ROYAL NORWEGIAN
MINISTRY OF TRANSPORT

EFTA Surveillance Authority (ESA)
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Your ref	Our ref	Date
Case No: 84698 Document No: 1166682	15/1923-	13 April 2021

Response to the reasoned opinion concerning minimum safety requirements for tunnels in the Trans-European Road Network

Reference is made to the reasoned opinion of 3 December 2020 from the EFTA Surveillance Authority ("the Authority") concerning the fulfilment of Directive 2004/54/EC of the European Parliament and of the Council of 29 April 2004 on minimum safety requirements for tunnels in the Trans-European Road Network, OJ L 167, 30.4.2004, p. 39 ("the Directive"). The Directive was incorporated into the EEA Agreement by Decision of the EEA Joint Committee No 10/2006, which entered into force on 1 December 2006.

In the reasoned opinion, the Authority concludes that:

" *by not implementing the minimum safety requirements for tunnels falling under Article 11 of the Act by 30 April 2019, Norway has failed to fulfil its obligations under Article 3(1) and Article 11 of the Act.* ".

The objective of the Directive is to improve the safety of road users in tunnels by preventing critical events that might endanger human life, the environment and tunnel installations, and to reduce the consequences of accidents when they do occur. Norway supports this objective, and the Government gives high priority to fulfilment of its obligations under the Directive. However, as earlier reported to the Authority, there have unfortunately been significant difficulties and unforeseen delays to the plans for bringing the TERN tunnels in Norway in line with the requirements of the Directive.

The Norwegian Government would like to emphasise that there are relevant and sufficient reasons why the requirements under Articles 3(1) and 11 have not been met within the time-limit set by the Directive. However, the Norwegian Government also points out that several of

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the safety requirements in the Directive is already in place and that refurbishment of the remaining non compliant tunnels is a priority and in process. Traffic safety work is a field that is given high priority in Norway. The remaining upgrading work do unfortunately pose several traffic safety challenges, and it is therefore not possible to advance the refurbishment works further without creating major disturbances in the transport system and placing an unproportionable burden on the society.

The Government maintains that these reasons imply that the Norwegian Government should not be held legally responsible for not fulfilling the obligations under Article 3(1) and Article 11 of the Directive.

1 Introduction

The infringement proceedings against Norway concerns the minimum safety requirements for tunnels in the Trans-European Road Network (TERN). According to Article 3(1) of the Directive, the EU Member States and EEA EFTA States are to ensure that tunnels in their territory falling within the scope of the Directive meet the minimum safety requirements laid down in Annex I to the Directive.

According to Article 11(6), any refurbishment work needed to bring tunnels already in operation up to the prescribed standards, had to be completed by 30 April 2014. Norway was, together with other Member States with a higher than average density of tunnels, were according to Article 11(7) given additional five years to complete the refurbishment of tunnels already in operation. Norway’s deadline for implementation of the minimum safety requirements in tunnels that were in operation at the time the Directive entered into force, was therefore 30 April 2019.

The Government recognises that the requirements in Article 3(1) of the Directive have not been met in entirety in all the tunnels in question within the Directive's deadline. As of January 2021, 57 tunnels were not in full compliance with the Directive. The Government expects this number to have been reduced to 49 tunnels by the end of 2021. In addition, upgrading or preparation for upgrading has been started in 28 of these 49 remaining tunnels. Another 20 remaining tunnels will be replaced by new road infrastructure on new road sections. Funds have also been put aside for the necessary upgrading work of the last remaining tunnel.

Although the requirements in Article 3(1) of the Directive have not been fully met, the Government respectfully points out that there are several relevant and sufficient reasons why the deadline has shown to be too progressive and impossible to comply with. Furthermore, the Government emphasises that these circumstances were not known when the Directive was incorporated into the EEA Agreement. In the following, the Government will elaborate further on these reasons and will furnish the Authority with evidence to show that the remaining refurbishment works in the non-compliant TERN tunnels are prioritised and in good process.

Furthermore, the Government will explain in detail why, due to various safety challenges, it is not possible to advance the refurbishment works in the remaining tunnels further and to commit to a more ambitious time schedule than described below. The Government will also report on the status concerning risk-reduction measures that may bring the tunnels closer to the minimum requirements in the time period before the remaining refurbishment works are carried out.

The Government kindly asks the Authority to place emphasis on all these reasons when considering this case further.

2 Summary of the facts

2.1 Introduction

The Government refers to the factual description that has previously been presented to the Authority, especially in the Government`s letters dated 24 November 2016 and 17 January 2019 respectively, which is still relevant in the case, and must be read in conjunction with the following.

2.2 Work on tunnel upgrades since the inclusion of the Directive in the EEA agreement

In 2014, Norway established a plan for upgrading national road tunnels (the "tunnel upgrade programme") which includes tunnels of more than 500 m both in the TERN and the rest of the network of national roads. Tunnels that are expected to be replaced by new roads or tunnels in the near future are not included in the plan (see section 2.4.2 below concerning these tunnels).

131 TERN tunnels in Norway were according to Article 3 (1) and 11 to be refurbished to meet the minimum safety requirements laid down in Annex I to the Directive. Up to 2014 only eight TERN tunnels were upgraded. The main reason why it took some time before the work was started on a large scale was that the complexity and cost of the programme in the first phase had been rather significantly underestimated. In early 2006, a survey was made of deficiencies with regard to minimum equipment required by the Directive. The survey showed a number of deficiencies that would have been manageable during the period, had the tunnels been new at that time. But the condition of the tunnels and their infrastructure made it impossible to simply supplement existing equipment. The condition and need for upgrading of infrastructure were not surveyed at the same time, and the full extent of the need was thus misunderstood and undercommunicated.

Moreover, during this period EU and national legislation relating to electrical engineering[1], with appurtenant specifications and standards, were significantly changed, which triggered

[1] Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility, Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits, Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and

considerably more extensive requirements for tunnel upgrades. The regulations require that the Norwegian Public Roads Association (NPRA) has to change everything from cabinets and fuses, to cables and certain components in the electrical systems. Emergency power, which is central to the Directive is established according to strict rules on, among other things, separation, which entails the construction of larger buildings with more rooms, sometimes also more buildings. The misassumption that the existing electrical systems in the tunnels could be supplemented with certain components without affecting the infrastructure, has significantly contributed to the fact that the full extent of the need for refurbishments was underestimated. Deficiencies requiring measures to meet the minimum requirements of the Directive were mapped as simple deficiencies, but would in practice lead to a total replacement of the equipment due to the changed regulations relating to electrical engineering, which often requires rebuilding technical buildings significantly and establishing new ones.

Issues related to traffic management and traffic flow during construction periods were, for similar reasons, underestimated with regard to both time and costs (See section 4.2 for further details).

In the period before 2014, although only eight tunnels were upgraded, the planning work was underway. The work to upgrade existing tunnels in accordance with the Directive and the requirements in the other relevant regulations, was highlighted as a priority area in the National Transport Plan (NTP) 2014-2023[2]. In the period 2014-2017, 43 tunnels were upgraded. In line with the NTP 2014-2023, a new budget item was established in the National Budget for 2014[3]: "Renewal of infrastructure". The goal was to reduce the maintenance backlog that had built up over several decades on the network of national roads. Tunnel maintenance made up a significant share of the total estimated maintenance backlog. The tunnel upgrade programme was an important part of the initiative of gradually removing the maintenance backlog, and in the first years the funds were used primarily to finance the tunnel upgrade programme. In 2015 it was estimated that the maintenance backlog was reduced for the first time in several decades, and it is estimated that the backlog has been reduced each year since 2015. Considerable resources have been put in to ensure good progress in the programme, both for the TERN and other national roads.

The main focus during the first phase of the tunnel upgrade programme was to upgrade tunnels where traffic was heaviest. A number of these tunnels were located in areas where traffic is so heavy that closing several tunnels at the same time was considered unacceptable, especially when it comes to maintaining traffic flow and accessibility for traffic/transports. The lack of deviation routes, both in rural and urban areas, would have been a major road safety issue. This applies in particular to a number of tunnels in Oslo, where tunnel upgrades have been carried out successively.

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amending Directive 95/16/EC, Lov om tilsyn med elektriske anlegg og elektrisk utstyr (el-tilsynsloven), Lov om elektronisk kommunikasjon (ekomloven), Lov om intelligente transportsystemer innenfor vegtransport m.m. (ITS-loven)

[2] Meld. St. 26 (2012–2013) Nasjonal transportplan 2014–2023, p. 113

[3] Prop. 1 S (2013-2014)

Initially, the plan only involved rehabilitation where there was non-compliance with regulatory requirements, as well as critical maintenance measures. There is a large maintenance backlog for the tunnels on the national road network, which also requires substantial measures. In order to avoid the disadvantages inflicted on road users by closing each tunnel twice, and in order to achieve a more rational and cost-effective implementation, it was decided in 2016 that the issues in maintenance backlog were to be rectified at the same time as the regulatory requirements. The Storting was informed of this in the National Budget for 2017[4]. At the same time, the Storting was informed that the completion of upgrades to the TERN tunnels would be postponed until 2020/2021 and the remaining national road tunnels until 2022/2023. This priority was used as a basis in the NTP 2018-2029[5].

In connection with the work on the NTP 2018-2029, the total costs of upgrading the TERN tunnels were estimated at approximately NOK 10.7 bn. Early in the planning period, it became clear that these costs were also rather significantly underestimated. In the autumn of 2019, the Norwegian Public Roads Administration (NPRA) revised its plan for the tunnel upgrades. The revised plan showed that the costs of upgrading the TERN tunnels had increased with 35 % to NOK 14.5 bn. A review showed that the cost increase for the tunnels on the rest of the national road network was similarly large.

As a consequence, and based on recommendations from the NPRA, the Government has adopted a revised strategy for the implementation of the tunnel upgrade programme in the National Budget for 2020. [6] This means that it is mainly only critical maintenance and upgrades that are important for tunnel safety that will be carried out at the same time as the measures required by the regulations/Directive. The scope of the measures is still extensive with such a strategy, as changes in electrotechnical installations make it mandatory to comply with newer abovementioned regulations in force.

Upgrades to the tunnels in the TERN are prioritised, which means that the upgrading of tunnels on the remaining national road network will mainly be carried out after 2023.

2.3 Status of tunnel upgrade work

On 29 June 2020, the Government provided the Authority with updated information on the state of compliance, confirming that out of the tunnels that fall within the scope of the Directive at the date of the letter, 68 tunnels were reported not to be in full compliance with the Directive. As of January 2021, 57 tunnels in the TERN were still in need of upgrades. The upgrading of eight of these tunnels are expected to be completed within 2021. By the end of 2021, 49 tunnels will thus remain to be upgraded.

Most of the non- compliant tunnels are already linked to a remote control center, and are equipped with lighting, ventilation, emergency stations, fire extinguishers, communication

[4] Prop. 1 S (2016-2017)
[5] Meld. St. 33 (2016–2017)
[6] Prop.1 S (2019-2020)

systems and tunnel closing systems. In addition, several of the non-compliant tunnels also possess new technology required by the Directive. However, some of the older tunnels need a thorough upgrade to reach the same level as the new ones with regards to technology. The upgrades will also renew the equipment where it is needed, and put in place more uniform equipment. Exactly what work that is to be performed varies, depending on how old the tunnel is, length, traffic volume and standard. Some of the following examples of measures are relevant for many of the tunnels:

- Upgrading of ventilation according to EU and national legislation.
- Better fire safety with new firefighting equipment, well-marked emergency exits, emergency communication with direct contact to the NPRA remote control centersand the emergency services, and control system that allows the tunnels to be closed in the event of an accident or fire.
- Better lighting.
- Renewed electrical infrastructure, cables, cabinets and technical buildings.
- Better protection against fire by covering flammable water and frost protection (PE Foam) with concrete.

To further demonstrate the planned measures in some of the non-compliant tunnels, the Government has enclosed the NPRA's action plans for two of the tunnels, E16 Hernestunnelen and E 39 Viggjatunnelen. The enclosed action plans are documents drawn up by the NPRA for its internal preparation.

2.3.1 The risk of fires in tunnels is very low in Norway

Pending the implementation of refurbishment of the remaining tunnels on the TERN, the NPRA has recently completed a risk analysis of the remaining tunnels, which is necessary in order to propose measures that are appropriate for each individual tunnel and road section, and the risk level involved in each case. The risk analysis shows that the risk of fires in tunnels is very low in Norway, especially given the number of tunnels in this country. This is supported by a comprehensive study carried out by the Norwegian Institute of Transport Economics (TØI), which includes an analysis of all vehicle fires in Norwegian road tunnels in the period 2008-2015. This survey indicated that the average number of fires in Norwegian road tunnels is 0.02 fires per kilometre of tunnel. The low number is mainly due to low traffic volumes in a large number of tunnels. In addition, the report shows that there has been no clear increase in the number of fires and near-misses year by year in the period studied, considering that the number of road tunnels is increasing every year (by perhaps 10-20 tunnel kilometres), while the traffic volume is also slightly increasing every year (perhaps 1-2%).

Fire is the foremost critical event for road tunnels' safety, and fatal fires following accidents in the Mont Blanc, Tauern and Gotthard tunnels prompted the Directive with minimum safety requirements for TERN tunnels. No deaths have been caused by tunnel fires in Norway. The vast majority of serious injuries from fire situations have been caused by traffic accidents. Fires in heavy vehicles were overrepresented in tunnels with a gradient steeper than 5 per

cent. 42 per cent of the fires occurred in tunnels with gradients steeper than 5 per cent. Technical problems were twice as often the cause of fires in heavy vehicles as for light vehicles, while single vehicle accidents and collisions were twice as often the cause of fires in light vehicles as for heavy vehicles. In this context, it is important to point out that the steepest tunnels, and most of the steep tunnels, are found outside the TERN.

In 2019, TØI developed statistical models for road tunnels in Norway, in order to calculate the number of vehicle fires, personal injury accidents, the number of accidents involving fatalities or serious injuries, and the number of vehicle breakdowns, as a function of a number of tunnel characteristics (e.g. traffic volume, length, number of tubes, speed limit and gradient). The study combines knowledge about incidents (fires, accidents, breakdowns) with information about all tunnels in the country, including those that have not had any incidents, so that we can gain systematic knowledge about the conditions affecting the occurrence of fires, accidents and breakdowns in Norwegian road tunnels. The TØI study and models provide us with knowledge about tunnels that are particularly at risk and will need stronger risk-reducing measures.

Traffic safety work is a field that is given high priority in Norway. In 2019, Norway was the best-performing country in Europe with regard to traffic safety for the fourth year in a row.[7] These results of our traffic safety work are due to extensive investments in the principles on which "Vision Zero" is based, which involves a systematic approach to multidisciplinary and cross-agency work. Norway works systematically with the registration of accidents, data processing, learning and risk management.

As in most other countries, road safety is significantly better in tunnels than on the road outside, due to stable driving conditions, without junctions or cyclists and pedestrians. Norway’s topography and extreme weather conditions make tunnels a perceived and actual safety improvement for road users. Such conditions are characteristic of the tunnels included in the remaining tunnel upgrade programme.

2.4 Future works

2.4.1 Tunnels that will remain in the TERN

Of the 49 tunnels that will not fully comply with the Directive after 2021, upgrading or preparation for upgrading has been started in 28 tunnels in the TERN, based on the priorities in the National Budget of 2021(See Attachment 1 for further details concerning the status for TERN tunnels covered by the Directive).

The Government intends to prioritise the upgrade of the remaining TERN tunnels in accordance with the NTP, which is produced every four years and elaborates on how the Government intends to prioritise resources within the transport sector over the next twelve years. The aim of the NTP is to provide a superordinate basis on which to make decisions.

[7] 13th report of the European Traffic Safety Council (ETSC).

The Government has recently submitted a Report to the Storting (White Paper), NTP 2022–2033.The final and binding decisions concerning the further progress of the upgrade of the TERN tunnels depend on annual National Budget adoptions.

As regards the 29th tunnel, E39 Fløyfjelltunnelen, the timing of the upgrade must be considered specifically in light of other projects in the city center of Bergen. It is under consideration that the Bergen Light Rail ("Bybanen") to Åsane will partly use the existing Fløyfjelltunnel as a route. This means that the upgrade of this tunnel, and the construction of a new Fløyfjelltunnel for E39 traffic, must be considered in context. The focus will, among other things, be on avoiding major disadvantages inflicted on road users in the centre of Bergen. Funds have been allocated for the preparation/planning of this measure in 2021, so that alternatives and costs may be more easily clarified.

2.4.2 Tunnels that will not remain in the TERN

Of the 49 tunnels that has not been upgraded to meet the requirements in the Directive, 20 of the tunnels will be replaced by new road infrastructure on new road sections. These 20 tunnels will fall outside the TERN when the new road sections have been built. These tunnels are:

- E16 Arna-Stanghelle (6 tunnels)
- E6 Megården – Mørsvikbotn (12 tunnels)
- E16 Nærøydalen (2 tunnels)

For these tunnels, risk-reducing measures will be carried out in anticipation of the tunnel being replaced by new tunnels. (see section 2.3 and 4.3 concerning the risk-reducing measures). Plans to start building the road sections that will replace the 20 aforementioned tunnels are included in the first six-year period of NTP 2022-2033, and is as such prioritised from the Government's side as the most important projects to be carried out and completed.

The Government will keep the Authority updated on the further progress concerning the upgrade of the remaining 49 tunnels, including final decisions concerning NTP 2022-2033, budget decisions, etc.

3 The reasoned opinion

The Authority finds that the Directive imposes a strict obligation of result on the EEA States to bring all tunnels falling under the scope of the Directive into line with its provisions. The Authority further points out that the Directive and the deadlines it provides was accepted by the Government when the Joint Committee incorporated it into Annex XIII of the EEA Agreement by Decision No 10/2006.

The Authority states that it is concerned about the high number of tunnels still not in conformity with the Directive to date and takes the view that possibilities should be sought to advance the refurbishment works and to commit to a more ambitious time schedule.

Further, the Authority does not consider it clear whether alternative risk-reduction measures have actually been implemented, and for which tunnels this is the case. The Authority expects in general, that any alternative risk-reduction measures accepted by the Norwegian Administrative Authority should be notified, either in accordance with Article 3(2) or, insofar as it may concern for limited derogations within the meaning of point 1.2.1 of Annex I of the Directive, in accordance with that provision. The Authority cannot see that the Norwegian Government has notified any alternative risk-reduction measures in accordance with those rules.

4 The Government`s assessment

4.1 Directive 2004/54/EC

The purpose of the Directive is to improve tunnel safety, cf. recital 4 of its preamble. It furthermore follows from the preamble (9) that "*Safety in tunnels requires a number of measures relating, amongst other things, to the geometry of the tunnel and its design, safety equipment, including road signs, traffic management, training of the emergency services, incident management, the provision of information to users on how to best have in tunnels and better communication between the authorities in charge and emergency services such as the police, fire-brigades and rescue teams*".

It follows from recital 17 of the preamble to the Directive that:
" *A flexible and progressive timetable is needed for implementation of this Directive. This will allow for completion of the most urgent works without creating major disturbances in the transport system or bottlenecks in public works in the Member States.* "

Furthermore, recital 18 of the Preamble reads:
" *The cost of refurbishing existing tunnels varies considerably from one Member State to another, particularly for geographical reasons, and Member States should be allowed to stagger any refurbishment works needed to meet the requirements of this Directive where the density of tunnels on their territory is well in excess of the European average.*"

Several other Member States (MS) with a high density of TERN tunnels have also faced significant challenges in meeting the Directive's deadline for refurbishing the tunnels. On 3 December 2020 the Commission sent a letter of formal notice to Belgium, Bulgaria, Croatia, Italy and Spain for failing to comply with the requirements of the Directive.[8] The concerned MS have been called to notify the Commission of measures taken to remedy the situation.

4.2 Fulfilling the obligations under Article 11

Several of the safety requirements measures mentioned in preamble (9) and Annex 1 to the Directive is already in place in the non-compliant tunnels (see section 2.3). Some of the requirements are unfortunately still lacking, but the Government's aim is to rectify this as soon as possible. However, as this letter will explain in detail below – the remaining upgrading work poses several traffic safety challenges. It is therefore not possible to advance

[8] INFR(2019)2282, INFR(2019)2281, INFR(2019)2278, INFR(2019)2280, INFR(2019)2279

the refurbishment works further without creating major disturbances in the transport system and placing an unproportionable burden on the society.

The total costs on society of achieving compliance is significant. The tunnel upgrading works can lead to challenges for road users in the time it takes to upgrade the tunnels. The practical arrangement will vary depending on the local conditions. In some places the tunnels are closed only during evening and nights. Other tunnels are completely closed and traffic is directed to detours. In tunnels with two separate lanes, traffic in one of the lanes is often discontinued. Regulating traffic flow during closure periods has been a particular challenge, which has made the planning and implementation of these projects more complex. This has entailed that tunnel improvements have had to take more time in these areas. In addition, the upgrading of many of these tunnels has proved to be very costly, and the financial resources allocated to tunnel upgrades nationally have primarily been spent on upgrading these tunnels. In parallel, sizeable funds have been used for the upgrading of a number of tunnels in very poor condition also outside the TERN, as a result of requirements in the national tunnel safety regulations.

The work to prepare the implementation of refurbishment of the remaining tunnels on the TERN has revealed that the condition of many of these tunnels was far worse than expected when incorporating the Directive into the EEA Agreement. This concerns in particular a number of tunnels that were built in the early 2000s, where the quality of the work performed has been worse than what the NPRA has based its cost calculations on with regard to upgrading these tunnels. Among other things, the condition of the drainage systems has been so poor that the entire system has had to be replaced in many tunnels. This has contributed significantly to an increase in the scope of the work.

At the same time, the assessment was made that one could not simply ensure compliance with the tunnel safety regulations without complying with other regulations (cf. abovementioned EU legislation and national regulations relating to electrical engineering, Act of 13 March 1981 No.6 Concerning Protection Against Pollution and Concerning Waste (Pollution Control Act)). The establishment of treatment solutions for surface drainage water and tunnel wash water, as well as emergency installations with subsequent establishment of an emergency power system, has significantly increased the scope of the tunnel upgrades. Changes in electrotechnical installations are in most places so extensive that it becomes mandatory to ensure compliance with new regulations in force. This in turn entails a major replacement of infrastructure, which in turn often entails reconstructions and extensions under very demanding conditions.

4.3 Main challenges for the remaing refurbishment works

Of the tunnels that currently remain to be upgraded on the TERN, many are within one limited geographical area, which can be defined as a continuous transport network. This applies in particular to tunnels in western Norway, and more specifically to Vestland county. There is a significant need for time-consuming planning and coordination of the implementation of the upgrade of these tunnels, especially when it comes to maintaining

traffic flow/accessibility for traffic/transports. This applies to many road connections in western Norway, but the E16 and the E39 in particular pose serious challenges.

These routes represent the core of the national road transport system, and obstacles and major delays will directly reduce accessibility, route open time and reliability, such as for transports that are of critical importance to society. At the same time, it is important to point out that a progress plan taking these factors into account will contribute to increased costs as a result of more time-consuming and complex implementation. A disproportionate reduction of accessibility on these routes will inflict major inconviniences on society, especially the transport industry. Much of the supply of goods in Norway takes place by road, as a modern logistics system is based on central warehousing and distribution according to the “just-in-time principle”.

Main challenges for upgrades in areas with a large number of tunnels (E16/E39) are:

- Lack of, or unsuitable, diversion routes for all traffic or major parts of the traffic volume (heavy vehicles) when tunnels are closed during construction/implementation. Issues of winter maintenance on mountain passes are also relevant here.

- Other road projects such as current maintenance on an alternative road network that could have been used for long diversions. Other road owners (county authorities) also have their projects and maintenance tasks to be carried out. In Norway there are as many tunnels on the county road network as on the national road network. This means that diversion routes – where these can be found – often include tunnels.

- Avalanche/ land slide hazard where convoys line up outside/near the tunnels.

- Accessibility for various groups of road users, including rescue services, when convoy driving (sometimes with long waiting times) or full closure of the tunnels for parts of the day/night, is the only option.

- Costs for society and consequences of reduced accessibility/traffic flow and long waiting times. With an increasing level of simultaneous upgrades on the same road section (E39/E16), these are greatly enlarged. Coordination of projects with a relatively large geographical distance between them is difficult and problematic, problematicand creates great uncertainty in the construction phase.

Please see Attachment 2 for further information concerning the upgrading of the remaining tunnels on E16 and E39.

The Government emphasises that the total cost for society is an important factor, in addition to the actual construction costs resulting from the implementation of tunnel projects. Although the NPRA, given a hypothetically unlimited access to resources in terms of personnel and funds, might be able to speed up the upgrade of a number of tunnels, the burden on the

communities in parts of Norway would be very high or unacceptable. The TERN ensures accessibility for transports that are of critical importance to society. The NPRA considers it hazardous and demanding to restrict traffic, such as by operating convoys through a number of tunnels on roads that are exposed to landslides or avalanches. Accessibility for emergency services and other functions of critical importance to society must also be maintained during the construction phase without compromising the safety of workers.

4.3 Risk-reduction measures

Tunnels are the most expensive road infrastructure, hence costs for refurbishing road tunnels in accordance with the full set of requirements of Annex I can be very high. For this reason, Article 3 (2) allows implementing less costly measures under certain conditions where they achieve a sufficient safety level. For this purpose, the classification system introduced in Annex I differentiated requirements according to traffic volumes and length, and a clause in the Act allows Member States to accept alternative risk reduction measures when refurbishment costs are excessive in relation to the costs of a new tunnel.

The call for risk reduction measures has been interpreted by Norway as a requirement that applies when a MS will not be able to meet the requirements of the Act after a prolonged period of time. So far, certain safety measures and minor improvements have been implemented in relation to maintenance work and traffic safety audits.

The purpose of the risk analysis carried out by the NPRA (see section 2.3) is to present risk-reducing measures that will improve the facilitation of self-rescue in tunnels that currently do not meet all minimum requirements. One of the main challenges is to find effective risk-reducing measures where evacuation lighting is not in place, as this is defined as a minimum requirement in Annex I, point 2.8.3 : "*Evacuation lighting, such as evacuation marker lights, at a height of no more than 1.5 m, shall be provided to guide tunnel users to evacuate the tunnel on foot, in the event of emergency.*" The risk analysis recommends the establishment of temporary evacuation lights in the tunnels that lack it and where there is enough power to establish it. Where this is not possible for electrotechnical reasons, the use of reflectors and handrails is suggested. According to Article 3(2), risk reduction measures will be implemented as they are approved by the Administrative Authority (the Directorate of Roads). These measures will later be notified to the Authority.

The Government emphasises that risk reducing measures will be implemented pending a complete upgrade. It is desirable to apply risk reduction measures to the extent that this is practically possible pending a complete upgrade according to the presented plan. The upgrade work is a priority and in process.

5 Conclusions

As the Authority points out, the Norwegian Government accepted the deadline set out in the Directive when the Joint Committee in 2006 incorporated it into Annex XIII of the EEA Agreement by Decision No 10/2006. However, the Government emphasises that the

following factors have delayed the plans for bringing the TERN tunnels in Norway in line with the requirements of the Directive:

- The complexity and cost of the programme in the first phase had been rather significantly underestimated.
- Since 2006, electrical regulations with adjacent norms and standards were significantly changed, which triggered extensive requirements for tunnel upgrades which were not taken into account when assessing the deadline in Article 11.
- Measures necessary to meet the minimum requirements of the Act were in 2006 identified as simple defiencies but in practice lead to a total replacement of the equipment, which often requires a significant rebuilding of technical buildings and the establishment of new ones.
- The problem related to traffic flow during work periods was, for the same reason, underestimated both in terms of safety, time and cost.

Although Norway has not fully completed refurbishing of all the TERN tunnels within the deadline set forth in Article 11 of the Directive, it is important to stress that the refurbishment of the remaining tunnels is a priority and in process. Most of the non- compliant tunnels are linked to a remote control center, and are equipped with lighting, ventilation, emergency stations, fire extinguishers, communication systems and tunnel closing systems. On 29 June 2020, the Government reported to the Authority that, at that time, 68 tunnels were not in full compliance with the Act. By the end of 2021, the number of non-compliant tunnels will be down to 49. Of these 49 tunnels, upgrading or preparation for upgrading has been started in 28 tunnels in the TERN, based on the priorities in the National Budget of 2021. 20 of the remaining tunnels will be replaced by new road infrastructure on new road sections. Plans to start building these road sections are included in the first six-year period of the Government's Report to the Storting, the National Transport Plan 2022-2033 (White Paper). As regards the final tunnel, Føyfjelltunnelen, the timing of the upgrade must be considered specifically in light of other projects in the city centre of Bergen. Funds have been allocated for the preparation/planning of this measure in 2021, so that alternatives and costs may be more easily clarified.

The total cost of the burden on the community would be very high or unacceptable with a more ambitious progress plan than described above. The Directive – and more specifically the deadline set out for refurbishing the tunnels - would also be deprived of meaning if a too progressive deadline would lead to closing down all tunnels until they would be in line with the Directive. The Government considers it too hazardous and demanding to restrict traffic, such as by operating convoys through a number of tunnels on roads that are exposed to landslides or avalanches. Accessibility for emergency services and other functions of critical importance to society must also be maintained during the construction phase without compromising the safety of workers. The Government points out that, as mentioned in the Directive's Preamble (17)," *A flexible and progressive timetable is needed for implementation of this Directive.*" In the view of the Government, the current progress plan for refurbishment of the TERN-tunnels is just such; the most urgent works are carried out, at the same time as

major disturbances and safety challenges aren't created in the transport system while the refurbishment work is being carried out.

It is desirable to apply risk reduction measures to the extent that this is practically possible pending a complete upgrade according to the presented plan. According to Article 3(2), measures will be implemented as they are approved by the Administrative Authority (the Directorate of Roads). These measures will be notified to the Authority.

For the reasons above, the Government respectfully submits that the Authority allows the time to complete the on-going refurbishments.

The Government would be happy to facilitate any further needs for information that the Authority may have. Furthermore the Government proposes a meeting with the Authority to elaborate and explain in detail the arguments and facts above. Any additional information concerning risk-reducing measures will be notified to the Authority as soon as possible.

Yours sincerely

Hans Einar Nerhus
Deputy Director General

Sonja Lindqvist
Senior Adviser

This document is signed electronically and has therefore no handwritten signature

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