general loading instructions.	The wagons and instructions have been altered.	Done
S330 The risk assessment procedure in the safety management system should be such that it covers pre-existing established practices.	The wagons and instructions have been altered.	Done
S331 In the turnout condition monitoring system, turnouts found to be in poor condition should be repaired or replaced so that they comply with the specifications and other requirements for turnouts.	The Finnish Transport Agency has begun a turnout maintenance management project. The project will be completed in 2015.	Incomplete
S332 There should be unambiguous instructions for action when threshold values and acute values for turnouts are exceeded, with regard to maintenance and traffic restrictions.	Instructions issued in an update to technical track maintenance instructions. The matter will also be considered in the turnout maintenance management project.	Incomplete
S333 Trafi is encouraged to enable the introduction of low-cost warning systems and to ensure that the Finnish Transport Agency continues its exploration of the applicability of low-cost	20 low-cost level-crossing warning systems will be tested in 2014.	Incomplete

warning systems with a view to their introduction.		
S334 The Finnish Transport Agency should ensure that command-based track blocking enabled by the interlocking system is used efficiently in traffic control.	The use of command-based track blocking will be taken into account in the update to the railway traffic control manual to be released in 2014.	Done
S335 The Finnish Transport Agency should explore best practices for resetting axle counters after track work, and enter these practices in the railway traffic control manual.	A risk assessment on axle count reset procedures will be conducted in 2014.	Incomplete
S336 The Finnish Transport Agency should ensure that the traffic restriction notification is also used when rolling stock is stored on tracks in traffic use.	This item will be entered in the new track maintenance safety guideline that will enter into force at the beginning of 2015.	Incomplete
S337 Trafi should ensure that concrete instructions are issued for the planned risk assessment measures, that the employees carrying out the assessments are trained in their use, and that the implementation of risk measures is supervised.		Incomplete
S338 The Finnish Transport Agency should create a system and methods for analysing the error logs of safety equipment in order to ensure that recurring safety-critical faults are detected.	The general maintenance instructions for railway safety equipment issued by the Finnish Transport Agency include instructions for error analysis. Error log analysis will be taken into account when updating safety equipment maintenance programmes.	Incomplete
S339 The Finnish Transport Agency should establish a system to ensure that the reason and justification for issuing a critical command are always recorded. The purpose of the justification is to demonstrate that the use of the command does not cause an actual malfunction in the system.	The Finnish Transport Agency issued instructions on procedures for cases of trailing point movement and malfunction notifications. The matter will be taken into account in the turnout condition maintenance project and traffic control instructions. Also, an information system for centralised entry of all	Incomplete

	observations will be developed.	
S340 The Finnish Transport Agency should modify the switch motors on the YV60-300-1:9 turnouts used on the main lines that allow trailing point movements so that vibrations caused by rolling stock cannot dislodge the facing point locks.	This change is being initiated, but will take several years to complete.	Issued
S341 As the infrastructure manager, the Finnish Transport Safety Agency should create a clearly defined turnout maintenance training programme and create a system for continuous monitoring of the competence of personnel engaged in turnout maintenance and adjustment.	The Finnish Transport Agency has begun a turnout maintenance management project.	Incomplete

Table 1 – Implementation of safety measures triggered by safety recommendations

C.3 Measures implemented not in relation to safety recommendations

Area of concern/ Description of the trigger	Safety measure introduced
(RU) Detachment of a spring set from an Sgmmns-w wagon caused derailment of a freight train.	Explore the use of ultrasound in wagon inspections to detect similar faults.
(RU) Reducing the number of safety deviations in shunting.	Air brakes used by default in shunting.
(RU) Preventing hazards caused by rolling stock movement.	Secure rolling stock with stop blocks.
(RU) Improving safety in assistance situations.	New instructions for assisting a unit stranded on the line.
(RU) Reducing hot box events on Russian rolling stock.	Instructions for loosening the brake regulator on Russian goods wagons.
(RU) Improving occupational safety in shunting.	New shunting instructions for car wagons.
(RU) Ensuring fulfilment of the infrastructure manager's responsibilities.	The VR track maintenance agreement was renewed.
(Rail maintenance company) Train 76090 (Tka9 snow plough) derailed at Markkala on 30 Jan 2013 when a trainee driver mistakenly pressed the control to lower the rear plough at turnout.	A cover was fitted on the control. In the future, the instructor will review cab functions with trainees before starting out.
(IM) A train collided with an excavator.	The Finnish Transport Agency will im-

	prove the track maintenance safety instructions.
(IM) Working outside a defined track work area. Track work also started without permission.	The Finnish Transport Agency will improve the track maintenance safety instructions.
(IM) After track work, a signal post was lying on the ground and the ATC system was inoperative. The situation led to a SPAD.	The requirement for drawing up a traffic safety plan will be further specified and a template provided. Radio traffic should be better controlled and standardised. Traffic control instructions will be further specified.
(IM) A turnout was locked in a position different from what the traffic control display was showing.	The Finnish Transport Agency will explore the drawing up of a traffic safety plan template with drawings.
(IM) A train hit planking under construction at a level crossing.	The Finnish Transport Agency will improve the procedures for completing track work in the track maintenance safety instructions.
(IM) Due to neglect by the lookout, workers did not see a train approaching until the last minute.	The Finnish Transport Agency is considering a stricter policy (including revoking qualifications in cases of negligence).
(IM) Deviations should be processed, corrective action determined and implemented more efficiently.	A railway safety group will be set up at the Finnish Transport Agency.
(IM) Ensuring that safety deviations are investigated together with operators.	Developing improved communications in damage and accident investigations with the VR Group.

Table 2 – Safety measures adopted by railway operators and infrastructure managers not triggered by safety recommendations

D. SUPERVISION

D.1 Strategy and plan(s)

Priorities can be set with different perspective. In general items involving passenger traffic or dangerous goods have the highest priority and items for normal shunting at a private yard have the lowest. Priorities with this kind of perspective follow much the priorities of capacity allocation. On the other hand, priorities and thereby targets are mainly based on organisation profiles and analysis of incidents. The profiles look at the performance of a certificate/authorisation holder's SMS and thereby assessing the risks of the management and operation of that organisation whereas the analysis of incidents evaluates different phenomena and their risks. Based on this information priorities and targets are set.

Sources of information and main inputs used for defining the supervision strategy and plan are organisation profiles, meetings, interviews, self-assessment, analysis reports, supervision action (audit, inspection), other documentation including applications for change in the SMS, letters, etc. and other external sources.

As revision of supervision plan there were some ad hoc items added to the plan during the reporting year.

D.2 Human resources

In 2013, Trafi had two full-time employees in railway supervision. They conducted 20 audits altogether. There were two auditors in each audit, and almost every audit took one working day. Also, both supervisors used one working day on average for preparing and winding up each audit. The total working hours used for auditing was about 640 hours, or 320 hours per auditor.

The supervisors conducted 32 inspections, about one working day each, of various areas of the railway system. Half of these were conducted by the supervisors together and half individually. Each inspection day usually required an additional day for preparation and winding up. Therefore, the inspections took a total of about 512 hours, about 384 hours per supervisor.

In all, the supervisors spent about 50% of their working hours on audits and inspections. In addition to the full-time supervisors, certain other Trafi employees participated in the audits and inspections. However, their contribution was significantly smaller in terms of working hours, and was not taken into account here.

D.3 Competence

Trafi has a system named Sympa for competence management of the agency's entire personnel. Sympa contains employees' qualification and competence data, information on critical competences in each function, information on each employee's competence goals and personal development plans. Sympa allows the compilation of an overview of competence throughout the organisation and of competence development needs. The system can be used to assist in personnel turnover situations, temporary resource shortages and job rotations.

D.4 Decision–making

On one hand a decision-making criteria is the performance, on the other hand risks. Based on the targets and priorities it was decided whom or what to supervise and what kind of action was needed (mostly audits, inspections or discussions).

There were no complaints submitted by RU's or IM's on Trafi's decisions concerning supervision activities.

D.5 Coordination and cooperation

There were no supervision arrangements or agreements with other NSA's during the reporting year.

D.6 Findings from measures taken

Main findings from evaluation of measures taken by RUs and IMs to remedy non-compliances were vigil changes in the SMS and enforcement of the SMS in the organisation.

E. CERTIFICATION AND AUTHORISATION

E.1 Guidance

Instructions for applying for safety authorisations and certificates are available on the Trafi website. The instructions discuss the practical details of applying for a safety authorisation or certificate and also safety management systems. The website also contains a document intended to clarify the requirements of decrees 1158/2010 and 1169/2010 for each evaluation criterion.

E.2 Contacts with other NSAs

So far, no foreign operators have applied for a safety certificate in Finland, and no Finnish operators have applied for one abroad. Therefore, there has been no contact with NSAs in other EU Member States concerning this matter.

E.3 Procedural issues

In Finland in 2013, safety certificates were issued to nine operators. These were mainly small-scale operators performing shunting on private sidings. There were no particular problems in processing the safety applications.

In 2013, 35 safety authorisations were issued. There was a slight backlog because of the deadline of 1 August 2013 for applying for a safety authorisation for private siding managers. A lot of applications were received around the time of the deadline, and because of this spike it was not possible to process all the applications within the specified four-month period. The backlog was cleared by the beginning of 2014 without undue delay in processing times.

A particular challenge in managing safety authorisations that should be mentioned is that Trafi does not have comprehensive information on all private siding managers in Finland. It is known that not all private siding managers have applied for a safety authorisation, and it is difficult to find out which infrastructure managers still do not have one.

There is a great deal of variation in the quality of safety authorisation applications, particularly with regard to the safety management system description. Describing the safety management system in the detail required by the application process frequently presents a significant challenge, particularly to smaller operators. Several rounds of additional clarification are often required in the application process due to poorly prepared applications.

In Finland, several individual private siding managers can apply for a safety authorisation using a shared application. In order to save money and time, sometimes very different private siding managers apply for a safety authorisation with a single application. The problem frequently presented by these applications is that they attempt to describe the operations of different types of operators using a single safety management system, which leads to no single operator possessing a description corresponding to actual operations.

As in previous years, there were some minor disagreements with some safety authorisation and safety certificate applicants concerning the interpretation of the requirements for the safety management system, but these were resolved through discussion.

E.4 Feedback

Representatives of Trafi and of the companies applying for a safety authorisation or certificate are in regular contact, and the application process is interactive. Feedback is given and received at these meetings. Operators are also requested to respond to the annual Trafi client satisfaction survey. Feedback that only concerns applying for a safety authorisation or certificate is not systematically collected from applicants.

An appeal against any Trafi decision may be filed at the Helsinki Administrative Court.

F. CHANGES IN LEGISLATION

F.1 Railway Safety Directive

Issues related to the header are presented in table 1 of annex B.

F.2 Changes in legislation and regulation

Issues related to the header are presented below and in the table 2 of annex B.

The Railway Act has been repeatedly amended in recent years due to, for example, the need to integrate domestic and EU laws and regulations. The amendments have also sought to resolve certain discrepancies in the application of the law. Amendment (323/2013), which entered into force in the spring of 2013, revised the provisions concerning for example the register of railway infrastructure, the certification authority and the certification of the entity in charge of maintenance operations. Amendment (939/2013), which entered into force in 2014, revised the provisions concerning for example the authorisations for the placing in service of subsystems, as well as specifying in more detail the testing of subsystems forming part of a stock unit. Similarly, Government Bill (HE 48/2014) presented to Parliament in the spring of 2014 proposes that section 84 of the Railway Act, containing provisions on railway traffic communications and recordings, should be amended to permit for example that railway undertakings and infrastructure managers could have access under certain conditions to recorded voice communications for the purposes of developing their operations further.

The next amendment to the Railway Act is already being prepared. The Railway Act must be amended to implement the changes brought about by the First EU Railway Package. In particular, the regulation of railway markets will change. The Government Bill on the amendment will probably be presented to Parliament during 2014.

The amendment of the Qualifications Act (860/2012) that entered into force in 2013 and the Government Decrees based on this Act implemented certain regulations of the European Commission pertaining to the organisation of vocational driver education, acceptance of driver examinations and the registration of driver qualifications. The amendment of the Qualifications Act also further specified the responsibilities of the institutions providing traffic safety training for the organisation of training and job induction. Under the conditions specified in the Act, a railway undertaking may also provide job induction when organising vocational training.

By virtue of the Railway Act and Qualifications Act, Trafi has the authority to issue technical decrees. The main part of the regulations on railways issued by the agency are related to the regulation of interoperability aiming at the technical harmonisation of the European railway system. As of 2014, Trafi reformed the regulations significantly by issuing new decrees governing railway operations and safety devices while simultaneously repealing 14 rather detailed railway regulations. These changes will enable industry operators to develop operations further within the framework of more extensive safety management systems. Because the regulations permit two-year transition periods within which the operators must include in their internal guidelines the subject entities formerly contained in the repealed regulations, this means that the transition period has not yet ended. For its part, Trafi has promoted and facilitated transfer towards lighter regulation by establishing joint collaboration groups in order to support the operators in the preparation of their internal guidelines.

Though the main objective of the regulations reform was to present the operators with an opportunity to issue their own guidelines supporting their operations in an optimal and safe way, the reform also sought to improve the regulation function through clarifying the relationship between domestic and EU regulations. In order to attain this objective, individual and largely obsolete regulations were repealed in 2013, and collaboration with stakeholder groups was developed further for example by organising more frequent stakeholder meetings and improving communications about new regulation projects. This work will be pursued further: in the spring of 2014, the agency launched a regulation project to update and clarify the existing regulation on rolling stock. Collaboration with stakeholders will also be developed further on the basis of the views and desires expressed by stakeholders.

G. APPLICATION OF THE CSM TO RISK EVALUATION AND ASSESSMENT

G.1 NSA experience

On the whole, the operators perform significant change assessments appropriately, and the quality of assessments seems to have improved considerably in recent years. However, the integrity of the operators in assessing the significance of change varies somewhat. Some operators perform their significant change assessments very systematically, and have performed several risk evaluations pursuant to the Common Safety Method. Other operators, however, seem to tend to assess changes as less significant than they actually are. The systematic downplaying of the significance of changes is suggested by the fact that very few risk evaluations pursuant to the Common Safety Method have been performed in relation to the size of the operators in question. A third approach to significant change assessment and risk assessment pursuant to the Common Safety Method is found among very small operators. Some small operators have still not understood the principles and importance of risk assessment under the Common Safety Method and do not use it. These include many private siding managers for whom rail transport is only a support function. However, significant change assessments are now being carried out, for instance for harbour sidings.

Once an operator has assessed a change as being significant, the risk assessment pursuant to the Common Safety Method is performed appropriately, often commissioned from a consultant. Independent assessment bodies have also been engaged in appropriate ways.

The major operators, following their safety management systems, perform risk assessments also in the case of non-significant changes. The risk assessment does not then need to be submitted to an independent assessment body for evaluation. In some cases, Trafi has considered it necessary to ask operators whether they have performed a risk assessment on a particular change. The major operators have always submitted a risk assessment or significant change assessment on request.

G.2 Feedback from stakeholders

Rail transport operators and infrastructure managers are requested to describe their experiences of applying the Common Safety Method in their annual safety reports.

The Finnish Transport Agency, the infrastructure manager of the state-owned rail network, has engaged in risk management measures pursuant to Regulation 352/2009 in dozens of track improvement and traffic control projects. Experiences gained by the Finnish Transport Agency suggest that operators are still not completely comfortable with the method or adept at applying the appropriate procedures.

The track maintenance company Destia Rail Oy performed a risk assessment on the introduction of an operations and equipment maintenance safety management in 2012, and updated its hazard record with new safety measures in 2013. In 2013, Destia Rail commissioned VTT to perform a risk assessment pursuant to the Common Safety Method on the introduction of a new tamper. Destia felt that the first risk assessment concerning the introduction of rolling stock was a new and educational experience. The use of the hazard record also seems to have been taken on board and now forms part of the safety management system at Destia Rail Oy and its day-to-day operations.

G.3 Revision of NSRs to take into account the EC regulation on CSM on risk evaluations and assessment

No changes were made to national regulations on the basis of the Common Safety Method for risk evaluation and assessment in 2013.

H. DEROGATIONS REGARDING ECM CERTIFICATION SCHEME

Finland’s first ECM certificate was granted to VR Group Ltd on 31 May 2013. Exceptions to the certification of the entity in charge of maintenance (ECM), as provided for in Article 14a (8) of the Railway Safety Directive (2004/49/EC), have not been made in Finland.

VR Group Ltd has applied for a derogation to the ECM procedure pursuant to Article 14a (8) of the Railway Safety Directive concerning Russian rolling stock, but the application is still pending.

ANNEX A COMMON SAFETY INDICATORS

CSI data charts

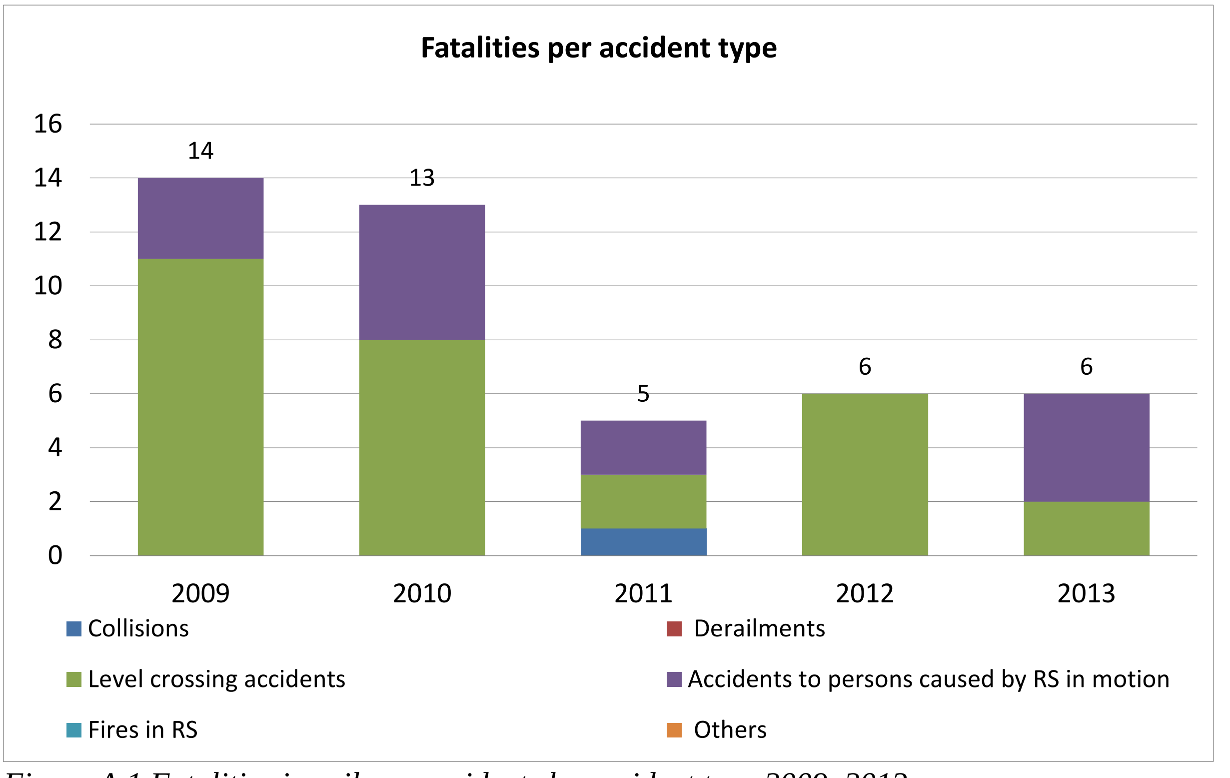

Figure A.1 Fatalities in railway accidents by accident type 2009–2013.

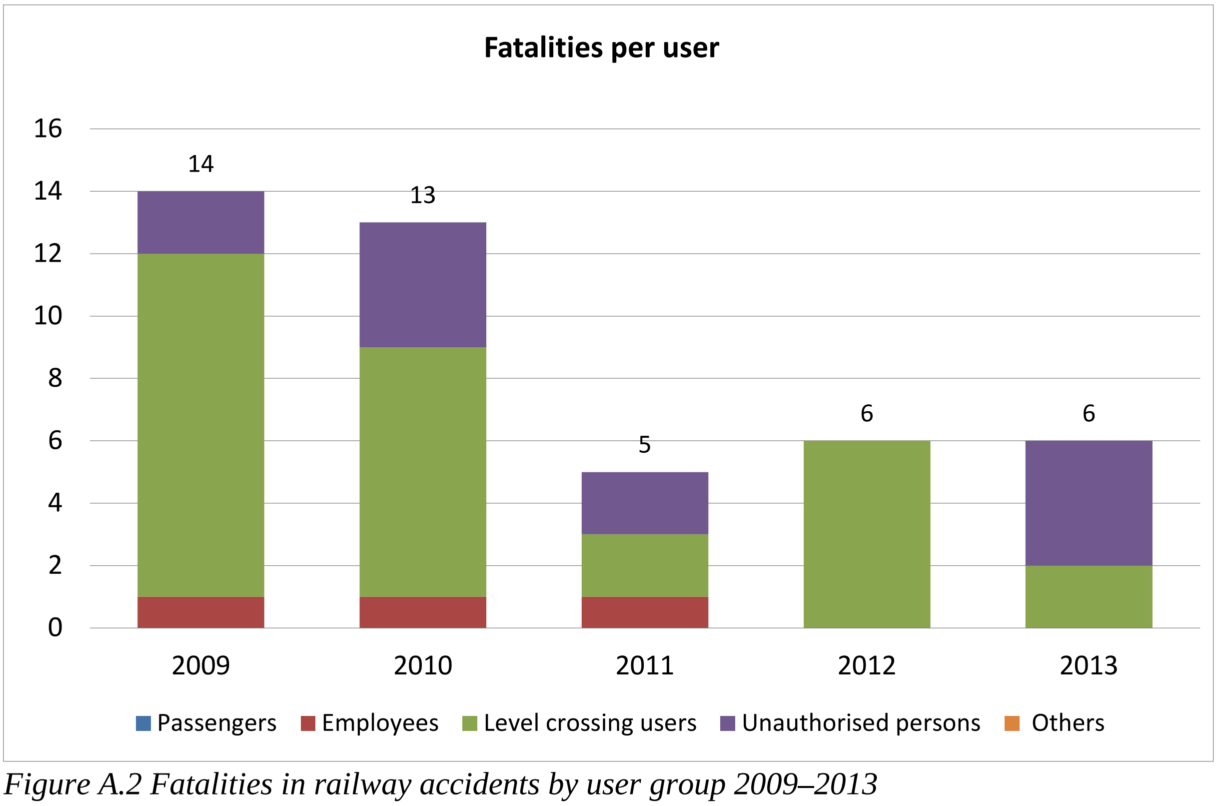

Figure A.2 Fatalities in railway accidents by user group 2009–2013

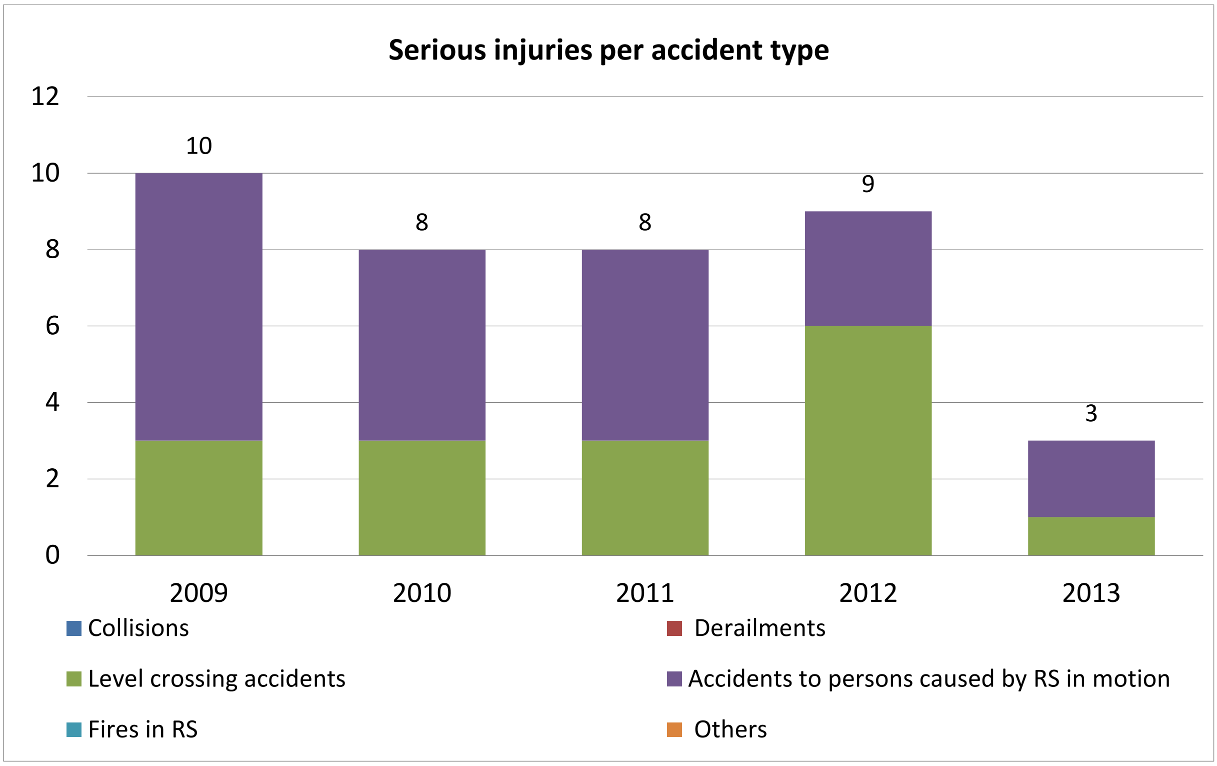

Figure A.3 Serious injuries in railway accidents by accident type 2009–2013

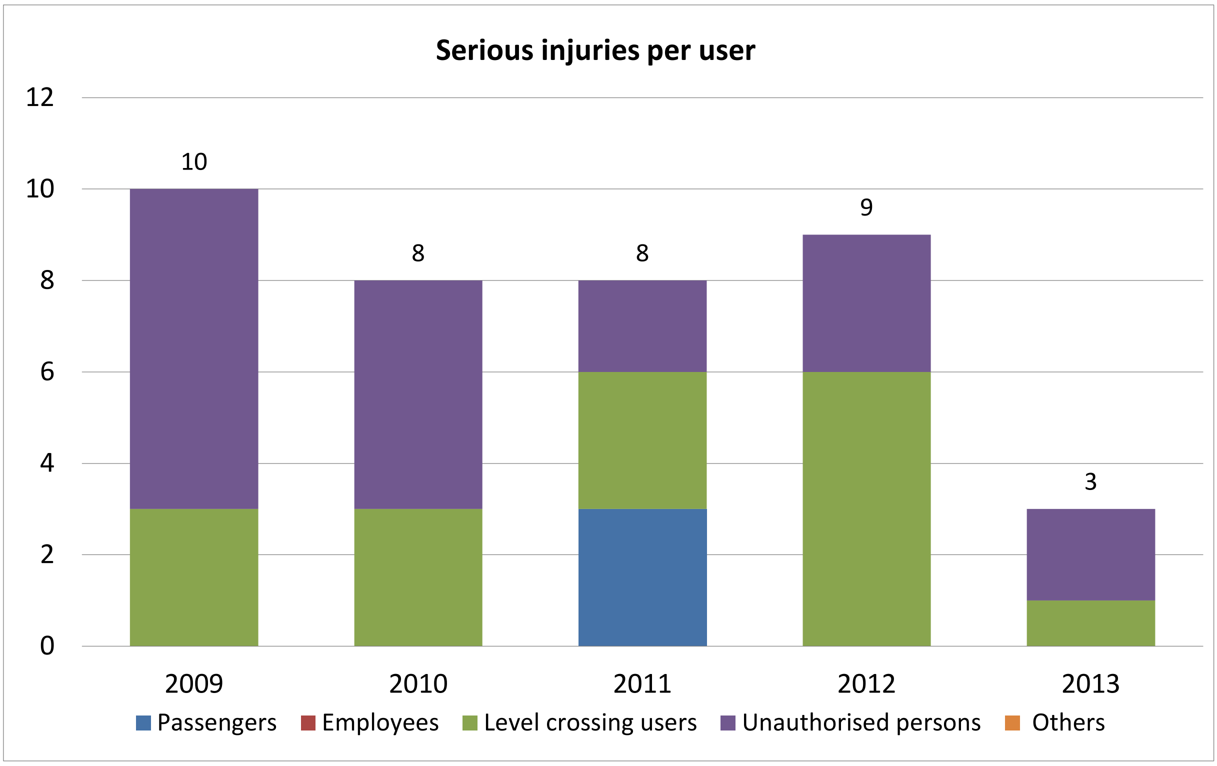

Figure A.4 Serious injuries in railway accidents by user group 2009–2013

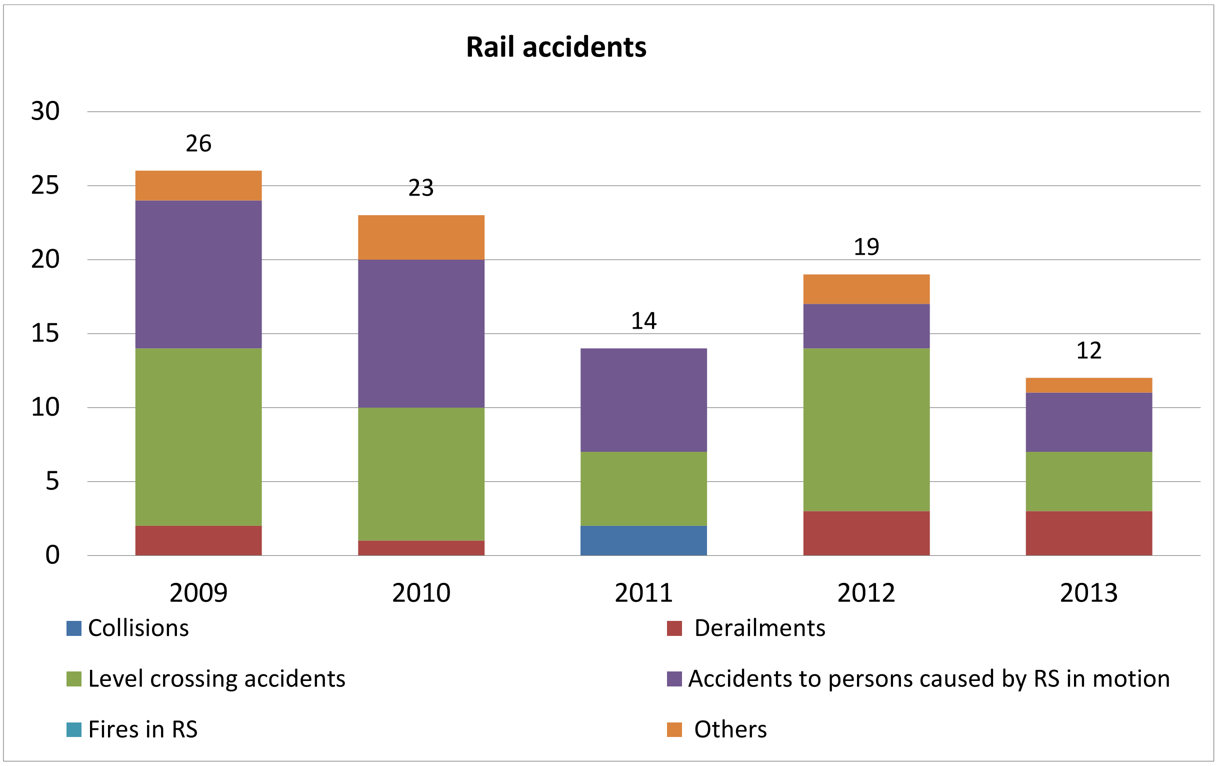

Figure A.5 Significant rail accidents 2009–2013

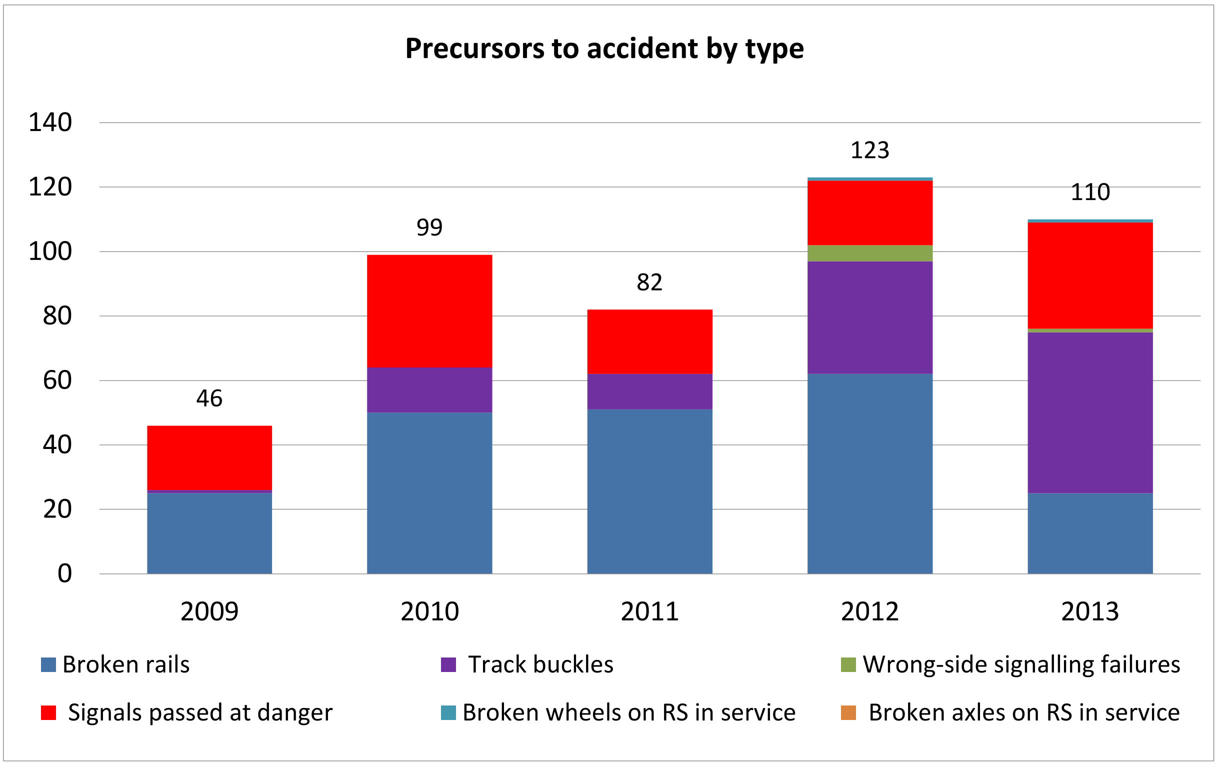

Figure A.6 Precursors to accidents 2009–2013

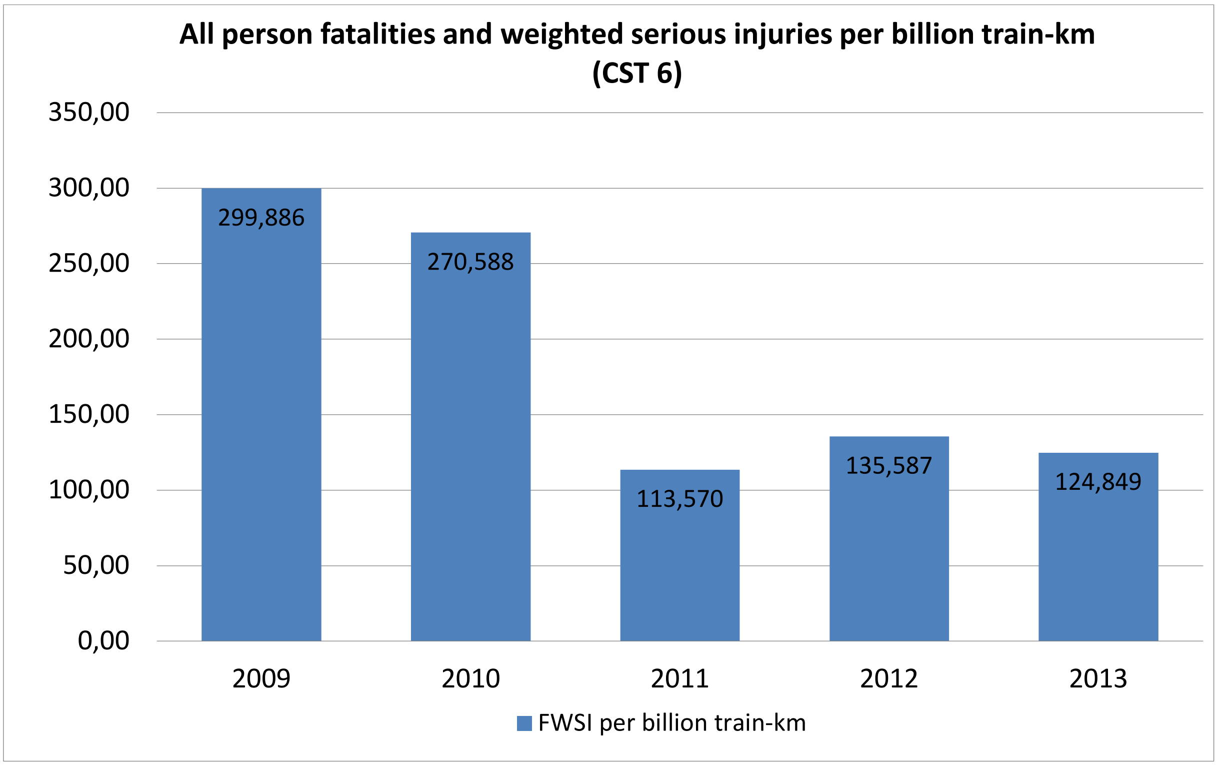

Figure A.7 Number of fatalities and weighted number of serious injuries per billion train-km on railway accidents 2009-2013

ANNEX B CHANGES IN LEGISLATION

Table 1

AMENDMENTS TO RSD	Transposed (Y/N)	Legal reference	Date of entry into force
Directive 2008/57/EC	Y	Government Decree 1094/2013	1.1.2014
Directive 2008/110/EC	Y	Railway Act 304/2011	15.4.2011
Commission Directive 2009/149/EC	Y	Government Decree VNA 1094/2013 NSA Regulation TRAFI/7531/03.04.02.00/2013	1.1.2014 1.12.2013

Table 2

LEGISLATION AND REGULATION	Legal reference	Date of entry into force	Description of change	Reasons for the change
Concerning the NSA	Act amending the Railway Act (323/2013) sections 59, 70, 72, 91, 94a	7.5.2013	Amended the provisions concerning certification of the entity in charge of maintenance (ECM) and the track register in the Railway Act (304/2011). Also further specified certain provisions in the Act.	Trafi itself may also be an ECM.
	Government Decree amending the Government Decree on the safety and interoperability of the rail system (1094/2013) sections 2, 3a	1.1.2014	Amended the Decree (372/2011), for instance with regard to safety indicators. A new section concerning submitting of track register information.	Augments implementation of the Railway Safety Directive (2004/49/EC).
	Act amending the Railway Act (939/2013) sections 9, 20a, 30a, 42, 46, 47a, 48, 48a, 49, 51, 52a, 52b, 54, 56, 57, 66, 66a, 67, 68, 69, 75, 77, 82, 82a, 86, 87, 93, 94a	1.1.2014	Amended the provisions concerning rail network access agreements, traffic control, authorisations for placing a subsystem into service, placing rolling stock units into service, preparedness for exceptional circumstances, accident notifications and appeals in the Railway Act (304/2011). Also further specified certain provisions in the Act.	Augments implementation of the Railway Safety Directive (2004/49/EC) and the Interoperability Directive (2008/57/EC).

Concerning NoBos, DeBos, ABs, third party entities for registration, examination, etc.	Act amending the Railway Act (323/2013) sections 59, 70	7.5.1013	Amended the provisions concerning certification of the entity in charge of maintenance (ECM) and the track register in the Railway Act (304/2011). Also further specified certain provisions in the Act.	Trafi itself may also be an ECM.
	Government Decree on requirements concerning educational institutions providing railway traffic safety training and on certain qualifications and listings (13/2013)	15.1.2013	A new decree specifying the requirements of the Qualification Act (1664/2009) (amended 860/2012)	Implementation of Commission decision (2011/765/EU)
	Government Decree on information to be entered in the register of qualifications for the railway system and the additional certificate register (11/2013)	15.1.2013	A new decree specifying the requirements of the Qualification Act (1664/2009) (amended 860/2012)	Implementation of Commission decision (2010/17/EC)
	Act amending the Railway Act (323/2013) sections 62, 66a, 77	1.1.2014	Amended the provisions concerning rail network access agreements, traffic control, authorisations for placing a subsystem into service, placing rolling stock units into service, preparedness for exceptional circumstances, accident notifications and appeals in the Railway Act (304/2011). Also further specified certain provisions in the Act.	Augments implementation of the Railway Safety Directive (2004/49/EC) and the Interoperability Directive (2008/57/EC).
Concerning RUs/IMs/ECMs	Act amending the Railway Act (939/2013) sections 4, 9, 20, 20a, 30, 30a, 36, 39, 42, 46, 47a, 48, 48a, 49, 51, 52a, 52b, 54, 56, 57, 67, 68, 69, 77, 81, 82, 86, 87, 93, 94a.	1.1.2014	Amended the provisions concerning rail network access agreements, traffic control, authorisations for placing a subsystem into service, placing rolling stock units into service, preparedness for exceptional circumstances, accident notifications and appeals in the Railway Act (304/2011). Also further specified certain provisions in the Act.	Augments implementation of the Railway Safety Directive (2004/49/EC) and the Interoperability Directive (2008/57/EC).
	Government Decree amending the Government Decree on the safety and interoperability of the rail system (1094/2013) section 13a	1.1.2014	Amended the Decree (372/2011) for instance with regard to safety indicators. A new section concerning submitting of track register information.	Augments implementation of the Railway Safety Directive (2004/49/EC).
	Government Decree on the language skills required of personnel managing traffic safety duties in the rail system (12/2013)	15.1.2013	A new decree specifying the requirements of the Qualification Act (1664/2009) (amended 860/2012)	Implementation of the language skills requirements pursuant to the OPE TSI (2011/314/EU) and the Train Driver Directive (2007/59/EU)
	Government Decree on information to be entered in the register of qualifications for the railway system and the additional certificate register (11/2013)	15.1.2013	A new decree specifying the requirements of the Qualification Act (1664/2009) (amended 860/2012)	Implementation of Commission decision (2010/17/EY)

	Operations and traffic control subsystem TRAFI/22100/03.04.02.00/2012	1.1.2014	Previous regulations merged and regulation simplified.	Implementation of the OPE TSI and simplification of national regulations
	Rail traffic operator and infrastructure manager safety report TRAFI/7531/03.04.02.00/2013	1.12.2013	Previous regulation clarified and further specified on the basis of application practice.	Notes from application practice
Implementation of other EU requirements (if concerning railway safety)				