Statens haverikommission

Track workers struck by train at Malmö freight yard

The Swedish Accident Investigation Authority has investigated a fatal accident at Malmö freight yard, Skåne County, on 24 April 2025

2026-03-18



Final report
SHK 2026:03e

About the Swedish Accident Investigation Authority

The Swedish Accident Investigation Authority (SHK) investigates accidents and incidents from a safety perspective regardless of whether they occurred on land, at sea or in the air. The authority's accident investigations are intended to disseminate knowledge and provide a basis for actions by authorities, companies, organizations, and individuals that improve safety and reduce the risk of accidents. The activities should also contribute to people feeling secure and having trust in society's institutions and the confidence in transportation systems. The mission also includes assessing the efforts made by the rescue services in connection with an accident. However, the investigations should not assign blame or liability, whether criminally, civilly, or administratively.

The investigations by SHK aim to answer three questions:

- What happened?
- Why did it happen?
- How can a similar accident/incident be avoided in the future?

The report is also available on the Swedish Accident Investigation Authority's website: www.shk.se

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Content

About the Swedish Accident Investigation Authority **2**

1. Summary **5**

Causes of the accident 5

Safety recommendations 5

2. The Investigation **7**

Investigation material 7

3. Description of the occurrence **9**

3.1 Background 9

3.2 Sequence of events 9

3.3 Emergency call 12

3.4 Actions by the rescue and emergency services 12

3.4.1 General conditions for the rescue operation 12

3.4.2 The execution of the rescue operation 13

3.5 Injuries 15

3.6 Organisations and staff involved 15

3.6.1 Swedish Transport Administration 15

3.6.2 Infranord AB 15

3.6.3 Rail Solutions Scandinavia AB (RSAB) 16

3.6.4 Transdev Sverige AB 16

3.7 Rolling stock 16

3.8 Infrastructure 17

3.8.1 Track infrastructure 17

3.8.2 Signal aspects and train movements 18

3.9 Examination of the accident site 18

3.10 General information about work within the track area 20

3.10.1 Competence and training 20

3.10.2 Protection and safety planning 22

3.10.3 Information about local conditions 24

3.11 The assignment 24

3.11.1 Competence requirements 25

3.11.2 Safety introduction and local information 26

3.11.3 Access to Malmö freight yard 27

3.11.4 Tasks allocated to the work team 28

3.11.5 Incidents the same week as the accident 30

3.12 Safety management arrangements of the involved parties 32

3.12.1 The Swedish Transport Administration's monitoring of contractors 34

3.12.2 Infranord's monitoring 35
3.12.3 Handling of reported incidents and accidents 35
3.12.4 Identified safety challenges for work in the track area 37
3.13 Safety authorisation and supervision 37
3.13.1 Swedish Work Environment Authority 37
3.13.2 Swedish Transport Agency 38
3.14 Health and working environment 40
3.14.1 Working hours 40
3.14.2 Workload 42
3.15 Previous investigations of similar occurrences 44
3.16 Measures taken since the occurrence 45
3.16.1 The Swedish Transport Administration 45
3.16.2 Infranord AB 45
3.16.3 Rail Solutions Scandinavia AB (RSAB) 46
4. Analysis 47
4.1 Underlying conditions 47
4.2 Why was the work team in a track open to traffic? 48
4.2.1 The work team lacked the conditions needed to work safely 48
4.2.2 The planning process did not identify the risks before the work started 48
4.2.3 The risks were not recognised on site 49
4.2.4 Summary of findings 49
4.3 The deficiencies were not identified before the work started 50
4.4 The monitoring of work on the track needs to be strengthened 50
4.4.1 Track work should be monitored more systematically 50
4.4.2 Workplace inspections should be improved 51
4.4.3 The handling of near-miss incidents should be strengthened 51
4.4.4 Targeted regulatory supervision is needed 52
4.5 Conclusions regarding the rescue operation 53
4.5.1 Access for the emergency services to yards should be ensured 53
4.5.2 Pre-hospital medical command should be strengthened 53
5. Conclusions 54
5.1 Findings 54
5.2 Causes 54
5.3 Additional observations 55
6. Safety recommendations 55

1. Summary

On 24 April 2025, two track workers were struck by a passenger train at the Malmö freight yard. One of the track workers was killed and the other was seriously injured.

The track workers had been hired to remedy findings from inspections, over the course of one week. The work on the day in question was planned to be performed on the tracks whilst they were open to traffic, with the help of a lookout – i.e. one of the track workers was responsible for alerting the other worker to approaching trains.

Earlier in the day, the workers had mainly worked within an area of the yard where permitted speed was limited to 40 km/h. In the afternoon, the team moved to another area of the yard to check an inspection remark.

The remark was located in a switch which was situated on the main line track, where the maximum permitted speed was 160 km/h. As the train approached the switch, the train driver perceived that there were workers on the track and applied the emergency brake. The track workers did not have time to move out of the way before they were struck by the train.

Causes of the accident

The immediate cause of the accident was that the track workers were present on tracks open for traffic without any planned or implemented protective measures.

Underlying causes were deficiencies in induction, planning and execution of work within the track area. These shortcomings were not identified by the employer, the rail contractor or the infrastructure manager.

At a systemic level, there were deficiencies in how the infrastructure manager followed up on work carried out within the track area and in the management of deviations and incidents.

Safety recommendations

The stakeholders concerned have implemented several measures aimed at enhancing safety and reducing the risk of similar accidents. The Swedish Accident Investigation Authority (SHK) does not issue recommendations in areas where these measures already address the deficiencies identified in this investigation. Against this background, the following recommendations are issued.

The Swedish Transport Agency is recommended to:

- Conduct supervision of how the Swedish Transport Administration ensures risk control across all tiers of contractors when carrying out work within the railway track area. *(SHK 2026:03 R1)*

The Swedish Transport Administration is recommended to:

- Take measures to enhance safety for work on or near the track and to ensure that the risks associated with such work are systematically followed up within the supervisory process by:
    - reviewing how the procedures for Protection and Safety planning are applied
    - strengthening working methods to ensure that the controller of site safety is provided with adequate site-specific knowledge
    - investigating the extent of work carried out on or near the track without, or with inadequate, risk assessment and taking appropriate action
    - reviewing and strengthening procedures for workplace inspections
    - taking measures to strengthen the reporting culture regarding near-misses for work on railway tracks. *(SHK 2026:03 R2)*
- In consultation with the relevant stakeholders, review the existing procedures to ensure that access for emergency services to the yard is satisfactory. *(SHK 2026:03 R3)*

Infranord AB is recommended to:

- Review its working methods to ensure that hired personnel have sufficient local knowledge, to strengthen planning so that it serves as more effective support for the controller of site safety and to develop procedures for a more systematic follow-up of planned and completed works. *(SHK 2026:03 R4)*

2. The Investigation

On 24 April 2025, the Swedish Accident Investigation Authority (SHK) was notified about two track workers being struck by a train within the Malmö freight yard operating area, Skåne County. One person was fatally injured and the other sustained serious injuries.

On 30 April 2025, in consideration of the serious consequences, SHK decided to investigate the accident. The circumstances of the accident were also considered to be of potential importance from a safety perspective.

The accident has been investigated by SHK represented by Kristina Börjevik Kovaniemi, Chairperson, Eva-Lotta Högberg, Investigator in Charge, Lars Dahlin, Operations Investigator, and Sofia Martinsson, Fire and Rescue Service Investigator.

The investigation was followed by Gisela Liss of the Swedish Transport Agency and by Hanna Sellehed of the Swedish Work Environment Authority.

Investigation material

SHK has examined and documented the accident site on two occasions, on 29 April and 6 May 2025.

SHK has conducted interviews with:

- The track worker who was seriously injured in the accident.
- The train driver and the train attendant.
- The supervisor, who also acted as protection and safety planner.
- Other staff who had been present at Malmö freight yard during the week concerned.
- Colleagues of those involved.
- Representatives of the Swedish Transport Administration, the track contractor and the staff leasing company.
- Trade union representatives.
- Officers of the fire and rescue service.
- Ambulance staff.

SHK has also held meetings with the Swedish Transport Agency and the Swedish Work Environment Authority.

Information from interviews and meetings has been incorporated into this report.

SHK has obtained, among other things, photographs, documentation and logs from the organisations mentioned above. SHK has also reviewed surveillance footage from cameras at nearby premises and mobile phone location data.

A fact-finding presentation meeting with family members of the worker was held on 7 October 2025, and with relevant interested parties on 8 October 2025. At these meetings, SHK presented the facts discovered during the investigation, available at the time.

Final report SHK 2026:03e

Type of occurrence:	**Track workers struck by train**
Date and time:	24 April 2025, at 15:44 hrs
Location, section of track:	Malmö freight yard operating area
Infrastructure manager:	Swedish Transport Administration
Track contractor:	Infranord AB
Staff leasing company:	Rail Solutions Scandinavia AB
Activity:	Rectification of inspection defects
Railway undertaking:	Transdev Sverige AB
Type of traffic operation:	Train movement
Rolling stock:	Train type X31, two electric multiple units (4570 and 4308)
Traffic operating system:	System H
Speed at the time of the accident:	153 km/h
Maximum permitted speed for the track:	160 km/h
Weather:	Partly cloudy, +11 ˚C
Personal injuries:	One person was fatally injured and the other sustained serious injuries.

3. Description of the occurrence

3.1 Background

Malmö freight yard handles freight traffic destined for other parts of Sweden and Europe. In addition, the southern main line, which connects Malmö with Järna and Katrineholm, also passes through this area.

The accident occurred when a two-person work team was rectifying findings from inspections at the Swedish Transport Administration's track infrastructure at Malmö freight yard. The work team was hired by the track contractor Infranord AB which, under a contract with the Swedish Transport Administration, was responsible for carrying out routine maintenance of the infrastructure in Malmö and south-eastern Skåne.

Infranord had contracted the work team from Rail Solutions Scandinavia AB (RSAB) to perform welding and track engineering tasks. The two workers comprised a welding team that consisted of a track welder, who was also certified to act as (among other things) protection and safety leader[1] (hereafter referred to as the safety leader or controller of site safety), and a track worker/assistant (hereafter referred to as the track worker) who was to help, among other things, with carrying welding equipment and rectifying minor defects identified during inspections.

A supervisor at Infranord had planned for the work team to perform welding and rectification of inspection defects during week 17 of 2025. The plan for Thursday, 24 April, was for the team to replace switch components while the track was closed (so-called 'A-protection'[2]). However, the planned work was cancelled because the required materials were unavailable, and the group was therefore assigned other tasks.

3.2 Sequence of events

Shortly after 07:00 hrs in the morning, the work team met with the supervisor at Infranord's office in Malmö. The supervisor had prepared the day's tasks by printing out a list of defects from the inspection system (BESSY), which he handed to the safety leader. The inspection defects comprised 26 pages with a total of 94 items and covered a large area of Malmö freight yard (see figure 1).



Figure 1. Malmö freight yard. The yellow marking has been added by SHK and shows the area where most of the inspection defects were located. The orange box shows the control tower from which the shunting of wagons is controlled. The orange cross marks the accident site. Image: Google Maps.

[1] The protection and safety leader is responsible for ensuring that occupational health and safety measures are implemented during work and visits within the track area.

[2] A-protection' is a method of traffic management used to prevent or restrict the movement of rail vehicles within a defined area.

The inspection defects were primarily related to switches on tracks where the maximum permitted speed varied between 40 and 70 km/h. Among the defects there were also items on tracks where the maximum permitted speed was 160 km/h.

The supervisor, who also acted as protection and safety planner[3] (hereafter referred to as the Safety planner), prepared and documented a protection and safety plan (hereafter referred to as the safety plan) for the work. The safety planning applied from 07:00 hrs on 24 April until 18:00 hrs on 27 April 2025 for all tracks at Malmö freight yard and Malmö C. According to the Safety plan, the workers were to use a *lookout*, meaning that one designated person (the lookout) is tasked with warning the other members of the team when they are working within the safety zone[4] that rail vehicles are approaching. The safety leader was nominated as lookout, and the other worker was to rectify the defects. The safety plan stated that the work was to be performed on tracks where the maximum permitted speed was 40 km/h.

The supervisor went through the assignment with the safety leader, and the work team signed to confirm that they had been briefed about the safety plan. The team then travelled by car to Malmö freight yard.

During the morning, the work team rectified defects in switches. They worked mainly in the vicinity of the control tower, from which the shunting of wagons is controlled and supervised (see figure 1). The tasks consisted principally of tightening loose components in the track infrastructure.

After lunch, the work team moved to the northern part of the freight yard. After rectifying a number of similar inspection defects, the safety leader informed the track worker that they were going to inspect a roller device[5] on switch 717.

The printout from BESSY that they had with them contained two defects relating to switch 717: *'Roller device – Operating poorly – Renew', and 'Sleeper – Skewed – Adjust' (*see figure 2).

[3] The protection and safety planner plans and assesses the risks associated with occupational health and safety when work is carried out within the track area.

[4] The safety zone extends on either side of the track to 2.20 metres from the nearest rail.

[5] A device that facilitates the movement of the switch rail in a switch. The switch rail is moved according to which track a rail vehicle is to be routed onto.

TRAFIKVERKET

Besiktningsanmärkningar
Bessy

Datum: 2025-04-24 07:22:39
Sida: 2

901

Id	Stn/Str	Km + m fr	Km + m ti	Besiktn.datum	Prio	Sp	H/V	Typ	Anl benämning	Besiktningstyp	Föresl. åtg.dat.
Benämning			Anläggningstyp/Undertyp	Besiktningspunkt					Anmärkning	Åtgärdsförslag	Åtgärdad
Position										Utförd åtgärd	
Status			Best.nr			Extern ref				Skapad/Ändrad av	
Latitud	Longitud		Lägesinfo						Individ/Stolpnr		
<Ursprunglig besiktningsnotering(Ubn)> <Åtgärdsnotering(Ån)> <Text(Te)>											
2025-901-1009	mgb-mgb	613 + 970	613 + 970	2025-03-27	M	61 n1		ban	709	Säkerhetsbesiktning	
			Spårväxel/EV-UIC60-300-1:9	Mätkod c1					1444 mm (1431/1435/1443)		2025-06-25
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2025-901-1010	mgb-mgb	613 + 970	613 + 970	2025-03-27	M	61 n1		ban	709	Säkerhetsbesiktning	
			Spårväxel/EV-UIC60-300-1:9	Mätkod d1					1442 mm (1431/1435/1441)		2025-06-25
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2025-901-898	mgb-mgb	614 + 43	614 + 77	2025-03-20	M	717-723	H	ban	717	Säkerhetsbesiktning	
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Ubn: Slipers nr 15 ligger för nära stag											

Figure 2. Extract from the list of inspection findings from the inspection system BESSY, which the work team had with them on the day of the accident. The blue box shows the defects relating to switch 717. Source: The Swedish Transport Administration.

They parked the car by some lineside equipment buildings located about 100 metres from switch 717 (see figure 3). The safety leader walked away briefly, while the track worker remained by the car. After a while, the track worker noticed the safety leader heading out towards the tracks and followed him. CCTV footage from a nearby property shows the work team walking alongside the tracks in the direction of switch 717 on track 61, at 15:42 hrs.

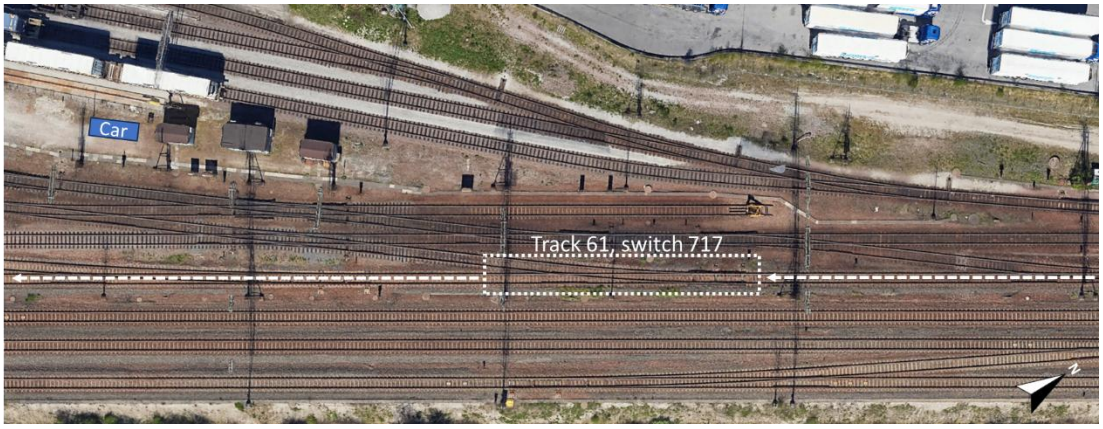


Figure 3. The markings added by SHK show where the work team's vehicle was parked, switch 717 and the direction of travel of the train on track 61. The distance from the vehicle to the switch is approximately 100 metres. Image: Google Maps.

When the work team reached switch 717, the safety leader located the defect and said to the track worker, "I'm thinking of calling to request an A-protection" [i.e. to close the track to train movements].

At about the same time, train 11095 was en route to Malmö Central Station and onward to Denmark. The train was travelling on track 61 at 158 km/h, and the signals showed a proceed aspect, meaning that the track should be clear of other rail traffic and obstacles.

Approximately 150 metres[6] before the train reached switch 717, the train driver looked up, having checked something on the work mobile phone, and then saw the work team. The train driver perceived that one person was standing on the track, in a switch, as if looking at or examining it, and that the other person was standing next to the track looking at the switch. The train driver applied the emergency brake[7], but did not have time to sound the horn before the train passed through switch 717. The work team became aware of the train just before it reached the switch, but did not have time to move clear before they were struck.

3.3 Emergency call

Once the train had come to a stand, the train driver made a railway emergency call and announced "person struck by train – stop all trains between Malmö and Lund". The call was broken off shortly afterwards. The train driver then telephoned the train dispatcher directly and reported what had happened. The train dispatcher stopped the traffic and alerted SOS Alarm at 15:46 hrs.

At 15:50 hrs the track worker called SOS Alarm on his mobile phone and told the operator that he had been struck by a train and was injured, and that he could not see his colleague. The operator remained on the phone with the track worker for 18 minutes, until the fire and rescue service arrived.

3.4 Actions by the rescue and emergency services

This section first describes the conditions for the rescue operation, and then the response carried out after the accident. In this report, the term 'rescue operation' refers to the combined efforts of the fire and rescue service, the police and the health care services to deal with the immediate consequences of the accident.

3.4.1 General conditions for the rescue operation

In Malmö, Fire and Rescue Service South provide the municipal fire and rescue service in accordance with the Civil Protection Act (2003:778). The fire and rescue service has a rescue coordination centre (RC Syd) which listens in to incoming emergency calls to SOS Alarm, and mobilises and directs the resources of the fire and rescue service.

On behalf of Region Skåne[8], SOS Alarm receives ambulance requests and dispatches ambulances throughout Skåne. Region Skåne follows the national framework for prehospital medical command and control, which is based on the National Board of Health and Welfare's regulations, general advice and guidelines. The framework includes training on how the ambulance service is to be directed at an incident site. Region Skåne's directives for

[6] Calculation based on an assumed reaction time (2 seconds) and the brake application recorded in the vehicle log.

[7] Emergency braking activates the train's pneumatic brake and magnetic track brake to achieve maximum braking force.

[8] Region Skåne is the regional public authority responsible for healthcare in Skåne, southern Sweden. Its other responsibilities include public transport and regional development.

prehospital care state that it is important to always establish a command unit when one or more ambulances are working at an accident site. A command unit consists of a medical incident officer, whose responsibilities include coordinating with the other rescue actors involved in the rescue operation, and a medically responsible officer. Normally, the first ambulance to arrive at the accident site will form the command unit.

Region Skåne's directives state that all ambulance crews must have completed the training required to act, among other things, in the role of medical incident officer. During an ongoing operation, changing the medical incident officer should be avoided.

If a doctor is present in the first ambulance to arrive at the accident site, it may be appropriate that this person does not take the role of medical incident officer or medically responsible officer. Instead, the next ambulance to arrive should assume these roles, so that the doctor can devote their effort to direct patient care.

3.4.2 The execution of the rescue operation

The train dispatcher used an emergency map of Malmö freight yard during the call with SOS Alarm, and suggested Krusegatan North or Krusegatan South as possible access routes for the emergency services. The fire and rescue service requested and received confirmation that rail traffic had been stopped, allowing personnel to enter the track area. Initially, it was unclear how many people had been affected. Among other things, a drone was used to locate the injured persons.

An Incident Site Officer, who assumed the role of Incident Commander, and two fire and rescue crews were dispatched to the accident at Malmö freight yard. The first unit from the fire and rescue service arrived at Krusegatan South at 15:57 hrs. Incoming ambulances, police patrols and additional fire and rescue units also assembled there.

Initially, five ambulances were dispatched to the accident site. The crew of the first ambulance to arrive at Krusegatan South consisted of a nurse and an anaesthetist. Since a doctor was present in the first ambulance, the nurse suggested that the following ambulance should assume the roles of medical command, and that the doctor should focus on patient care rather than on leading the medical response. However, the crew of the next ambulance were working overtime and asked that the appointment of a medical command unit be postponed until the extent of the accident had been established. A member of one of the ambulance crew suggested to SOS Alarm that it might be appropriate to dispatch a prehospital incident site officer (PIL[9]), which was done. The crew of the third ambulance undertook the task of acting as the medical command unit, but did not fully follow the established prehospital medical command framework. As a consequence, the other responding rescue actors were not informed who the medical incident site officer was, and therefore had no clearly identified point of contact.

Figure 4 shows the location where the emergency resources initially assembled and the routes they used to access the yard.

[9] This is a person with advanced training in pre-hospital medical command who can be deployed for complex incidents.

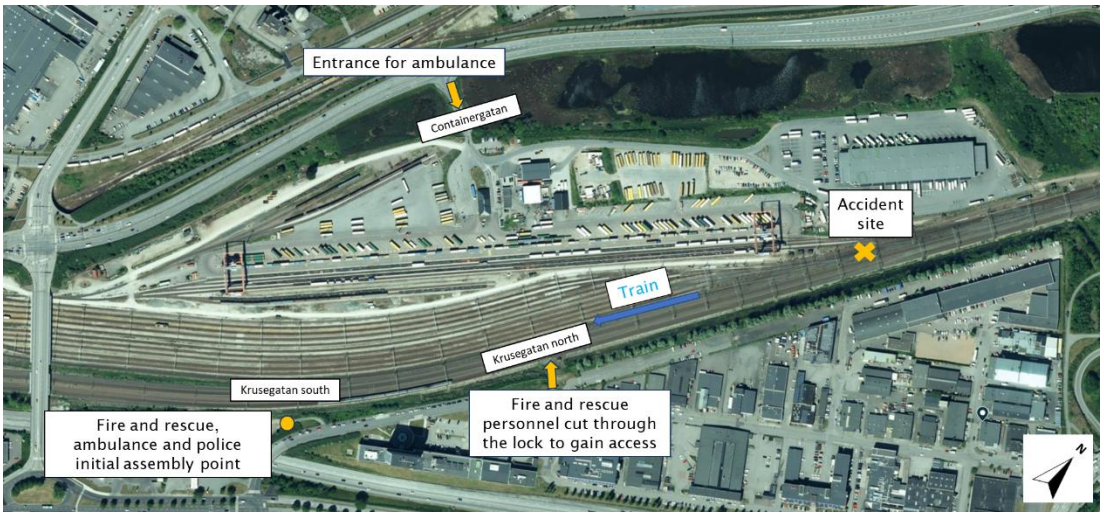


Figure 4. The markings added by SHK show the initial assembly point for the fire and rescue service, the location where the first unit entered the yard, the point at which the ambulance drove into the area, the accident site, and the position of the train after it had come to a stand. Image: Google Maps.

The first unit from the fire and rescue service found that the key cabinet at the gate, where the key for the gate lock was kept, had been tampered with so that they could not obtain the key. The unit was instead instructed by the rescue coordination centre to proceed further north. After some searching, they reached Krusegatan North, where they cut open a gate lock.

Firefighters from the first fire and rescue unit then ran from Krusegatan North together with police officers for about 500 metres to the accident site, which they reached at 16:08 hrs. The safety leader was found to be deceased and the track worker was seriously injured. The fire and rescue service and the police applied tourniquets to the track worker to stem the bleeding.

The officer at the Krusegatan North gate requested via the RAPS radio talkgroup[10] that the incident commander send an ambulance to the location, allowing the ambulance crew to enter the track area on foot. The other ambulances were to drive around the yard and gain access via Containergatan (see figure 4). The request for an ambulance to be sent to Krusegatan North was not picked up by any of the ambulances. The incident commander also attempted to contact the ambulance, but without receiving any response. The officer at the Krusegatan North gate then made a directed call to one of the ambulances, requesting that it attend the gate. The ambulance crew understood the call to mean that they should take an alternative route around the yard. As a result, all of the ambulances entered the yard via Containergatan.

When the ambulances and the police arrived at Containergatan they found the gate locked and began looking for alternative routes into the freight yard. A firefighter, who had entered the yard via the gate on Krusegatan North, met with the ambulances and the police and showed them how to reach the accident site. The ambulance crew began assessing the track

[10] RAPS stands for “Rescue services, Ambulance, Police, SOS Alarm” and refers to the talk groups used for communication and coordination between these actors. During this incident, the fire and rescue service did not use a dedicated incident talk group; instead, all radio communication took place over RAPS and could therefore be heard by all actors.

worker at 16:21 hrs and continued to care for him until he was transported to hospital for further treatment.

3.5 Injuries

The safety leader was fatally injured at the scene and the track worker sustained serious injuries.

3.6 Organisations and staff involved

3.6.1 Swedish Transport Administration

The Swedish Transport Administration is the infrastructure manager for the majority of the Swedish railway network and is responsible, among other things, for operating, maintaining and developing the network. The Swedish Transport Administration procures the routine maintenance of the railway network through maintenance contracts with track contractors. Under these maintenance contracts, the contractor is required to carry out preventive maintenance through inspections and the rectification of any defects identified. The contracts also include, among other things, corrective maintenance.

The Swedish Transport Administration also acts as contracting client for the construction work (Sw: *byggherre*). It requires its contracted track maintenance companies to provide personnel to perform the duties of the construction work environment coordinator for planning and design (BAS-P) and construction work environment coordinator for the execution phase (BAS-U). For the maintenance contract, the Swedish Transport Administration had appointed Infranord to act as BAS-P and BAS-U.

3.6.2 Infranord AB

Infranord is one of the larger track contractors in Sweden. Since 1 September 2022, Infranord had held a five-year maintenance contract with the Swedish Transport Administration for routine maintenance of the railway infrastructure in Malmö and south-eastern Skåne. The contract was a design-and-build contract based on ABT 06[11]. Infranord also served as BAS-P and BAS-U. In addition to its own employees, Infranord hired external personnel to perform and supervise the work.

The supervisor involved was contracted by Infranord from a smaller company. He was trained and qualified as a safety planner on 10 May 2021 and had around 13 years' experience of working on the railway in roles including track welder and safety leader. He had also completed basic training in work environment (health and safety).

[11] ABT 06 General conditions of contract for design-and-build contracts for building, civil engineering and installation works.

3.6.3 Rail Solutions Scandinavia AB (RSAB)

RSAB is a company specialising in track welding and railway track engineering. It had entered into an agreement with Infranord for the supply of BEST[12] technicians. The work team involved in the accident had been hired by Infranord from RSAB and consisted of a track welder and a track worker/assistant.

The safety leader, who was a full-time employee of RSAB, had around two years' experience of working on the railway and was a trained track welder. He had been certified as a protection and safety leader since 22 June 2023 and as the person in charge of the worksite[13] since 30 June 2023.

The track worker was employed outside the railway industry and also worked for RSAB on an hourly basis. For approximately a year, he had assisted with welding and minor track maintenance work. He completed the Swedish Transport Administration's digital 'protection instructions' information module on 17 March 2025 and, in accordance with the Swedish Transport Administration's rules, was authorised to work in or be present within the track area under the supervision of a safety leader.

3.6.4 Transdev Sverige AB

Transdev Sverige AB is a railway undertaking that provides train services. The driver of train 11095 was employed by Transdev and had been an authorised train driver since 2020.

3.7 Rolling stock

Train 11095 consisted of two X31-type electric multiple units, numbers 4570 (leading unit) and 4308[14].

The train departed from Gothenburg at 12:40 hrs and was en route to Copenhagen. It was running on track 61 as a *secured movement*, which requires that the route has been set and is free from other rail movements and obstacles.

Data from the train's recording device show that an emergency brake application was initiated approximately 45 metres before switch 717, when the train speed was 158 km/h. Based on the recorded data, the speed is assessed to have been 153 km/h as the train passed switch 717. The train came to a stand around 470 metres beyond switch 717.

[12] The abbreviation BEST refers to the technical disciplines of track, power, signalling and telecommunications.

[13] The person in charge of the worksite may, among other things, be responsible for implementing A-protection (work carried out with the line blocked from train movements).

[14] The wagons' European vehicle numbers are 94 74 5314 570-0 (leading unit) and 94 86 4314 308-4.

3.8 Infrastructure

3.8.1 Track infrastructure

The accident occurred on the Malmö freight yard section of the operating site, on line section 901, track 61, at switch 717.

The Malmö operating site comprises several sections, one of which is Malmö freight yard. Shortly before Malmö freight yard, trains travelling towards Malmö switch from running on the left to running on the right. The reason is that trains run on the right-hand track over the Öresund Bridge and in Denmark.

Malmö freight yard has five main tracks on the normal route[15], 59, 61, 62, 63 and 64, as well as a number of other main tracks and sidings. On tracks 61, 62, 63 and 64, which form part of line section 901[16], the maximum permitted speed is 160 km/h. Main track 59, together with the remaining tracks at Malmö freight yard, forms part of line section 902 and is divided into different areas including arrival and sorting tracks. Figure 5 shows the maximum permitted speeds in the area where the accident occurred.

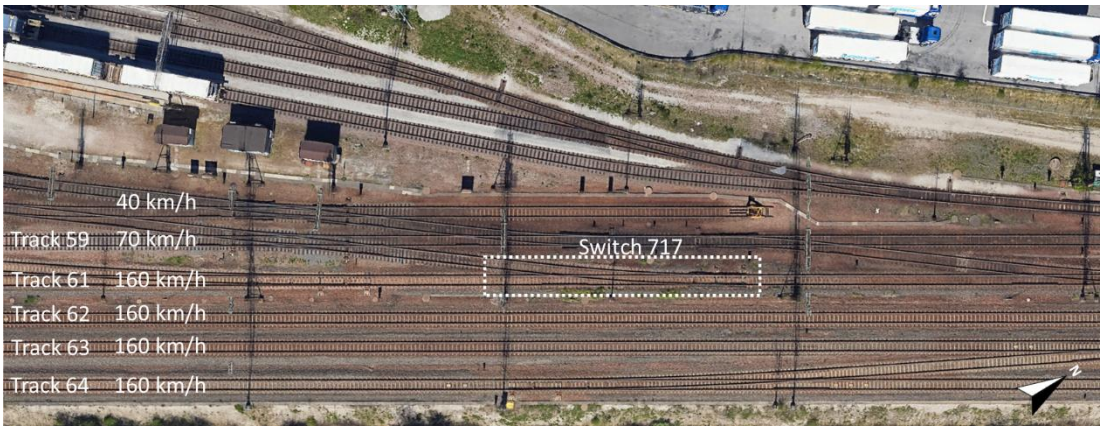


Figure 5. The area of Malmö freight yard where the accident occurred. The markings added by SHK show the maximum permitted speed on track 61 and the adjacent tracks. Source: Google Maps.

Switch 717 is located on track 61 at railway kilometre 614+44[17]. For trains travelling south towards Malmö Central Station, it is normally a facing switch set to the left, allowing them to continue straight ahead. When set to the right, the switch leads to track 59 and the marshalling yard, among other tracks. The maximum permitted speed in this position is 50 km/h.

Traffic was controlled from the Swedish Transport Administration's traffic control centre in Malmö and traffic management system H was in use. Under this system, track circuits monitor whether a section of track is clear of trains and other activities, such as A protection (A-skydd). The freight yard also has marshalling tracks controlled by a marshalling

[15] A *main track on the normal route* is a track intended for train movements that leads from the operating site boundary through switches in their normal position.

[16] A line section is an internal route section used for financial control and accounting purposes.

[17] Railway distances are measured in kilometres and metres from a reference point, in this case Stockholm.

interlocking, which is operated locally by a marshalling operator employed by the railway undertaking Green Cargo AB.

Track 61 is equipped with the Automatic Train Control (ATC) train protection system[18].

3.8.2 Signal aspects and train movements

The Swedish Transport Administration logs indications from the signalling interlockings. The data show that train 11095 received a 'proceed' aspect at main signal 707 at 15:42:29. Main signal 707 is located at km 613+575, approximately 500 metres ahead of switch 717, which is located at km 614+44. Train 11095 passed main signal 707 at 15:44:04 and switch 717 at 15:44:14.

The log shows the following information about other train movements before the accident:

- Train 1521 towards Malmö C passed switch 717 on track 61 at 15:37:59.
- Train 1473 towards Malmö C passed switch 717 on track 61 at 15:40:29.
- Train 1720 towards Lund passed on track 63 in parallel with switch 717 at 15:41:50.
- No other shunting or train movements were taking place on the main tracks in the northern part of Malmö freight yard.

3.9 Examination of the accident site

SHK examined the accident site on two occasions, on 29 April and 6 May 2025. During these visits, SHK documented the track area and the surrounding environment.

There are no physical barriers between tracks 59 (maximum permitted speed 70 km/h) and track 61 (maximum permitted speed 160 km/h). There are also no speed limit signs at this location. Figure 6 shows the track area around switch 717.

[18] ATC (Automatic Train Control) – a system which monitors the train's progress in accordance with the movement authority issued by the signalling system.



Figure 6. The track area around switch 717. The photographer is positioned by the lineside equipment building. The work team's vehicle was parked just behind the photographer. The photograph was taken on 29 April.

Figure 7 shows the view from switch 717 in the direction from which the train approached. SHK has estimated the maximum available sighting distance in this direction to be approximately 840 metres[19]. Figure 7 also shows that there is a ditch between tracks 61 and 62.

[19] The estimate is based on 14 overhead line masts. On straight tracks in Sweden, the distance between overhead line masts is generally 60 metres.



Figure 7. The photograph, taken on 27 April, shows the view along switch 717 and track 61 in the direction from which the train approached (from Lund). To the right are tracks 62–64, where the maximum permitted speed is also 160 km/h. To the left are tracks with lower permitted speeds. At this location there is a ditch between tracks 61 and 62. Photograph: accident site manager from Infranord AB on behalf of the Swedish Transport Administration.

3.10 General information about work within the track area

3.10.1 Competence and training

In accordance with the Railway Safety Act (Chapter 2, Section 7), any person working within an infrastructure manager's operations must have a sound knowledge of the conditions, regulations and requirements governing those operations insofar as they relate to their duties. Safety-critical tasks may only be carried out by persons who, with regard to professional competence, state of health and personal circumstances, are suitable to perform them. The infrastructure manager must require that those it contracts meet these requirements. Any party engaged in this way must in turn place equivalent requirements on any subcontractor it engages.

Any person who is present in, or works within, the track area must have appropriate training and an assignment from the Swedish Transport Administration. Different competence requirements apply depending on the role.

The Swedish Transport Administration's *competence requirements for access and traffic safety functions* (TDOK 2014:0230) describe access functions. There are competence requirement specifications linked to each function that affects traffic, electrical and signalling safety. Such specifications exist, among others, for *individual access to the track*, *safety planners* and *safety leaders*. Relevant access functions are described below.

- *'Protection instructions*' is an authorisation that entitles a person, under the supervision of a safety leader, to work in or be present within the track area. The person must have received the '*protection instructions'* information via the Swedish Transport Administration's website or from a competent safety leader. At each new work site, a local briefing must be given on local information and site-specific conditions, and this must be documented.

- *'Individual access to the track'* is an authorisation that entitles a person to take responsibility for their own safety when present alone on the track area. The person must have completed the Swedish Transport Administration's course '*BASÄVISTA*' or an equivalent course. This training lasts 12 hours including practical exercises and authorises the person to be alone on the track and to be responsible for their own safety. The training must be repeated every three years.

- *Protection and safety leader (safety leader)* is an authorisation that entitles a person to take responsibility for, and plan, their own and others' safety during activities within the track area. Among other things, the person must have completed the Swedish Transport Administration's course '*BASÄSKYDD*' or an equivalent course. This training lasts 30 hours including practical exercises. Refresher training must be undertaken annually and must comprise at least four hours. The *safety leader* may also act as a lookout, provided that a valid medical examination has been carried out in accordance with the Swedish Transport Agency's regulations and general advice on medical examinations and medical fitness for staff with safety-critical duties within the national railway system (TSFS 2019:112). Providing lookout warning has been assessed by the Swedish Transport Administration as a safety-critical task.

- *Protection and safety planner (safety planner)* is an authorisation that entitles a person to plan and carry out risk assessments for their own and others' safety during activities within the track area. Among other things, the person must hold an authorisation to act as safety leader, and have completed the Swedish Transport Administration's course '*Protection and safety planner*' or an equivalent course. This training lasts 24 hours including practical exercises. Refresher training must be undertaken annually and must comprise at least four hours.

In addition to access functions, the document also describes traffic safety functions, including person in charge of the worksite for A-, E-, L- and S-protection and level crossing attendant, who are responsible for planning, requesting and maintaining protection. The duties of a person in charge of the worksite have been assessed by the Swedish Transport Administration as safety-critical.

Training requirements in access agreements

The access agreement between the Swedish Transport Administration and Infranord stipulated that all staff who needed access to the railway infrastructure to undertake work for the Swedish Transport Administration were, as a minimum, to have completed the training course *'Individual access to the track'*.

Training in track engineering

The Swedish Transport Administration did not stipulate any requirement for subject-specific training for staff who worked on rectifying defects identified during inspections. However, there is training in track engineering aimed at track maintenance workers and technicians.

Training in emergency management

The Swedish Civil Defence and Resilience Agency[20] regulations on the transport of dangerous goods by rail (MSBFS 2024:11) require that emergency plans are drawn up for freight yards used for marshalling.

Malmö freight yard is one of eleven yards within the Swedish Transport Administration's infrastructure that have an emergency plan in place (TDOK 2018:0149).

The purpose of the emergency plan is to prevent or limit the consequences of an accident involving, for example, dangerous goods or other emergency situations, and to improve the ability to use available resources effectively.

The fact that Malmö freight yard is a yard with an emergency plan means that each company must apply for authorisation for its own staff and any hired-in personnel. The application must contain details of each individual requiring access together with evidence of completion of the course *'Basic emergency management at freight yards'* and a yard-specific basic course. Once the application is approved, the worker is authorised to access the yard, and the authorisation is recorded on the authority card (ID06 card).

3.10.2 Protection and safety planning

The Swedish Transport Administration's traffic safety regulation for safety during activities within the track area (TDOK 2016:0289) states that all work and all visits within the track area must be subject to safety planning. Safety planning must, among other things, cover where and when the work will take place, pre- and post-work activities, and transport to and from the worksite. The purpose of the safety planning is to identify and manage the risks associated with the specific work activity. The safety plan is prepared by a safety planner, who signs it and hands it over to the appointed safety leader, who is responsible for safety during the execution of the work. For work that has not been possible to plan in advance, such as emergency fault repairs or changes to an existing plan, the safety leader is responsible for preparing a new safety plan.

The safety plan must ensure that the correct form of protection and appropriate protection measures are applied for the work, that there are sufficient personnel with the required authorisations and competences, and that the necessary equipment and other aids are available. As part of the safety planning, it must, for example, be assessed whether the track

[20] On 1 January 2026, the Swedish Civil Contingencies Agency (MSB) changed its name to the Swedish Civil Defence and Resilience Agency.

needs to be closed or whether the work can be carried out on a track open to traffic under lookout warning. In making this assessment, the safer method of protection is to be selected.

A-protection

A-protection is a traffic operating arrangement under which the track is blocked to train movements. A-protection is pre-planned by a safety planner and the work plan must be approved by the Swedish Transport Administration.

A safety leader and a person in charge of work for the A-protection must be appointed. Under the Swedish Transport Administration's regulations, it is considered appropriate for the safety leader to also act as the person in charge of the worksite. The person in charge of the worksite is responsible for traffic safety and requests A-protection from the train dispatcher, who blocks the area described in the work plan. The person in charge of the worksite must also physically protect the area by, among other things, short-circuiting the track circuit and placing stop boards.

If an A-protection needs to be established at short notice, for example for emergency fault repairs or changes to an existing plan, and therefore cannot be pre-planned, it may be planned at short notice.

Lookout

Under certain conditions, work may be carried out without blocking train movements. In such cases, a person is appointed as a lookout. This person is responsible for warning those who are working on the track of approaching rail vehicles.

When assessing whether lookout can be used for a specific work activity, account must, among other things, be taken of: the scope of the work, the maximum permitted speed, the sighting conditions and the available escape options. The escape route must not be planned to cross another track open to traffic. At the time of the accident, lookout was, for example, not permitted if the maximum permitted speed was above 150 km/h[21]. The risk of a person being struck due to inadequate information about the prevailing conditions must also be assessed.

For a lookout warning arrangement to be permitted, those carrying out the work must be able, with certainty, to be clear of the safety zone at least 15 seconds before a rail vehicle passes. The evacuation time must be assessed in the safety plan on the basis of how the evacuation is intended to be carried out.

The required sighting distance is calculated as the maximum permitted speed (m/s) × (evacuation time + 15-second safety margin). The calculated sighting distance must then be compared with the actual sighting distance in order to assess whether a lookout can be used.

SHK has requested information on the number of work activities that are carried out with the use of lookouts, and has been informed that the Swedish Transport Administration is currently unable to provide reliable statistics on this.

[21] After the accident, the Swedish Transport Administration introduced an amendment, stating that lookout warning may only be used on lines where the maximum permitted speed is no more than 70 km/h (120 km/h on single-track lines).

Self-movement

"Self-movement" refers to an individual moving on foot within the track area. As far as possible, such movements are to take place outside the safety zone. When moving on foot within the safety zone, the person must as a minimum have the authorisation *'individual access to the track'*.

When moving on foot within the safety zone, it is not permitted to perform work or to use equipment that could distract attention. The person undertaking the movement must continually assess the risks and must have moved out of the safety zone at least 10 seconds before a rail vehicle passes. This risk assessment does not need to be documented.

The Swedish Transport Administration has stated that there is no general speed limit governing when such "self-movement/self-transfer" is permitted, and that in many cases whether it is acceptable is entirely dependent on the specific situation.

3.10.3 Information about local conditions

The Swedish Transport Administration's regulation TDOK 2016:0289 states that, before starting work in the track area, personnel must receive local information relevant to the work and the location where it will be carried out. This information must include the Swedish Transport Administration document *Route book* (Underlag till linjeboken*),* which is available on the website. The document contains information on the line's maximum permitted speed, tracks and operating sites, as well as emergency contact numbers.

The safety leader must have a sound knowledge of the track infrastructure and sufficient local information to be able to determine whether the details in the safety plan correspond to the actual conditions on site, for example with regard to sighting distances. The safety leader is responsible for ensuring that those covered by the safety plan are continually provided with local information and for documenting this in the current safety plan.

There is no systematic follow-up of how the safety planner passes on local information to the safety leader, or of how it is ensured that the safety leader has a sound knowledge of the track infrastructure. The Swedish Transport Administration and Infranord have also stated that there is no procedure for this.

3.11 The assignment

In early April 2025, Infranord contracted four welding teams from RSAB to perform welding and track maintenance work. The work team involved in the accident arrived in Malmö on the morning of 22 April (week 17). They were scheduled to work day shifts on a 7/7 rotation: seven days of work followed by seven days off.

The process for planning work to be carried out within the track area is not documented, but has been described by Infranord as follows. The supervisor plans tasks based on due dates in the Swedish Transport Administration's inspection system BESSY, orders materials and applies for access to block lines where this is required. The supervisor prints out the inspection defects, prepares the safety plan for the work, provides the documentation to the safety leader and briefs the safety leader on the assignment.

Infranord has stated that the supervisor is to plan on the basis of the intended work tasks and the site, and that the safety leader is then responsible for checking the conditions on site and, if necessary, for replanning the work.

3.11.1 Competence requirements

The Swedish Transport Administration's general traffic and electrical safety requirements for railways (TDOK 2018:0015) state that the Swedish Transport Administration, as infrastructure manager, always has responsibility for traffic safety. This means that the Swedish Transport Administration sets requirements for, and monitors, compliance with competence and authorisation requirements for both the contractor's own staff and any hired personnel. The Swedish Transport Administration has stated that the method for following up the requirements is that each contractor submits an up-to-date competence matrix showing the competence and authorisations of its staff.

Infranord's agreement with RSAB for the hire of BEST technicians stated that RSAB would provide staff with appropriate professional competence and valid competence certificates for the relevant assignment. The agreement described a welding team as consisting of two people together with equipment. The agreement did not specify which competences were to be included, but according to Infranord and RSAB the team was to comprise at least one track welder and one assistant.

The agreement also contained a list of the certificates required for different roles, including track welder and track worker. The role of assistant was not mentioned in this list.

According to the list, a track welder was to hold, as a minimum, safety leader authorisation and have completed training both in track engineering and in the relevant welding method. A track worker was to hold, as a minimum, either the '*individual access to the track*' or *'protection instructions'* authorisation.

When placing the order, Infranord checked staff authorisations by requiring RSAB to complete a competence matrix showing which individuals would work on the assignment and which training courses they had completed. The competence matrix was then forwarded to the Swedish Transport Administration. In addition to this authorisation check at the ordering stage, a further check might also be carried out when staff received their safety induction at Infranord.

SHK has reviewed the most recent competence matrix that was submitted to the Swedish Transport Administration. It was dated 25 September 2024 and had not been updated to include the track worker's most recent authorisation, *'protection instructions'*.

The competence matrix for RSAB's staff contained no information about training in '*basic emergency management at freight yards*'. The safety leader and the track worker held authority cards (ID06 cards), but did not hold course certificates in emergency management at freight yards and therefore did not have the necessary authorisation to access Malmö freight yard.

Other observation regarding training for persons in charge of work

According to the Swedish Transport Administration's competence requirement specification for persons in charge of the worksite[22] (TDOK 2020:0224), anyone to be trained as a person in charge of the worksite must already hold a safety leader authorisation and must have served in that role on at least five occasions within a calendar year.

The track welder completed safety leader training between 19 and 22 June 2023 and training as a person in charge of the worksite between 26 and 30 June 2023. The courses were therefore held in close succession, and there is no information (for example in duty rosters) showing that he had acted as a safety leader on the prescribed five occasions before the person-in-charge training began.

Other observation regarding competence requirements for supervisors

In Infranord's competence requirements it was stated that these covered both Infranord's activities as a railway undertaking and its activities as a track contractor for an infrastructure manager.

The document stated that managers and supervisors were to have completed training in Infranord's safety management system, including a documented knowledge test. The knowledge test was to be assessed by the operational head of traffic and safety. The supervisor had not completed this training. Infranord has stated that the training related to Infranord's activities as a railway undertaking.

3.11.2 Safety introduction and local information

In Infranord's document *'requirements and responsibilities when engaging external resources'* it was stated that project information was to be provided as part of the safety induction for external resources. According to Infranord, the safety introduction forms part of the general introduction to the workplace, but no documentation has been presented describing what this comprises. A checklist associated with the requirements document shows that external resources are to be given information on, among other things, the project plan, work environment rules and general site rules and safety rules. The fact that this information has been provided is to be documented on the checklist.

The site manager is responsible for ensuring that staff have sufficient competence for the tasks they are allocated, and that specific information regarding the location is provided for the place where the work is to be carried out. The site manager must make available the documentation and information required for the task. The safety planner or safety leader is responsible for ensuring that relevant staff receive location-specific information, and that they are kept informed of any changes.

SHK has reviewed checklists from Infranord in which the supervisor had recorded that competence, personal protective equipment, etc. had been checked, and that information on the project plan, working-environment arrangements, and site rules and safety rules had been provided to the safety leader and the track worker. The checklists, and other available

[22] The full course title is *'Person in charge of the worksite for A-, E-, L- and S-protection and level crossing attendant'.*

documentation, do not show in any detail which location-specific information about Malmö that was actually provided.

In January 2025, Infranord and the trade union negotiated a local agreement concerning contracted staff. Among other things, this agreement stated that the reception/induction of contracted staff was to take place in person on the first occasion they worked under the relevant contract in the current calendar year.

According to the checklist, the safety leader received this information no later than 13 January 2025, and the track worker no later than 23 June 2024. RSAB and Infranord have given differing accounts of the track worker's duties on 23 June. Infranord's time-recording system shows that he was scheduled to work in Malmö on that date, but RSAB states that he did not. However, both Infranord and RSAB confirm that the track worker worked in Malmö on 8 June 2024, and a completed checklist exists from that occasion.

When the work team arrived in Malmö on 22 April 2025, no safety introduction was carried out. Nor was any location-specific information provided about the particular tasks that were to be undertaken during the week. Infranord judged that this was not necessary because they had previously worked in Malmö. There is no detailed information about the type of work that was carried out on those earlier occasions, or in which part of the yard it took place. There is also no information about the extent to which the safety leader had previously acted as a lookout. SHK has asked Infranord and RSAB for this information. Infranord stated that it did not hold such information and referred SHK to RSAB. According to RSAB, the safety leader had worked in Malmö on and off since July 2023. He had worked around 60 shifts in Malmö, including rail replacement and vegetation clearance, but RSAB has no detailed information on the extent to which the safety leader had previously worked under lookout arrangements.

It has not been possible to establish the extent of the safety leader's local knowledge of Malmö freight yard. According to Infranord, some information about local conditions is provided during the introduction, but it is unclear what this covered in practice and to what extent the safety leader had absorbed this knowledge.

The track worker had only worked a small number of shifts for Infranord. He stated that on one occasion he had worked under lookout arrangements, but that his duties had mainly consisted of acting as an assistant when the line was blocked to traffic.

3.11.3 Access to Malmö freight yard

To enable the work team to access Malmö freight yard, the supervisor lent them his ID06 card. The supervisor stated that he had on previous occasions borrowed ID06 cards from others, and had also lent out his own card before.

SHK has reviewed a list of staff that Infranord contracted from RSAB to work in Malmö. Of 26 people, 16 had not completed the course '*Basic emergency management at freight yards*'. SHK asked Infranord whether any of these individuals had worked at a yard covered by an emergency management plan. Infranord stated that it did not hold this information.

3.11.4 Tasks allocated to the work team

Tuesday 22 April

On 22 April, the work team was tasked with rectifying inspection defects at Malmö Central. Acting in his role as safety planner, the supervisor prepared one safety plan for work under A-protection and a second safety plan for work under lookout arrangements.

The safety plan for work under lookout arrangements applied to all tracks at Malmö Central between 07:00 and 18:00. The speed was assessed as 40 km/h and the evacuation time as 20 seconds, giving a required sighting distance of at least 390 metres. The safety planning did not identify any other risks, for example those associated with adjacent tracks. No evacuation route was specified in the plan.

SHK has asked Infranord which inspection defects were intended to be rectified under lookout arrangements that day. Infranord has responded that it does not know.

Wednesday 23 April

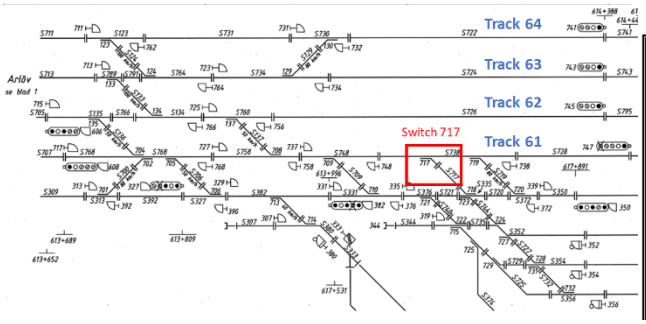
On 23 April, the work team was tasked with assisting with welding work. This welding was carried out with the line closed to traffic. Once the welding had been completed, the work team continued rectifying inspection defects. The supervisor stated that during the day he discussed with the safety leader how to complete a document related to bringing the line back into use after the welding work.

Thursday 24 April

Because the planned work for the day had been cancelled, the work team was instead tasked with rectifying inspection defects at Malmö freight yard. The supervisor stated that he was keen to ensure the work team had something to do over the following days, as he himself would not be on duty.

The safety plan stated that it applied to all tracks at Malmö Central and Malmö freight yard. The speed was assessed as 40 km/h and the evacuation time as 20 seconds, giving a required sighting distance of at least 390 metres. The safety planning did not identify any other risks, for example those associated with adjacent tracks. No evacuation route was specified, and there was no description of the risks associated with pre- and post-work activities or transport to the worksite.

To support his assessment of whether the limits of the work were consistent with the information in the safety plan, the safety leader had a schematic signalling diagram (see figure 8). This diagram shows switches, signals and track circuits. For some switches, it also shows speed information, which applies when the switch is set to the diverging route. There is no speed shown at the switch where the accident occurred, switch 717. It has not been established whether the safety leader had consulted the *Route Book*, which includes information such as maximum permitted speeds on different tracks, when assessing the safety plan. The track worker stated that he was not aware that the speed at switch 717 on track 61 was 160 km/h.



TRAFIKVERKET — TC MALMÖ UNDERLAG TILL LINJEBOK — D37

GMP→ PHM

Km	Sth	Signaler, trafikplatser, mm
	160/200a)	a)<62>
	150b)	b) <64>,<63>
614+388	**140**c)/160c)	Msi (M 741 <64>, M 743 <63>, M 745 <62>) c);<61>
614+447		Msi (M 747 <61>)
614+447	**140**/160	Hatavla <64,63,62,61>
614+800		**Malmö gbg (Mgb)** * Uppgifter om parkeringsspår se avd E
614+920	70	Hatavla (<59>)

Figure 8. On the left is an extract from the schematic signalling diagram that the safety leader had with him. The red marking shows the accident location, switch 717, and the blue markings show the track numbers. On the right is an extract from the *Route Book*, in which the green marking shows the permitted speed at this location. The markings have been added by SHK. Source: Swedish Transport Administration.

The lists of inspection defects that the work team received consisted of six separate print-outs (a total of 26 pages) from the Swedish Transport Administration's inspection system BESSY. The supervisor printed these defects on the afternoon of 23 April and the morning of 24 April. The inspection list mainly contained entries for tightening loose bolts and screws and for lubrication in switches 11/786, 12 and 774. Switches 11/786 and 12 are pneumatically operated switches located in the area referred to as the marshalling yard, where operators in a control tower control the switches and shunting movements.

SHK has assessed that the work team also carried out work in switches 732, 733, 737, 738, 741 and 743, although this was not recorded in the inspection list. Figure 9 shows some of the defects at Malmö freight yard.

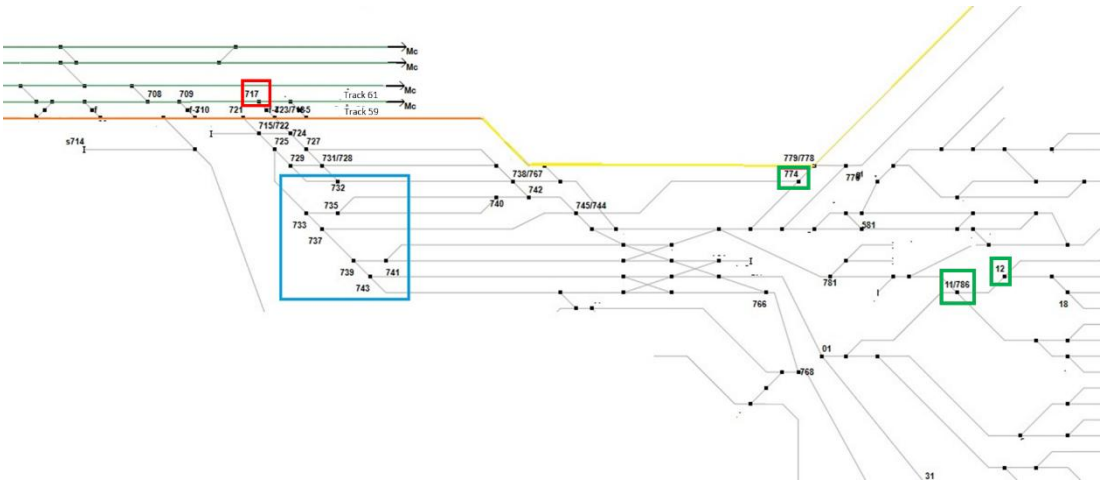


Figure 9. Inspection defects illustrated by switch numbers. The green boxes have been added by SHK to indicate switches where the work team has checked the defect, according to notes on the inspection list. The blue box indicates switches where the work team is assessed to have worked before the accident. The red box indicates the switch at which the accident occurred. The coloured lines show the maximum permitted speed on each track: green 160 km/h, orange 70 km/h and yellow 50 km/h. Source: The Swedish Transport Administration's infrastructure database BIS.

After reviewing the inspection defects and the *Route book*, SHK has identified that 19 of the 94 defects related to tracks where the speed was higher than 40 km/h, of which:

- 8 defects were on tracks where the speed was 160 km/h.
- 8 defects were on tracks where the speed was 70 km/h.
- 3 defects were on tracks where the speed was 50 km/h.

To rectify the inspection defect in switch 717, the track would have needed to be blocked to traffic. The supervisor has stated that the inspection defects relating to switch 717 were included among the printouts given to the work team by mistake, and that these were scheduled to be rectified by another work team during a line closure on the night of 27/28 April.

SHK has reviewed a safety plan for track 61 covering welding work with the track closed to traffic during the night of 27/28 April, and a task briefing for welding on switch 719 on track 61 on the same night. SHK has asked Infranord whether there was a task briefing for work in switch 717 on the same night. Infranord has not produced any such document. Infranord has stated that its normal working practice is that, once A-protection has been granted, other inspection defects covered by the safety plan may also be rectified. The inspection defects in switch 717 were rectified on 28 April 2025.

3.11.5 Incidents the same week as the accident

After the accident, it was noted that the work team had been involved in incidents the same week as the accident happened.

Workplace inspection on 22 April

On 22 April, the Swedish Transport Administration carried out a workplace inspection at Malmö Central. The inspector was there to inspect work being undertaken under A-protection on a siding. On the way to the A-protection site, the inspector observed two persons – the work team involved in the accident – working in switch 383 without look-out (see figure 10).



Figure 10. The work team working in switch 383. The workplace inspector took the photograph before approaching the work team. Source: Swedish Transport Administration.

According to the track worker, he was clearing a contaminated flangeway when the safety leader “dropped down” onto the track to help him. Shortly afterwards, the inspector arrived. The track worker stated that it sometimes happened that the safety leader helped with rectifying inspection defects when they were working under lookout arrangements.

The inspector spoke with the safety leader about understanding of the rules and safety in relation to the track work. After completing the inspection, the inspector produced a preliminary report noting a non-compliance and emailed it to the Swedish Transport Administration’s project manager and to Infranord. The preliminary report had not been read by the Swedish Transport Administration’s project manager or by Infranord before the accident occurred.

SHK has examined whether the conditions for working under lookout arrangements were met at switch 383. The safety plan for the work specified a required sighting distance of 390 metres. The Swedish Transport Administration has assessed the available sighting as 172 metres in the direction of the passenger station and 80 metres in the direction of Malmö Central. The conditions were therefore not met. This was not recorded in the workplace inspection report.

Near-miss incident on the morning of 24 April

On the morning of 24 April, an operator in the control tower observed that a track worker was in the track at switch 12 or 14 when a wagon was rolling towards him. The track worker has stated that he was in the track area while the safety leader was away moving the car.

The operator perceived that there was a risk of an accident and therefore contacted a train driver, who gave an audible 'train approaching' warning to alert the track worker. According to the operator, the track worker did not react to the audible warning, but moved clear shortly before the wagon passed him. The track worker has stated that he felt he had an adequate safety margin.

The incident was reported within the operator's own organisation (Green Cargo). The operator also informed a member of another Infranord work team who was in the tower shortly after the incident. That Infranord work team then contacted the RSAB work team to discuss what had happened.

According to the information available to SHK, there was no immediate reporting of the incident to the Swedish Transport Administration's control centre or to Infranord's local management. The control centre was informed of the near-miss by Green Cargo after the accident.

3.12 Safety management arrangements of the involved parties

To operate as an infrastructure manager, an organisation must, under the Railway Safety Act (2022:367), have a safety management system in place. Such a system consists of the organisational arrangements that have been established, together with the measures and procedures adopted to ensure safe operations. The safety management system must be documented and designed so that the infrastructure manager can control the risks arising from its activities.

Under Commission Delegated Regulation (EU) 2018/762 of 8 March 2018, establishing common safety methods on safety management system requirements, an organisation is required to identify the significant safety risks arising from its railway operations, whether these are carried out by the organisation itself or by contractors.

Under Commission Regulation (EU) No 1078/2012 of 16 November 2012, on a common safety method for monitoring, an organisation must have a monitoring process that is applied to all processes and procedures within its management system, including technical, operational and organisational risk-control measures.

The Swedish Transport Administration also has the duties of a contracting client, as set out in Chapter 3, Section 6 of the Work Environment Act, and further specified in the Swedish Work Environment Authority's regulations and general recommendations (AFS 2023:3) on design and coordination of the construction work environment – general duties.

The Swedish Work Environment Authority's regulations and general recommendations (AFS 2023:13) on risks associated with certain types of work also contain, in Chapter 5, Sections 100–107, requirements relating to the working environment for certain activities, including work on or near the line.

Risk management within the Swedish Transport Administration is governed at an overall level by a framework consisting of the Swedish Transport Administration's directive on internal control (TDOK 2010:163), its internal regulation on integrated risk management (TDOK 2010:18), the guideline 'Integrated Risk Management' (TDOK 2018:0360), and process-specific guidelines on risk management.

TDOK 2018:0360 states that the Swedish Transport Administration's general approach to integrated risk management is intended to support the achievement of its business objectives, and that risks and adverse events are to be continuously monitored and communicated.

The Swedish Transport Administration's procedure 'Safety indicators Railway' (TDOK 2020:0060) describes an approach for developing safety indicators in order to meet the requirements of Regulation (EU) No 1078/2012. It states that a designated risk owner is responsible for monitoring and analysing the safety indicators. The Swedish Transport Administration has stated that it uses a safety indicator to monitor serious incidents involving workers being struck by trains or other rail vehicles.

The Swedish Transport Administration places requirements on contractors' risk management in its specification 'Quality management in contracted activities – construction and design services' (TDOK 2016:0032), and in 'General traffic and electrical safety requirements for railways' (TDOK 2018:0015).

TDOK 2016:0032 states that the contractor must have documented working methods to ensure, among other things, that risks are managed on an ongoing and systematic basis and that appropriate actions are taken. TDOK 2018:0015 states that there must be a clear link between the risk management process and safety planning and task briefings. It further specifies that risk management must be followed up systematically in order to determine whether the intended effect has been achieved. The requirements relating to safety management must be passed on to subcontractors.

Among other things, the Swedish Transport Administration requires track contractors to produce a safety plan describing how the contractor's activities are integrated into the Swedish Transport Administration's safety management system. Infranord had prepared such a safety plan, which stated, among other things, that Infranord applied the Swedish Transport Administration's traffic safety regulations for activities in the track area (TDOK 2016:0289).

On 10 November 2023, Infranord carried out a project-specific risk analysis of the basic maintenance contract. This identified a risk that contracted staff and subcontractors might not receive the correct information, which could lead, for example, to insufficient understanding of task briefings and other documents applicable to the work. One of the risk scenarios cited was that the *'protection instructions'* might not be given to a subcontractor. Proposed control measures included, among other things, good planning, a thorough briefing with the work team on the tasks to be carried out, and checks of staff competence and authorisations.

3.12.1 The Swedish Transport Administration's monitoring of contractors

TDOK 2016:0032 describes how the Swedish Transport Administration follows up the requirements placed on track contractors in the areas of quality, environment, risk management, safety, systematic work-environment management, construction work environment and social requirements. The track contractor must have a project plan, a corporate safety plan and a work environment plan.

The Swedish Transport Administration has stated that monitoring of the track contractor is carried out on an ongoing basis through, among other things, monthly meetings and targeted reviews. At these meetings, the Swedish Transport Administration checks, for example, staff authorisations by taking a random sample from the competence matrix submitted by Infranord. Infranord is required to keep this competence matrix continuously up to date.

The Swedish Transport Administration also carries out unannounced workplace inspections. The Swedish Transport Administration's procedure 'Inspections of construction sites with regard to electrical and traffic safety' (TDOK 2019:0027) states that the purpose of these inspections is to check the safety management of the track contractor and to provide an opportunity for feedback and discussion with the track contractor.

If a track contractor does not meet the requirements relating to work environment and safety, the track contractor may be liable to pay a contractual penalty. In the case of shortcomings in work environment and safety, such a penalty is payable, among other things, for inadequate high-visibility clothing, staff who do not meet competence requirements, incorrect protection arrangements when working under A-protection, absence of a safety leader during the work, and deficiencies in risk assessment.

At each workplace inspection, representatives of the track contractor must be informed of any non-compliance that has been identified. In the event of serious non-compliance, or non-compliance that the inspector considers to present a traffic safety risk, the Swedish Transport Administration's project manager or the track contractor's site management must be contacted without delay so that unsafe work can be stopped until safety-improvement measures have been implemented. After each workplace inspection, a preliminary written report must be produced and sent to the Swedish Transport Administration's project manager and the track contractor's site manager for review.

In the southern region, which includes Malmö, the Swedish Transport Administration carries out around 100 unannounced workplace inspections each year, on average.

During the Swedish Transport Administration's workplace inspection of two worksites, one in Ystad and one in Trelleborg, on 26 February 2025, deficiencies were noted in the risk assessments, and there was no designated safety leader. At the meeting on 28 March 2025, it was recorded that these shortcomings had been identified in the workplace inspections, and that Infranord had been issued with contractual penalties. The incidents were not investigated further.

The Swedish Transport Administration also requires contracted track contractors to perform their own workplace inspections.

3.12.2 Infranord's monitoring

Infranord's general site rules on safety and conduct state that everyone at the worksite has an important part to play by working safely and avoiding risky shortcuts taken to save time or money, or for convenience. Everyone is also expected to intervene when they observe unsafe behaviours and to point out safety deficiencies, and, where necessary, to inform local management and the safety representative.

Workplace inspections

Infranord carries out its own workplace inspections. These inspections include checking whether there is a safety plan in place, a work plan, and whether a safety leader is present on site.

During the preceding twelve-month period, Infranord had carried out two such inspections in Malmö and south-east Skåne, on 24 September and 9 December 2024. One of these inspections resulted in a recorded non-compliance relating to personal protective equipment.

Follow-up of completed work

Once an inspection defect has been rectified, the work carried out is recorded in the inspection system BESSY and the safety plan is archived. According to Infranord and the Swedish Transport Administration, there is no routine follow-up of safety matters, such as reviewing how the planning and execution of work have worked in practice.

3.12.3 Handling of reported incidents and accidents

Under Regulation (EU) 2018/762, accidents and incidents related to the infrastructure manager's activities must be reported, recorded, investigated and analysed in order to identify their underlying causes. In accordance with the Railway Safety Act, accidents and incidents must, where applicable, be reported to the Swedish Transport Agency.

Employers are also required to notify the Swedish Work Environment Authority of serious accidents and incidents in their operations. Because being struck by a train is life-threatening, most such near-misses on the track should, according to the Work Environment Authority, be regarded as serious and reported, even if nobody has been injured.

The Swedish Transport Administration's 'General traffic and electrical safety requirements for railways' state that all electrical and traffic-safety-related events (non-compliances, incidents and accidents) must be reported immediately to the Swedish Transport Administration's traffic control centre, in accordance with the Swedish Transport Administration's requirements for reporting non-compliances, incidents and accidents (TDOK 2016:0035). According to the Swedish Transport Administration, non-compliances identified during workplace inspections are handled separately.

The Swedish Transport Administration investigates accidents and incidents, and its contracts also require the contractor to investigate accidents and incidents and report the findings to the Swedish Transport Administration. These investigations should address human, organisational and technical factors. The lessons learned from such events are to be

used systematically as a basis for improvements to working methods, operational processes and future risk assessments.

Review and investigation of reported events

SHK has reviewed statistics from the Swedish Transport Administration concerning the handling of non-compliances, incidents and accidents related to 'staff struck by trains while working'. In 2024, 46 such events were reported, and in 2025, up until the date of the accident in April, a further 20 events were reported.

Of the 46 events that occurred in 2024, nine have been investigated. The Swedish Transport Administration has stated that the reason why more events have not been investigated is a lack of information, including uncertainty about which contractor was involved. The handling of certain of the events was closed because there were differing views on how serious the near-miss was.

Interviews have indicated that non-compliances and near-misses have sometimes been dealt with on site, immediately after the event, through discussions with those involved, and have not then been further reported within the organisation.

Reporting of events to the Swedish Transport Agency

The Swedish Transport Agency's regulation on accident and safety reporting for railways (TSFS 2024:02) regulates which events must be reported by railway undertakings and infrastructure managers. Events that must be reported immediately include accidents and near-misses involving at least one moving rail vehicle which have resulted in one or more people being fatally or seriously injured.

SHK has reviewed the total number of events reported to the Swedish Transport Agency in 2024 in the category 'staff struck by trains while working'. Of the 44 events reported to the Agency, 23 were reported by a railway undertaking, but not by the Swedish Transport Administration. When SHK requested information on the events, eight of the 23 events were not recorded by the Swedish Transport Administration. According to the Swedish Transport Administration, a possible explanation is that these events were never reported to the Swedish Transport Administration's traffic control centre.

Near-miss incident at Malmö freight yard on 7 February 2024

A train driver reported a near-miss incident that occurred on track 61 at Malmö freight yard on 7 February 2024. The train driver observed two track workers from Infranord crossing the track. The train was travelling at 160 km/h and the train driver judged that it came to within about 50 metres (1–2 seconds) of striking them. The train driver reported the incident to the Swedish Transport Administration's traffic control centre, which recorded it and informed Infranord. The Swedish Transport Administration did not report the incident to the Swedish Transport Agency. Nor is there any record of this near-miss having been reported to the Swedish Work Environment Authority.

According to the Swedish Transport Administration's incident reporting system, the track workers concerned were at the site to survey it ahead of work planned for the following night. The Swedish Transport Administration's record of the case also states that self-movement on the track is not appropriate at this location because there are multiple tracks open to traffic, and trains run at high speed. The Swedish Transport Administration stated

that this had been communicated by the traffic control centre to the contractor, but the near-miss was not further investigated.

3.12.4 Identified safety challenges for work in the track area

The Swedish Transport Administration conducts analyses of aggregated safety data. In 2020, following a large number of reported deviations and near misses involving workers at risk of being struck by rail vehicles, it analysed compliance with the rules for working in the track area. The analysis identified shortcomings in compliance, risk assessments and protective measures. The analysis report noted that deficiencies in systematic reporting had made the analysis more difficult. The Swedish Transport Administration has stated that there is no complete record of how the findings were subsequently followed up within the organisation. It reports that it has since developed its approach to this work, and is continuing to do so in 2026.

During the investigation, several interviewees highlighted that working under lookout arrangements is perceived as a high-risk work method. Infranord and the Swedish Transport Administration have stated that it is not possible, with the current systems, to obtain historical data on work carried out under lookout arrangements.

The maintenance division within the Swedish Transport Administration develops and evaluates rules governing safety during activities on the tracks. In spring 2024, it initiated and produced an internal note on safety challenges associated with work under lookout arrangements. The note was based on discussions with industry stakeholders and observations made during worksite inspections. Among other things, it highlighted difficulties in securing time to work on the track, shortcomings in rule compliance, and the tendency for safety plans to be treated as a formality rather than as a support tool for safety.

The internal note resulted in draft amendments and clarifications to TDOK 2016:0289. The intention was for a proposal to be sent out for consultation in June 2025 and to come into force in 2026. Following the accident, parts of the draft proposal were implemented through specific measures (see section 3.16). The remaining elements are being handled within the Swedish Transport Administration’s ongoing management of its traffic safety regulations.

3.13 Safety authorisation and supervision

3.13.1 Swedish Work Environment Authority

The Swedish Work Environment Act (1977:1160) is intended to prevent ill-health and accidents at work. Among other things, the Act requires that work is planned and organised so that it can be carried out in a healthy and safe environment. Each employer must ensure that employees have a good understanding of their working conditions and are informed about the risks that may be associated with the work. The employer must also ensure that employees receive the training they need and understand the measures required to avoid risks in their work. Furthermore, the employer must ensure that only employees who have received adequate instructions are allowed access to areas where there is a clear risk of ill-health or accidents.

The Swedish Work Environment Authority has issued regulations and general recommendations (AFS 2023:1) on systematic work environment management – general duties for those with employer responsibility. These regulations apply to all activities in

which employees perform work on behalf of an employer; anyone hiring in labour is treated as an employer. Among other things, the regulations state that the employer must ensure that systematic work environment management is carried out as part of day-to-day operations, and that all employees have sufficient knowledge of their work and its associated risks. The employer must also regularly examine working-environment conditions in order to assess risks of ill-health and accidents at work.

The Swedish Work Environment Authority exercises supervision under the Work Environment Act. This supervision is planned on an annual basis, but can also be initiated following specific events, reports from safety representatives or incoming complaints. Different areas of focus may be included in the planned supervision.

In 2022, the Work Environment Authority carried out a national supervisory initiative involving a number of companies in the railway sector. This supervision identified, among other things, shortcomings in coordination and deficiencies in risk assessments for work on the tracks.

In 2026, the Work Environment Authority will begin a national supervisory initiative focusing on planning and design in construction projects. The Swedish Transport Administration is included in the selection for this inspection activity.

At the time of publication of this report, the Work Environment Authority had an ongoing supervisory case concerning Infranord in relation to the accident.

3.13.2 Swedish Transport Agency

The Swedish Transport Agency is responsible for issuing regulations, granting authorisations, exercising regulatory supervision and maintaining registers in the transport sector. Under the Railway Safety Act, it grants safety authorisations to Swedish railway infrastructure managers and supervises their activities. To obtain an authorisation, an infrastructure manager must, among other things, have a safety management system with processes and procedures for controlling the risks arising from its operations, and comply with the requirements of relevant EU regulations and national rules.

Safety authorisation

On 31 October 2025, the Swedish Transport Agency granted the Swedish Transport Administration a renewed safety authorisation, valid for three years[23], for its role as infrastructure manager of the state railway network. As a condition of this authorisation, the Swedish Transport Agency imposed a number of requirements for actions to meet the provisions of the EU regulations on common safety methods for safety management systems (2018/762) and for monitoring (2012/1078). With regard to the safety management system, conditions were imposed for measures to fulfil safety objectives, achieve continuous improvement, incorporate learning from accidents and near-misses, and integrate human and organisational factors. With regard to monitoring, the Swedish Transport Administration was required to implement the regulation's provisions in full.

[23] The validity period for a safety authorisation is normally five years.

Safety supervision

The Swedish Transport Agency's supervision activities are planned on an annual basis and are based on risk assessments of the activities of authorisation holders. The supervision focuses on monitoring that these organisations have effective safety management arrangements in place. In addition to planned supervision, the Swedish Transport Agency may initiate supervisory activity following, among other things, accidents.

Supervision in response to the accident
In 2025, the Swedish Transport Agency conducted a supervisory inspection of the Swedish Transport Administration in response to the accident investigated in this report (file number TSJ 2025-626). As a result, the Swedish Transport Agency ordered the Swedish Transport Administration to report the measures it had decided on and implemented to ensure that all risks associated with railway infrastructure maintenance carried out by personnel on or immediately adjacent to the track were under control.

In its order, the Swedish Transport Agency noted that since 2020 it had received reports of 100 events in which people wearing high-visibility clothing were on the tracks as trains passed. In its response, the Swedish Transport Administration reported, among other things, that it had met with the heads of safety from three major contractor companies. They agreed that the demands placed on the railway system posed challenges for train operations in terms of access time for maintenance work, and wear on the infrastructure. The Swedish Transport Administration also reported that the participants had identified a need to work together to improve the safety culture and to review whether the rules needed to be revised.

The Swedish Transport Agency responded that the Swedish Transport Administration had not demonstrated that it had done enough to manage the risks in its operations. The Swedish Transport Agency stated that the meetings referred to by the Swedish Transport Administration had only involved three infrastructure contractors, and that it was not clear whether any concrete measures had been decided at these meetings to prevent further near-misses and accidents.

The Swedish Transport Administration set out the measures it had taken in a supplementary response. The Swedish Transport Agency then closed the supervision activity (see section 3.16).

Supervision of how actions following accidents and incidents are managed
In the autumn of 2024, the Swedish Transport Agency initiated supervision of the Swedish Transport Administration focusing on near-misses and accidents during track work, with the aim of examining whether the Swedish Transport Administration, following its investigations, was implementing effective actions to prevent a recurrence of such events (file number TSJ 2024-1260).

On 4 April 2025, the Swedish Transport Agency decided to issue an order requiring the Swedish Transport Administration to take a number of actions. This followed the Swedish Transport Agency's review of investigation reports and interviews, which showed that events had not been investigated in sufficient depth. The Swedish Transport Administration responded that it would take action in the following five areas: ensuring the robust collection of evidence; taking a holistic approach to investigations; ensuring that identified shortcomings lead to actions; monitoring the implementation of those actions; and

improving the understanding of the current situation together with continued organisational learning.

The Swedish Transport Agency asked the Swedish Transport Administration to supplement its response with an analysis of the underlying causes and an implementation plan for the actions. Following these additions, the Swedish Transport Agency judged that the Swedish Transport Administration had addressed the shortcomings in an acceptable manner and, on 25 November 2025, closed the supervisory case. In its decision, the Swedish Transport Agency stated that it would follow up the actions set out in the submitted implementation plan.

3.14 Health and working environment

3.14.1 Working hours

The Swedish Working Hours Act (1982:673) contains rules on how many hours employees may work per day, week and year. Its purpose is to protect employees' health and safety by regulating the amount of work they may perform, and by ensuring sufficient rest and recovery, through rules on normal working hours, overtime, night work, breaks, rest pauses, daily rest and weekly rest.

In this case, the provisions of the Working Hours Act had been set aside by collective and local agreements[24]. Under these agreements, a work period may be no longer than 13 or 14 hours. The rest period between two work periods must be at least 11 hours (daily rest). An employee who mainly works nights must, after working four or more consecutive nights, have at least 60 hours of continuous rest immediately following the night work (weekly rest). The agreements also state that general overtime may not exceed 48 hours over a four-week period or 50 hours in a calendar month.

The work team's working week

Infranord's working week (week 17) began on the Tuesday (the Monday was a public holiday) and followed a so-called 7/7 roster, that is, seven days on followed by seven days off. The safety leader and the track worker worked 11-hour shifts on the Tuesday and Wednesday. Their shifts started at 07:00 and finished at 18:00, and included travel between Infranord's premises and the sites where the work was to be carried out.

The safety leader

According to available information, the safety leader had been working extensively over a period and appeared tired during the week of the accident. SHK has therefore examined the safety leader's work schedule in detail for the period from 1 March to 30 April 2025.

During this period, the safety leader mainly worked for the contractor Strukton Rail AB in Alvesta, on a roster consisting mostly of night shifts from Sunday night/Monday morning through to Thursday, with a few day shifts as exceptions. According to the roster, the safety leader was then off duty from Thursday morning until Sunday evening, when the next week's work began.

[24] Road and Track collective agreement and the Infranord Railway Infrastructure Agreement

The review of the scheduled hours has identified several deviations in relation to total working time, weekly rest and daily rest.

- On Sunday 2 March, the safety leader worked a double shift: first a 12-hour day shift for Infranord, followed by a 9-hour night shift for Strukton.
- Further deviations related to weekly rest were noted in weeks 12, 14, 15 and 16. In addition to his rostered shifts for Strukton, the safety leader had also worked double night shifts at weekends during this period.
- In the week before the accident (week 16), the safety leader had worked 63 hours (including Sunday of week 15) on a mix of day and night shifts for Strukton. By the time he started work for Infranord on the Tuesday, he had had a daily rest period of 24 hours.
- His total working time in March was 214 hours, and in April up to the day of the accident (24 April) it was 171.5[25] hours. Under the applicable agreements, the total working time per four-week period, including overtime, may not exceed 192 hours for staff working nights (36-hour weeks).

The track worker

The track worker was employed full-time (40 hours per week) by a company outside the railway sector. His working hours were 07:00–16:00. He took days off from his regular job when working additional shifts for RSAB.

In the week before the accident, the track worker had worked at his regular job from Monday to Thursday, and on the Saturday he worked a 22-hour shift (including travel time) as a track worker in Vingåker for a staffing agency.

The supervisor

The supervisor, who was working as a contracted consultant, had a contractual working time of 40 hours per week. During March he worked 216 hours, and in April 237 hours. This exceeded the permitted working time under the collective agreement, which was 208 hours per four-week period.

Monitoring of working time

Interviews with RSAB, Infranord and Strukton indicated that no checks are made to confirm whether contracted staff have received their daily rest or weekly rest before starting a work period for each respective infrastructure contractor. Infranord stated that its contract with RSAB specifies that the supplying company is responsible for ensuring compliance with the applicable working-time rules.

[25] The planned working time for April was 204.5 hours.

3.14.2 Workload

Workload, fatigue and reduced attentiveness had been identified as risks in Infranord's risk analysis dated 10 November 2023. The analysis stated that during and after long shifts or night shifts there is an increased risk of inattention and fatigue among staff. The initial assessment of this risk indicated a likelihood of 5 out of 5 and a consequence of 5 out of 5.

The following control measures were described in the risk analysis:

- Ensuring good planning of working hours in order to reduce workload.
- Encouraging staff to optimise their rest periods between shifts.
- Management and colleagues are to remain alert to each other's state of health and any signs of fatigue.

After these measures, the likelihood was assessed as reduced to level 1, and the consequence as reduced to level 4.

The risk analysis stated that a high workload can lead to errors in delivery and planning, as well as sickness absence. Proposed measures included ensuring that sufficient staff with the right competence and resources are available, and continuously monitoring the distribution of work.

Interviews with a number of people indicated that there has been a high workload, including for the supervisors at Infranord in Malmö. It has also emerged that, before the accident, the trade union had raised concerns with the employer about the volume of contracted staff and the way that the supervisors were managing those staff.

Two supervisors were responsible for planning and following up inspection defects relating to track components. The supervisor involved in this accident was responsible for around 15 staff, mainly engaged in welding work, and the other supervisor was responsible for around 25 staff, mainly engaged in track work. The supervisor role included, among other things, following up the allocated tasks, but interviews suggest that this had not been done to the extent intended because of the workload.

It was also described in interviews that the number of inspection defects requiring planning and rectification had increased. Figure 11 shows the number of such defects in Malmö and south-east Skåne during the period 2020 to 2025.



Figure 11. Number of inspection defects per week in the Malmö and south-east Skåne area between 1 January 2020 and 30 April 2025. The arrow indicates when Infranord AB took over the maintenance contract from Strukton Rail AB.

Figure 12 shows that the number of defects on line section 902 increased during 2025.

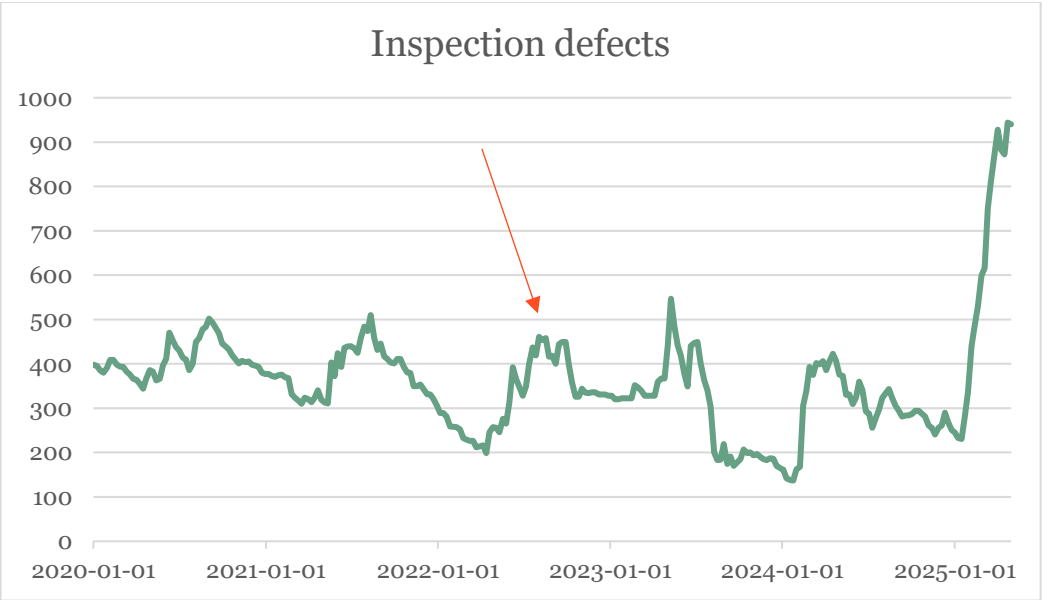


Figure 12. Number of inspection defects per week on line section 902 (Malmö freight yard) between 1 January 2020 and 30 April 2025. The arrow indicates when Infranord AB took over the maintenance contract from Strukton Rail AB.

On line section 901, where the accident occurred, the number of defects varied between approximately 100 and 400 per week over the same period.

3.15 Previous investigations of similar occurrences

SHK has previously investigated several accidents in which people were struck by trains while working on the track. In those investigations, SHK identified risks arising from the form of planning used, whether risk assessments had been carried out before the work, the contractors' local knowledge, and the type of protection arrangements selected for the work. The findings of the three most recent relevant investigations are summarised below: a thematic investigation into safety during work in the track area (RJ 2014:05), an accident involving a person in Pölsebo (RJ 2016:01) and an accident involving a person in Markaryd (RJ 2017:01).

The thematic investigation, published in November 2014, was prompted by the fact that 28 accidents and near-misses during work in the track area had been reported to SHK in 2012. SHK's investigation highlighted, among other things, a link between the level, planning form and execution of preparations for track work and the consequences of the events that occurred. The investigation also showed that neither the Swedish Transport Administration nor the contractors held sufficient data to provide an overall picture of the work being carried out in the track area. SHK recommended that the Swedish Transport Agency should, among other things, promote measures to ensure that the Swedish Transport Administration confirms that staff performing safety-critical tasks have local knowledge of the site where the work is taking place, and that, when the Swedish Transport Administration reviews completed work, it also follows up how safety was managed.

On 5 September 2015, a machine operator was struck by a train at Pölsebo as he was returning to his colleagues after driving his excavator off the track. The machine operator was seriously injured. SHK's investigation highlighted, among other things, that no specific safety measures had been implemented for the post-work activities alongside the track. SHK recommended the Swedish Transport Agency to ensure that the Swedish Transport Administration reviewed the effectiveness of its safety management system in creating safe operations on the railway infrastructure. The review was recommended to focus in particular on risks associated with pre- and post-work activities, rule design, training, monitoring, and the systematic feedback of experience from the application of the rules.

On 25 May 2016, two track workers were struck by a train while carrying out repair work in a switch on a main track at Markaryd. The work had not been subject to a risk assessment and no measures had been taken to protect the activity. One track worker was seriously injured and the other sustained minor injuries. SHK's investigation highlighted, among other things, that it is possible to follow up every intervention related to an inspection defect, from initiation to completion, in order to determine whether the planning of protection had been effective and implemented as intended, but that this possibility was not being used. SHK made no recommendations, referring instead to ongoing work in response to previously issued recommendations.

3.16 Measures taken since the occurrence

3.16.1 The Swedish Transport Administration

Following the Swedish Transport Agency's supervision, which was carried out immediately after the accident, the Swedish Transport Administration reported that it had taken the following four measures.

- The maximum permitted speed at which lookout working is allowed was first reduced temporarily and, after evaluation, permanently, from a maximum permitted speed of 150 km/h to 70 km/h (120 km/h on single-track lines).
- A temporary requirement was introduced for risk assessments related to individuals walking on the track to be documented in writing. This requirement was withdrawn after an evaluation showed that the change had not delivered any safety benefits.
- The Swedish Transport Administration established a dedicated role within the routine contractor's organisation to ensure compliance with contractual requirements concerning safety and competence.
- Within the Swedish Transport Administration's project organisation, procedures for monitoring electrical and traffic safety in each main railway maintenance contract were clarified.

In addition to the above, the Swedish Transport Administration has stated that it has conducted discussions and safety dialogues with Infranord and other infrastructure contractors.

3.16.2 Infranord AB

Infranord has taken the following measures.

- Updated its requirements document for engaging external resources, clarifying that, for work on the track, the minimum training requirement is "Individual access to the track", and adding a requirement to monitor compliance with "Access and training requirements for working at freight yards with an emergency plan".
- Clarified its information and improved procedures regarding access requirements, particularly the handling of ID06 cards.
- Improved its procedures for task briefings and project-specific information for incoming staff.
- Improved its procedures for monitoring contracted staff.
- Reminded all staff of the importance of following the safety instructions set out in the safety plan, and of the safety leader's responsibility to re-plan the work if conditions change or if the original planning is found to be inadequate.
- Initiated a review of its methods for following up the results of workplace inspections, with the aim of identifying and acting on non-compliances at an earlier stage. Locally in Malmö, preliminary reports from workplace inspections are now handled earlier, for example through immediate and ongoing communication and follow-up. Infranord also participates in industry-wide work on this issue.
- Raised the issue of safe presence on the track during its 2025 safety week and at workplace meetings.

3.16.3 Rail Solutions Scandinavia AB (RSAB)

After the accident, RSAB drew up an action plan containing the following elements.

- Competence requirements for work at RSAB
  - A minimum requirement to have completed the course "*Individual access to the track*" in order to work on the track under the supervision of a safety leader.
  - Within six months of employment, a safety leader training course is to be booked in order to raise the overall competence of the work team.
- Introduction with new clients or contracts
  - On the first shift for a new client or under a new contract, staff must ensure that they receive location-specific information and must inform the resource planner when this has been done.
  - The resource planner must follow up to ensure that time and opportunity are allocated for any project-specific training, and that staff have received the company description and the work environment plan.
  - If it is found that this has not been done, the resource planner must report this to the safety coordinator, who will contact the client's responsible manager to arrange corrective action.
- Safety coordinator
  - A safety coordinator was employed on 1 January 2026, with responsibility for highlighting safety issues, documentation and internal workplace inspections, and acting as a point of contact for staff.
- Reporting following external workplace inspections
  - Staff are instructed that, following an external workplace inspection, the outcome must be reported immediately to the safety coordinator, regardless of the result. This is intended to enable prompt action before the final report is issued.
  - The safety coordinator is to maintain a register of these reports, which will then be discussed at subsequent workplace meetings.

RSAB has also strengthened its monitoring of employees' working hours and opportunities for rest and recovery, by introducing a clearer and more structured routine which is now followed more closely on a weekly basis.

4. Analysis

This section contains an integrated analysis of roles and responsibilities, rolling stock and technical installations, human factors and feedback and control mechanisms, including risk and safety management and monitoring processes. [26]

SHK has found no defects in the infrastructure, no technical defects on the rolling stock and no failures of the signalling system that contributed to the accident. The train was running with a proceed aspect displayed at the main signal, and the train driver therefore had little time to notice that the work team was on the track and then react. The work team was in a track open to traffic and no protection arrangements had been implemented. Against this background, the analysis focuses on the reasons for the work team being at that location and the conditions for the performance of their work.

The analysis also examines, at an overarching level, the health and safety management and organisational learning of the parties involved. It also considers the rescue operation and the conditions faced by the fire and rescue service.

4.1 Underlying conditions

To understand how the accident could happen, it is first necessary to have a general understanding of the organisation and performance of operations and maintenance of the railway infrastructure. This provides context for the working environment of the team and the conditions under which they were expected to perform their work safely.

The Swedish Transport Administration is the infrastructure manager and had contracted Infranord to perform the maintenance work in Malmö. Infranord had its own personnel, but also contracted both supervisors and work teams from various track contractors to deliver work under the contract. This meant that a number of people with differing levels of experience were working in Malmö for relatively short periods, including the work team involved in the accident. Such circumstances present particular challenges when trying to build and maintain effective systematic work-environment management and a consistent safety culture.

The accident occurred at Malmö freight yard, where a large proportion of freight traffic between Sweden and continental Europe is handled. Passenger and freight trains on the Southern main line also pass through this area. The location of the accident can be described as a complex environment with multiple adjacent tracks on which rail vehicles are operated at different speeds. There are numerous switches connecting the tracks, allowing movements between them, and the traffic density is high.

Maintenance work is normally carried out when the track is closed to traffic. In order to maintain train services, simpler tasks may also be performed on tracks open to traffic under lookout arrangements. Working on a track open to traffic carries particular risks and may therefore only be done under certain conditions. For work under lookout arrangements, the safety planner must assess the risks in advance and plan the work. The plan is then handed

[26] These items form part of the reporting structure set out in Commission Implementing Regulation (EU) 2020/572 of 24 April 2020 on the reporting structure to be followed in the investigation of railway accidents and incidents. In this report, the headings have been adapted to reflect the nature and extent of the accident.

over to the safety leader, who must, on site, assess whether the work can be carried out in accordance with the plan or whether it needs to be replanned.

4.2 Why was the work team in a track open to traffic?

4.2.1 The work team lacked the conditions needed to work safely

The work team did not meet the access requirements that the Swedish Transport Administration had set out for work performed at Malmö freight yard. Nor did the work team receive any safety induction for the working week, or any location-specific information about Malmö freight yard, since the safety leader had previously worked in Malmö. The supervisor judged that the work team had sufficient competence and experience for the task, and therefore saw no need to check their local knowledge or their understanding of the risks associated with the work.

4.2.2 The planning process did not identify the risks before the work started

The supervisor, who was not due to be on duty over the following days, was keen to ensure that the contracted work team had tasks to carry out. He therefore performed a search for inspection defects at Malmö freight yard, which resulted in a work list consisting of 26 pages with a total of 94 defects. The supervisor did not check the print-outs, nor did he go through them in detail with the safety leader when handing them over. His instructions were that the work team should check and rectify the listed inspection defects that they were able to address during the day. The work was to be carried out under lookout arrangements, with the safety leader nominated as lookout and the track worker tasked with rectifying the defects.

The safety plan prepared for the work was generic and covered all tracks at Malmö freight yard and Malmö Central, including track 61, even though, according to the supervisor, it was not intended that work would be carried out on every track. The maximum permitted speed was stated in the safety plan to be 40 km/h. However, the speed on several of the tracks in the area is considerably higher than 40 km/h. The stated maximum permitted speed therefore did not correspond to the tracks specified in the plan, nor to the inspection defect at switch 717 on track 61, nor to several of the other defects listed in the work list.

The shortcomings in the planning meant that activities which could not, or should not, be carried out under lookout arrangements were included in the work list handed over to the work team. This suggests that the safety plan was regarded more as an administrative task than as a safety measure. The increase in the number of inspection defects, together with the supervisor's high workload over an extended period, may also have contributed to these shortcomings in the planning.

4.2.3 The risks were not recognised on site

The work team travelled to the site to check an inspection defect in switch 717 on track 61, which was included in the work list. The safety leader was the member of the group with the technical expertise and therefore needed to direct the track worker who was to perform the practical work. In addition to this, the safety leader was responsible for safety, that is, for each defect he had to assess whether the work could be carried out in accordance with the safety plan and provide lookout protection.

It forms part of the safety leader's role to check that the safety plan corresponds to the actual conditions on site before anyone goes on or near the track. To support this, information such as permitted speed on the tracks is available in the Swedish Transport Administration *Route Book*. It has not been possible to establish whether any such check was made before the work team went out onto the track, but it is clear that the safety plan was not applicable at this location.

Evidence suggests that the safety leader initially intended to perform a quick check of the defect before deciding which protection arrangements were required. The fact that the safety leader mentioned the need for A-protection shortly before the accident indicates that he was aware that the track needed to be closed to allow the defect to be rectified.

Checking the extent of a defect before starting work is a working practice that occurs. This type of informal inspection may be perceived as less risky, but the seriousness of this accident clearly shows that even short-duration and seemingly simple tasks can involve significant risk if safety measures are not in place.

Although it has not been possible to establish the extent of the safety leader's local knowledge, it is likely that he did not fully understand the risks involved in carrying out this inspection of the defect.

The complex track layout may also have contributed to the risks not being recognised on site. For example, there are no speed signs or other information at the location indicating the permitted speed for each track. There is a separation in the form of a ditch between tracks 61 and 62, which could lead to an assumption that the higher-speed tracks start at track 62. The fact that most of the switch connections lead from track 61 into the yard area may also reinforce an expectation of a lower speed on track 61.

4.2.4 Summary of findings

The work team received neither a safety induction nor information about local conditions before starting the task. It is likely that the safety leader had limited experience of this location and of working under lookout arrangements. The track worker had very limited experience of work on or near the track. The planning and risk assessment were not tailored to the tasks allocated. A track closure would have been required to rectify the inspection defect in switch 717. Taken together, this means that the work team lacked the conditions needed to work safely.

4.3 The deficiencies were not identified before the work started

The work team's employer, RSAB, did not have detailed knowledge of the tasks performed by its personnel for the contractor in Malmö. Nor did RSAB follow up the work team's situation once they had arrived in Malmö; instead, it relied on Infranord having established procedures to ensure that the team were given the conditions needed to work safely. RSAB also assumed that Infranord's contractual requirements were consistent with the requirements set by the Swedish Transport Administration.

RSAB's business model is based on providing personnel to different infrastructure contractors, each of which operates under different rules and conditions. It is therefore important that RSAB ensures that its personnel are given the right preconditions for each assignment, and that their working-environment situation is monitored on an ongoing basis. RSAB has taken a number of measures to ensure that the staff concerned receive the training and other preconditions required for each assignment.

Infranord's business model is based on having its own personnel but also, when needed, contracted personnel from various infrastructure contractors. The use of contracted personnel on a temporary basis places high demands on the planning, introduction and follow-up of the work. Infranord did not systematically monitor whether personnel were given the right preconditions for work on or near the track. For example, there was no follow-up to check whether the risk assessment was adequate for the task.

Infranord has taken a number of actions following the accident, but should in addition review its working methods to ensure that contracted personnel have sufficient local knowledge, to strengthen planning so that it provides more effective support for the safety leader, and to develop procedures for a more systematic follow-up of planned and completed work.

4.4 The monitoring of work on the track needs to be strengthened

As infrastructure manager and contracting client, the Swedish Transport Administration has overall responsibility for maintaining safety and a safe working environment. Regular monitoring of work on the track, together with the reporting and investigation of incidents, is central to fulfilling that responsibility.

4.4.1 Track work should be monitored more systematically

There are no statistics on how often, and in what situations, lookout working is used, since the Swedish Transport Administration does not monitor this – a fact that SHK has also highlighted in previous investigations. Without a clear understanding of how it is applied, it is unclear whether the method is being used to the extent, and in the manner, intended. Nor is there any systematic monitoring of how safety planning for work on or near the track is applied in practice.

The practice of work teams informally checking a site before starting work, without a risk assessment, also indicates a lack of risk awareness. The monitoring carried out by the Swedish Transport Administration and Infranord has not been sufficient to identify and

address situations in which personnel enter the track area without an adequate risk assessment.

Following the accident, the Swedish Transport Administration has introduced a dedicated role within the main maintenance contractor's organisation to ensure compliance with contractual requirements relating to safety and staff competence. Within the client's project organisation, the Swedish Transport Administration has also clarified procedures for monitoring electrical and traffic safety under each maintenance contract. In addition to these measures, the Swedish Transport Administration should review how the procedures for safety planning are applied, strengthen working methods to ensure that the safety leader receives relevant local knowledge, and investigate the extent of work being carried out on the track without, or with inadequate, risk assessment, taking action to address any shortcomings identified.

4.4.2 Workplace inspections should be improved

The Swedish Transport Administration carried out a workplace inspection at Malmö Central two days before the accident. During this inspection, the inspector observed that the work team involved in the accident was working without effective lookout. The shortcomings in the lookout arrangements were reported by the inspector. There were also other deficiencies; for example, the available sighting at the location was not sufficient for lookout working. These deficiencies were not identified in the workplace inspection. This indicates that the scope and content of workplace inspections may need to be reviewed.

The non-compliance identified during the workplace inspection was passed on to the project manager for the contract at the Swedish Transport Administration and to the infrastructure contractor, but no action had been taken yet before the accident occurred. RSAB and Infranord have, since the accident, taken measures to act on the results of workplace inspections at an earlier stage.

Another deficiency identified in the investigation is that workplace inspections are not systematically followed up by an investigation of the underlying causes of the non-compliances found. If the causes of non-compliances are not analysed, the organisation risks missing valuable safety learnings. Without the understanding gained from such cause analysis, similar types of non-compliance may recur, increasing the risk of accidents.

Workplace inspections are an important tool for identifying risks in good time and for ensuring that safety and work-environment requirements are being met. However, this incident shows that there are reasons to review both the scope of these inspections and how their findings are communicated onwards. The Swedish Transport Administration should therefore review and strengthen its procedures for workplace inspections.

4.4.3 The handling of near-miss incidents should be strengthened

If an accident or incident occurs, the Swedish Transport Administration's traffic control centre must be informed immediately so that appropriate actions can be taken. The traffic control centre must then inform the relevant infrastructure contractors, railway undertakings and other relevant functions within the Swedish Transport Administration. Events that meet certain criteria must also be reported to the Swedish Transport Agency. Thereafter, the event is to be investigated by the infrastructure contractor concerned and by

the Swedish Transport Administration. Organisations that are employers must also report serious accidents and incidents in their operations to the Swedish Work Environment Authority.

Statistics reviewed by SHK show that only a small proportion of reported near-miss incidents are investigated by the Swedish Transport Administration and the infrastructure contractors. This is confirmed by the supervision carried out by the Swedish Transport Agency in this area. The Swedish Transport Administration's renewed safety authorisation from the Swedish Transport Agency includes a condition requiring the Swedish Transport Administration to implement the measures set out in an action plan for applying lessons learned from accidents and near-misses.

Interviews conducted during the investigation indicated that some events are handled on site and are not then reported to the Swedish Transport Administration's traffic control centre. One example is the near-miss involving the work team on the morning of the accident, which was not reported by any of the parties involved. The failure to report events onwards may partly be due to a lack of risk awareness among those involved; for example, a train driver may perceive a situation as serious, while track workers on or near the track perceive it as less so. The fact that non-compliances and near-misses can in turn lead to contractual penalties may also reduce the willingness to report such events. Learning from events is an important element in improving and strengthening the safety of staff working on or near the track. The Swedish Transport Administration should therefore take action to strengthen the reporting culture for near-miss incidents in which staff were at risk of being struck by rail vehicles while working on the track.

4.4.4 Targeted regulatory supervision is needed

The investigation has identified deficiencies throughout the chain from planning and execution to the monitoring of work on or near the track. As a result, the risks associated with such work have not been adequately managed within the Swedish Transport Administration's safety management system. There is a risk of similar accidents occurring again, because there is currently no systematic monitoring of how the established rules are applied in practice by the various infrastructure contractors. If working methods are not monitored continuously, procedural drift can occur over time. This may, for example, mean that risk assessments gradually come to be regarded more as administrative tasks than as safety measures. In turn, this can lead to a loss of effective control of the risks. Similar deficiencies in the monitoring of work have been identified in previous investigations (see section 3.15).

The Swedish Transport Administration holds the responsibility for operational safety, and is therefore required to ensure that risk control is maintained across all track contractors it engages, including where one contractor hires staff from another. The Swedish Transport Agency should therefore carry out supervision activities to examine in which manner the Swedish Transport Administration ensures risk control across all tiers of the contracted supply chain when work is performed in the track area.

4.5 Conclusions regarding the rescue operation

4.5.1 Access for the emergency services to yards should be ensured

The train dispatcher had informed SOS Alarm that access to the yard could be gained from Krusegatan. However, the key cabinet at the first gate had been vandalised, which made access to the yard more difficult. The fire and rescue service, both at the site and in the rescue coordination centre, actively searched for alternative routes into the track area and gained access by cutting the padlock on the next gate. This created access to the accident site without any delay that materially affected the rescue operation.

Because the fire and rescue service quickly deployed drones to locate the casualties, firefighters and police officers were able to reach them promptly and begin life-saving treatment for the track worker. Medical staff also needed to reach the scene promptly, but the ambulance had difficulty getting to the accident site. There was initially a misunderstanding about how the ambulance was to access the freight yard. The prehospital medical response was then further delayed by a locked gate just inside the entrance on Containergatan.

The proactive efforts to secure access to the site, the coordination among those involved, and the application of tourniquets are considered to have been crucial to the rescue operation. To avoid delays, it is important that pre-planned access routes function as intended. The Swedish Transport Administration should therefore, in consultation with the relevant parties, review the existing procedures to ensure that they are effective.

4.5.2 Pre-hospital medical command should be strengthened

For various reasons, the crews of the first two ambulances that arrived at Krusegatan did not wish to take on the roles of medical incident command. The third ambulance was therefore appointed as the medical command unit, and at that point a prehospital incident site officer was also alerted. The initial phase of the response was characterised by time pressure and uncertainty about the number of casualties and their locations. This may have contributed to the fact that the individuals designated as medical incident officer and medically responsible officer did not follow the established prehospital command concept, and therefore did not clearly communicate to the other actors who were acting as medical officers. It is possible that, if a medical incident officer had been clearly identified and communicated, the fire and rescue service would have had a clearly defined counterpart to coordinate with, which could have improved communication and facilitated coordination from the outset. However, this is not considered to have been decisive for the overall handling of this incident.

Region Skåne has stated that it is working to develop an internal medical command function – a role within the ambulance service in which an experienced specialist nurse is based at SOS Alarm. The purpose of this function is to provide both patients and the ambulance service with the best possible conditions to ensure that the right care is given, at the right time and with the right resources. The internal medical command is also intended to support both SOS Alarm and ambulance crews, optimise the use of resources and coordinate the response in cooperation with other actors.

5. Conclusions

5.1 Findings

a) The Swedish Transport Administration is the infrastructure manager for Malmö freight yard and procures maintenance of the railway infrastructure.
b) Infranord AB held a five-year contract to deliver routine maintenance of the railway infrastructure in Malmö.
c) Infranord hired the work team involved in the accident from Rail Solutions Scandinavia AB.
d) The work team consisted of a safety leader and a track worker.
e) Under the access rules applicable at Malmö freight yard, the work team did not have the required authorisation to be present in the yard.
f) A supervisor contracted by Infranord instructed the work team to check and rectify a large number of defects identified during inspections at Malmö freight yard, using a work list.
g) The safety plan that had been prepared was generic for all tracks at Malmö Central and Malmö freight yard, and did not address all of the relevant risks.
h) The safety plan stated that work was to be carried out under lookout arrangements and that the maximum permitted speed was 40 km/h.
i) At the time of the accident, the work team was about to check the inspection defect in switch 717 on track 61.
j) The inspection defect in switch 717 on track 61 was probably included in the work list by mistake. The shortcomings in the planning were not identified.
k) It is likely that the safety leader intended to perform a quick check of the defect before deciding what protection arrangements were required.
l) At the time of the accident, the work team was in a track open to traffic and no protection arrangements were in place.
m) The maximum permitted speed at the location was 160 km/h.
n) The train was travelling at 158 km/h, in accordance with the applicable rules and driven by an authorised train driver.
o) Shortly before the accident, the train driver saw that the work team was in the safety zone and applied the emergency brake.
p) The work team became aware of the train shortly before it passed the switch and did not have time to move clear before they were struck.
q) The safety leader was fatally injured.
r) The track worker was seriously injured.

5.2 Causes

The immediate cause of the accident was that the track workers were present on tracks open for traffic without any planned or implemented protective measures.

Underlying causes were deficiencies in induction, planning and execution of work within the track area. These shortcomings were not identified by the employer, the rail contractor or the infrastructure manager.

At a systemic level, there were deficiencies in how the infrastructure manager followed up on work carried out within the track area and in the management of deviations and incidents.

5.3 Additional observations

The safety leader held assignments with several employers, which placed particular demands on continuous contact and monitoring of his working hours, in order to ensure compliance with working-time rules. The investigation has found that RSAB and Infranord did not adequately monitor the working hours of the personnel concerned.

The safety leader reported working hours that exceeded the prescribed limits, but RSAB did not take any measures. It is not certain that this had a direct impact on the event, but fatigue can affect the ability to make sound decisions when undertaking safety-critical tasks. The track worker had also worked a very long shift during the weekend before the week of the accident, which shows that RSAB did not have sufficient procedures in place to monitor and control the extent of employees' working hours. Following the accident, RSAB has introduced clearer and more structured procedures for monitoring working hours and ensuring adequate recovery.

6. Safety recommendations

The stakeholders concerned have implemented several measures aimed at enhancing safety and reducing the risk of similar accidents. The Swedish Accident Investigation Authority (SHK) does not issue recommendations in areas where these measures already address the deficiencies identified in this investigation. Against this background, the following recommendations are issued.

The Swedish Transport Agency is recommended to:

- Conduct supervision of how the Swedish Transport Administration ensures risk control across all tiers of contractors when carrying out work within the railway track area (see section 4.4.4). *(SHK 2026:03 R1)*

The Swedish Transport Administration is recommended to:

- Take measures to enhance safety for work on or near the track and to ensure that the risks associated with such work are systematically followed up within the supervisory process by:
    - reviewing how the procedures for Protection and Safety planning are applied (see section 4.4.1)
    - strengthening working methods to ensure that the controller of site safety is provided with adequate site-specific knowledge (see section 4.4.1)
    - investigating the extent of work carried out on or near the track without, or with inadequate, risk assessment and taking appropriate action (see section 4.4.1)
    - reviewing and strengthening procedures for workplace inspections (see section 4.4.2)

  - taking measures to strengthen the reporting culture regarding near-misses for work on railway tracks (see section 4.4.3). *(SHK 2026:03 R2)*

- In consultation with the relevant stakeholders, review the existing procedures to ensure that access for emergency services to the yard is satisfactory (see section 4.5.1). *(SHK 2026:03 R3)*

Infranord AB is recommended to:

- Review its working methods to ensure that hired personnel have sufficient local knowledge, to strengthen planning so that it serves as more effective support for the controller of site safety and to develop procedures for a more systematic follow-up of planned and completed works (see section 4.3). *(SHK 2026:03 R4)*

SHK respectfully requests to receive, by **18 June 2025** at the latest, information regarding measures taken in response to the recommendations included in this report.

On behalf of the Swedish Accident Investigation Authority,

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