



DUTCH  
SAFETY BOARD

# Summary

## Safe admittance onto the public roads

Lessons learned from the Stint accident



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Lessons learned from the Stint accident

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## **The Dutch Safety Board**

When accidents or disasters happen, the Dutch Safety Board investigates how it was possible for these to occur, with the aim of learning lessons for the future and, ultimately, improving safety in the Netherlands. The Safety Board is independent and is free to decide which incidents to investigate. In particular, it focuses on situations in which people's personal safety is dependent on third parties, such as the government or companies. In certain cases the Board is under an obligation to carry out an investigation. Its investigations do not address issues of blame or liability.

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On the morning of 20 September 2018, a Stint - an electric cart equipped for carrying children - was travelling from a child day care centre to a primary school in Oss. The Stint was carrying five children, ranging in age from four to eleven years. A female employee of the child day care centre was driving the vehicle. The journey was problem-free until the level crossing at Braakstraat. There things went terribly wrong. While the level crossing barriers were already lowered, the Stint continued its passage and ended up on the crossing. A passing train collided with the Stint, which was carried sideways several dozen metres by the impact. For four of the five children, the impact proved fatal. A fifth child and the female driver suffered serious injuries. Following the accident, the response in the Netherlands was one of horror and disbelief. How could this have happened?

The police and the Netherlands Forensic Institute (NFI) under the auspices of the Public Prosecution Service, launched an investigation into the course and cause of the accident. Although a number of possible causes have been clearly excluded, such as fractures in the neutral cable or in the spring of the throttle handle, the investigations have not yet provided conclusive proof as to how the accident occurred. At the moment of publication of this report, the investigations were not yet fully concluded.

The accident also raised questions about the safety of the Stint itself. Shortly following the accident, the Minister of Infrastructure and Water Management (I&W) decided to suspend the road approval for the Stint on the basis of the findings of the initial investigation by the Human Environment and Transport Inspectorate (ILT). The ILT also commissioned the Netherlands Organization for Applied Scientific Research (TNO) to undertake an analysis into the level of safety of the Stint. The TNO analysis revealed that the level of safety of the Stint was insufficient for the transport of people. On the basis of the outcomes of this analysis, the Minister decided to convert the suspension of the Stint into definitive withdrawal of the approval of the vehicle. In more general terms, the accident also raised questions about how such light motorized vehicles are admitted onto the public roads.

For the Dutch Safety Board, the event led to an investigation into the way in which light motorized vehicles, including vehicles such as the Stint, are admitted onto the public roads. The investigation answered the following questions: 'What role does safety play in the admittance of light motorized vehicles?' and 'To what extent does this guarantee the safety of these vehicles on the public roads?'

Light motorized vehicles can be divided into four groups. The majority consists of mopeds and motor-assisted bicycles, which are admitted to the public roads via a European admittance procedure. The second group to be admitted, the vehicle category of special mopeds, comprises the Segway and Stint. These vehicles are admitted to the public roads via a national admittance procedure. The third group consists of vehicles

permitted on the public roads without any admittance procedure, on the basis of a European exception. This exemption applies to motorized vehicles for the disabled and electric transport cycle. The fourth and final group relates to vehicles which are operated on public roads (illegally) without having been admitted or being the subject of an exemption. This category includes for example electric skateboards, hoverboards and monowheels. The Safety Board has focused its investigation on the three latter groups.

The investigation has revealed that with regard to the category of special motor-assisted bicycles, both the demarcation of the category itself and the admittance procedure demonstrated shortcomings. The then Ministry of Infrastructure and the Environment introduced this admittance construction in 2011, in order to satisfy the wishes of the Dutch House of Representatives to quickly and easily admit the Segway and other innovative vehicles to the public roads in the Netherlands. The criteria for eligibility for the category of special mopeds were formulated so openly that not only Segway-type vehicles but also other fundamentally different vehicle types could be admitted via this procedure.

The procedure to admit vehicles as special mopeds was structured simply. In that process, minimal substantive requirements were imposed on vehicles of this type. In that way, in several respects, the admittance procedure deviated from the European admittance procedure. For example, the decision for designation as a special motor-assisted bicycle was not taken by an independent inspection body (such as the Netherlands Vehicle Authority - RDW) but at administrative level by the Ministry of Infrastructure and the Environment. Although the Ministry based its decisions on a compulsory technical investigation (carried out by the RDW) and an optional road safety investigation (implemented by the Institute for Road Safety Research - SWOV), the outcome of both investigations enjoyed an advisory status and was not binding.

At the request of the Ministry, the substantive requirements and their assessment were restricted by the RDW and the SWOV. Although the RDW initially issued a critical opinion on this less intensive assessment of vehicle safety, the organization eventually agreed to this restricted assessment. After the Stint had been admitted via this procedure, in 2011, the SWOV announced that for future assessments it too wished to extend the scope of its road safety investigations. The Ministry rejected this wish as too time consuming and too costly. Subsequently, the Ministry had no further road safety investigations carried out with regard to the admittance of special motor-assisted bicycles.

In total, seventeen vehicle types have been admitted to the public roads under the category of special motor-assisted bicycle, including the Stint. Although the Stint did fall within the scope of the European admittance procedure<sup>1</sup>, it was admitted via the national admittance procedure as a special motor-assisted bicycle. The national admittance procedure was less extensive than the European admittance procedure, and imposed lighter requirements. The inspection of the Stint was not carried out correctly by the

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1 Directive 2002/24/EC relating to the type approval of two- or three-wheeled motor vehicles, which in accordance with Section 1.3 also applies to four-wheeled motor vehicles.

RDW, in respect of a number of points.<sup>2</sup> Despite the negative recommendations from the RDW and SWOV, the Minister nonetheless designated the Stint as a special motor-assisted bicycle and admitted it to the public roads.

As a result of the way in which the admittance procedure for both the Stint and the other special mopeds was structured and implemented, there was only a limited understanding of the potential safety shortcomings in the design and manufacture, and the safety risks in the use of these vehicles in traffic.

In addition to the shortcomings referred to above in the admittance of special motor-assisted bicycles, the Safety Board has also identified safety problems in the vehicles that are exempted from admittance. These include motorized vehicles for the disabled and electric transport cycle. Since the exemptions in 1992<sup>3</sup> and 2002<sup>4</sup> respectively, both vehicle groups have undergone far-reaching developments. In response to a significant rise in the number of serious accidents involving mobility scooters, the SWOV recently carried out detailed investigations into these vehicles.<sup>5</sup> These investigations have revealed structural safety shortcomings. Since then, electric delivery cycles for the transport of groups of children have been introduced. Despite these developments, no reassessment has been made of the exemptions. As a result, without an assessment of the safety risks, these vehicles are admitted to be used on the public roads.

To an increasing extent, light motorized vehicles are being used on the public roads that are not formally admitted via a European or national procedure and which are not subject to any exemption. This relates to a wide variety of vehicles, including electric-powered scooters, electric skateboards and monowheels. Use of such vehicles on the public roads is illegal, but this fact is not known to most consumers. With regard to these vehicles, which can be purchased both in the Netherlands and abroad, there is no understanding of the safety risks pertaining to their use on the public roads.

On the basis of its findings, the Safety Board has concluded that in the national decision making procedure on light motorized vehicles, vehicle safety and the consequences of admittance for road safety have been insufficiently taken into account.

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2 These relate to the dimensions of the vehicle and the braking deceleration.

3 Directive 92/61/EEC relating to the type approval of two- or three-wheeled vehicles.

4 Directive 2002/24/EC relating to the type approval of two- or three-wheeled motor vehicles and repealed Directive 92/61/EEC.

5 SWOV: *Mobility scooter accidents - how they occur and how they can be prevented, 2018 (Scootmobielongevallen – hoe ontstaan ze en hoe zijn ze te voorkomen, 2018).*

Year in year out, there are deaths and injuries on the roads. In 1973 – a low point – 3,000 people were killed in traffic in the Netherlands. Since that time, the number of traffic deaths has gradually fallen. However, over the past few years that downturn appears to have stagnated. Last year, for example, 678 people<sup>6</sup> were killed in traffic, 65 more than in 2017.<sup>7</sup> Of these, more than 20% (more than 140 people) were users – drivers and/or passengers – of a light-motorized vehicle.<sup>8</sup> These users include the most vulnerable road users: the elderly on electric bicycles, disabled persons in mobility scooters and children in Stints or electric delivery tricycles.

To reverse this trend, in December 2018, the Ministry of Infrastructure & Water Management presented its Strategic Road Safety Plan 2030.<sup>9</sup> This plan includes the goal of zero traffic fatalities. To achieve this, among others, a role has been allocated to innovation in road traffic. By introducing technological developments in vehicles and within the traffic system, road safety can be improved.

The investigations of the Safety Board reveal that in the past safety was above all viewed as a potential obstacle to innovation in road transport. The history of the development of the category of special mopeds reveals that – in response to problems involving the transport of a disabled young boy – the Dutch House of Representatives called upon the then Minister of Transport and Water Management to come up with a solution to emerging issues. The House asked the Minister to first admit the Segway to the public roads, followed by other innovative vehicles. This admittance had to be arranged rapidly and simply. Under the assumption that stringent regulations with regard to road safety and vehicle safety would prevent innovation, the Minister imposed only minimal requirements. The admittance procedure was simplified so that it too would not raise any obstacles. As a consequence, within the political consideration process, safety was made subordinate to the desire for innovation in road transport.

That history is now at risk of repeating itself. In order to introduce a new version of the Stint as quickly as possible to the public roads, at the express request of various sector associations representing child day care centres, the House has instructed the Minister to adapt the admittance framework for special special mopeds as quickly as possible. As was the case at the time for the Segway, the focus now is on the admittance of one

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<sup>6</sup> Around one third of traffic deaths consisted of car passengers (233) and one third was cyclists (228). The other victims were pedestrians or passengers/drivers of vehicles for the disabled, mopeds or motor-assisted bicycles, motorcycles and trucks and vans. Source: SWOV, *Traffic deaths in the Netherlands (Verkeersdoden in Nederland)*, April 2019.

<sup>7</sup> Statistics Netherlands (CBS Centraal Bureau voor de Statistiek).

<sup>8</sup> In 2018, there were more than 140 traffic deaths within the group of light motorized vehicles, from a total of 678 traffic deaths (figures Statistics Netherlands). No details are available about deaths among users of illegal vehicles.

<sup>9</sup> Ministry of Infrastructure and Water Management: *The Strategic Road Safety Plan 2030: Safe from door to door (Het strategisch plan Verkeersveiligheid 2030: Veilig van deur tot deur)*. 5 December 2018.

specific vehicle: the Stint. With that in mind, the safety requirements for special special mopeds have been adjusted. The admittance procedure has however not been amended. The shortcomings observed by the Dutch Safety Board during its investigation into the admittance process have therefore not yet been solved. As a result, there is no guarantee that the admittance of a light-motorized vehicle identifies all the safety risks, and that those risks are all sufficiently taken into account.

The Dutch House of Representatives and the Minister are responsible for adopting policy aimed at improving road safety on the public roads. For the group of light motorized vehicles, this means that they must determine the acceptable level of safety for this group, given the goals of the Strategic Road Safety Plan 2030. Based on that safety level, they must then determine how the road safety and vehicle safety of this group of light motorized vehicles can be guaranteed in the assessment frameworks and procedures.

The process of decision making about the actual admittance of specific vehicles should be carried out according to these frameworks and procedures adopted by the Dutch House of Representatives and the Minister. The testing and assessment of vehicle safety and road safety in the admittance procedure should be carried out objectively by an expert organization. With regard to vehicles subject to European admittance procedures, this is guaranteed: the assessment and decision making on admittance are carried out by an independent inspection body. In the Netherlands, that is the RDW. The national admittance of vehicles could be placed within the scope of responsibility of this body. This would prevent any admittance decision being driven by political considerations.

Existing vehicles, such as electric transport cycle and mobility scooters will also have to be critically examined. Many people, including the elderly, children and disabled persons, make daily use of a wide variety of light motorized vehicles. These numbers are expected to rise further. Already, more electric bicycles are being sold than 'ordinary' bicycles. In the past there was insufficient understanding of all aspects of road safety and vehicle safety for these groups of vehicles, as a result of which risks were insufficiently considered. It is now essential that a catch-up process be initiated.

Given the increased volume of traffic on the public roads and the large numbers of victims, measures are urgently required. To achieve the goal of zero traffic deaths, high priority must be given to specific aspects of road safety. All stakeholders will have to take responsibility for the safety of light motorized vehicles on the public roads.

# RECOMMENDATIONS

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The Dutch Safety Board has issued the following recommendations.

*To the Minister of Infrastructure and Water Management:*

**1. Carry out an integrated risk assessment and monitor the developments**

Carry out an integrated risk assessment for the various types of light motorized vehicles, focusing on the interaction between people, technology and the environment. Designate an acceptable level of safety given the ambitions of the Strategic Road Safety Plan 2030. Do this both when admitting new innovative vehicles and with regard to the group of vehicles already admitted to the public roads. Guarantee the desired level of safety by monitoring developments in technology and in road use, so that any new or altered risks can be identified in time so that measures can be taken.

**2. If necessary, introduce additional measures for already admitted vehicles**

If the risk evaluations of already admitted light motorized vehicles reveal that the level of safety need to be improved, investigate the measures needed to achieve that improved safety level. Consider for example imposing additional permanent requirements, user requirements or adjusting the infrastructure.

**3. Revise the admittance of new vehicles**

- a. *Nationally admitted vehicles:* structure the admittance procedure in such a way that an independent inspection body is responsible for the decision on the admittance of new vehicles. Ensure that the admittance is based on an integrated risk evaluation in accordance with recommendation 1. For innovative vehicles, initially award admittance for a specified period and monitor the resultant effect on road safety.
- b. *Vehicles with European exemption:* investigate the possibilities of also including motorized vehicles for the disabled and electric transport cycle in the European admittance system, or establishing a national admittance procedure for these vehicles. For the period during which these vehicles remain exempt from admittance, set national user requirements so that the safety risks are sufficiently controlled.
- c. *Illegally used vehicles:* ensure that it is clear to everyone which light motorized vehicles are and which are not permitted on the public roads, and tackle illegal use.

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