SUMMARY IN ENGLISH

On 5 March 2020 an articulated lorry, i.e. a lorry with trailer, was to transport a stone crushing plant between two gravel pits. On the route, the lorry needed to pass a railway level crossing located on a private gravel road. The crossing was signposted with a warning stating that trailers could get stuck on the crossing. The driver who had passed the level crossing several times before stopped and raised the trailer before he started to pass the level crossing.

Despite of the action taken the trailer got stuck on a road crest covered with ice and snow just before the level crossing equipped with automatic half-barriers and the lorry and trailer remained standing at the level crossing. The driver exited the lorry to try to raise the trailer further but did not succeed before the road railway lights started flashing, the audible warning sounded and the barriers began to go down. The lorry driver moved away from the level crossing and proceeded to a safe distance.

When the driver in the approaching train saw the vehicle on the level crossing, he immediately activated the brakes. The train hit the road vehicle at its weakest part between the lorry and the trailer at a speed of 103 km/h. No person was seriously injured. Six passengers were transported to hospital. Another ten passengers sought medical attention on their own at a later time. The train driver and the on board-staff member received minor injuries. The train, the articulated lorry, the stone crushing plant and the railway infrastructure were all severely damaged.

The accident was caused by the fact that the current conditions at the level crossing, pertaining to the adverse profile of the road in combination with the specific properties of the layer of snow and ice, was not fully know during the passage of the level crossing. The articulated lorry was consequently stuck on the level crossing due to the undercarriage of the trailer get caught on a crest on the road just before the level crossing and the articulated lorry was later struck by the train.

A contributing cause to the accident was that the road had not been sufficiently prepared for the transport in question. This was due to deficiencies in communication regarding what preparations that were needed and a difference of perceptions with the railroad infrastructure manager and the private road manager regarding which of the parties that were to perform winter maintenance of the level crossing area. Furthermore, the significance of the layer of snow and ice for the actual semi-trailer’s ability to pass the level crossing was not identified by any of the involved parties.

An underlying cause to the accident and a deficiency on a systemic level was that the previous infrastructure managers decided measures for addressing the risk identified road profile were not carried out. This was due to a restructuring of the organisation and that the present infrastructure manager lacked a systematic follow-up of previously decided measures for level crossings.

Another deficiency on a systemic level was that the level crossing protection used in the level crossing and which is also is used at many other level crossings has limited possibilities to detect a vehicle in the level crossing and afford the train the possibility to stop in time.

Safety recommendations

The Swedish Transport Agency is recommended to:

- Within the supervisory framework audit how the Swedish Transport Administration handles the risk that identified traffic safety deficiencies that have led to decided measures but consequently to the measures not being carried out. *(RJ 2021:01 R1)*

- Within the supervisory framework audit how the Swedish Transport Administration, as the railway infrastructure manager, handles the risk posed by special vehicles at level crossings. *(RJ 2021:01 R2)*

- Within the supervisory framework audit how the Swedish Transport Administration via their Safety Management System follow-up the ongoing work to facilitate the possibility to equip additional level crossings with obstacle detection and that the work is progressing in a way that is sufficiently satisfactory from a traffic safety standpoint. *(RJ 2021:01 R3)*

The Swedish Transport Administration is recommended to:

- Investigate whether there are other traffic safety measures, in addition to the one identified in the investigation, which were decided on before the Swedish Transport Administration was formed, but that were not carried out or otherwise followed up on after the Swedish Transport Administration took over the operation. *(RJ 2021:01 R4)*

- In consultation with private road managers perform a review of how the winter maintenance of level crossings on private roads is currently performed, with the purpose of specifying what parts that the Swedish Transport Administration's entrepreneurs maintain and what parts that the private road manager maintains. The review should include how the winter maintenance could be performed in a safe manner and how the need of specific preparations for special transports is communicated. If necessary, it could also be relevant to review the corresponding relationship with municipal road managers. *(RJ 2021:01 R5)*

- Perform a complete review of the way that dangerous crests at level crossings are measured, identified, analysed and risk assessed, and if needed take corrective action. The review should include the measuring of the level crossings vertical profile, how the assessment criteria is defined and documented and how the passage of a vehicle is analysed in order to ascertain the risk of getting stuck on a level crossing. *(RJ 2021:01 R6)*