NSW GOVERNMENT | Transport for NSW

Transport for NSW response to:

Effective fatigue management: Issues paper

Contents

1 General comments

Transport for NSW (TfNSW) welcomes the opportunity to contribute to the Issues Paper developed by the National Transport Commission (NTC) on the Effective Fatigue Management.

1.1 Overview

It is noted that the Issues Paper aims to:

- summarise current HVNL fatigue management provisions and compare them with other transport modes and alternative heavy vehicle driver fatigue management regimes
- examine the issues with the current law and how it is applied
- identify the high-level principles that a revised law should cover.

The primary purpose of the HVNL is to ensure a safe and efficient heavy vehicle journey. This comprises a safe driver – one who is well-trained, competent, fit for duty and alert when driving for the duration of the journey.

The Paper attempts to explore fatigue management issues in the context of the approach presented in the first issues paper: *A risk-based approach to regulating heavy vehicles*.

Overall, it is considered that the Issues Paper lacks adequate comparative analysis of existing heavy vehicle driver fatigue regimes. In particular it has omitted to include an analysis and discussion of the EU regulatory framework which has been in place for decades and demonstrates longstanding expertise in fatigue management.

While there is an overview of risk management experiences in the aviation and rail industries there is little examination of how a risk management approach might apply in heavy vehicle fatigue management. The Paper lacks discussion of policy options and as a result provides limited rationale and evidence for the high level principles and how they might apply in a revised law. For this reason it is difficult to support the high level principles at this stage and further consideration and analysis of the issues identified is needed.

1.2 NSW Context

1.2.1 Safety risks

Driver fatigue is one of the top three contributors to the road toll:

- Fatigue-related crashes are twice as likely to be fatal - drivers who are asleep can't brake
- From 2013 to 2017, more people in NSW died in fatigue-related crashes than drink driving crashes
- Being awake for about 17 hours has a similar effect on performance as a blood alcohol content (BAC) of 0.05

Crashes involving heavy vehicles are often serious because of their size and weight, regardless of who is at fault. While their numbers make up only 2.5 per cent of NSW motor vehicle registrations and 8.3 per cent of kilometres travelled by all NSW vehicles, heavy vehicles are involved in about 17 per cent of all road fatalities.

Heavy truck fatal crashes[1], five years 2014 to 2018:

- 264 fatal crashes involving heavy trucks, on average 53 fatal crashes per year
- 296 fatalities from heavy truck crashes, on average 59 people killed per year

Heavy truck injury crashes, five years 2013 to 2017:

- 6539 injuries from heavy truck crashes, on average1308 injuries per year
- This includes 2015 serious injuries, on average 403 serious injuries per year

The total cost of trauma from road traffic crashes in NSW for 2017 was estimated to be around $7.5 billion with casualties from heavy truck crashes alone accounting for $0.8 billion.

During the first six months of 2019 there have been 41 fatalities from heavy truck crashes on NSW roads, 13 (46 per cent) more fatalities than the same period last year. (preliminary data as at 1 July 2019)

1.2.2 Freight task

Heavy vehicle safety and fatigue management is a significant issue when considered in the context that nationally the freight task is expected to double by 2030.

The NSW freight task set to grow by 28 per cent by 2036. The largest growth in freight volumes in NSW will occur in Greater Sydney, which will see the freight task increase by almost 50 per cent by 2036.

With the exception of coal and some agricultural produce the majority of the freight, **approx. 90 per cent,** is moved by road.

A significant proportion of heavy vehicles operating on NSW roads, particularly articulated trucks, are registered in jurisdictions outside NSW. In the 12-month period ending 13 February 2018, 41 per cent of heavy vehicles involved in fatal crashes in NSW were registered interstate; of these, 17 were from Victoria and 10 from Queensland.

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[1] *Heavy Truck Crash Any crash involving a Heavy Rigid Truck (rigid lorry and rigid tanker with a tare weight in excess of 4.5 tonnes) or an Articulated Truck (articulated tanker, semi-trailer, low loader, road train or B-double) on a road that results in death, injury or towed vehicle and is reported to the police.*

1.3 Evidence based approach

1.3.1 Fatigue research

Key findings from the Alertness Safety and Productivity CRC Heavy Vehicle Driver Fatigue Project Report were tabled at the recent TISOC and were expected to provide evidence on fatigue to inform the review.

The two-year scientific study evaluated alertness monitoring technology and the impacts of work shifts on driver alertness. It analysed shift start time, the number of consecutive shifts, shift length, shift rotation, rest breaks and their likely impact on driver drowsiness and fatigue.

It involved a study of more than 300 heavy vehicle driver shifts both in-vehicle and in a laboratory, as well as 150,000 samples of retrospective data. The research found that slow eye and eyelid movements, longer blink duration and prolonged eye closure are reliable predictors of drowsiness and fatigue. It also confirmed the scientific link between alertness and drowsiness patterns associated with specific work shifts for heavy vehicle driving.

Research findings indicate that:

- Greatest alertness levels can be achieved under current standard driving hours for shifts starting between 6 am – 8 am, including all rest breaks and up to 14hours
- The greatest risk of an increase in drowsiness occurs:
    - For shifts longer than 12 hours (with at least a twofold increase in drowsiness events);
    - After 6-8 hours when on night shifts (starting in the afternoon to evening) and after 15 hours for day shifts starting before 9am;
    - Doubled after 5 consecutive shifts when driving for over 13 hours;
    - Tripled after 15 hours of day driving when a driver starts a shift before 9 am;
    - After 6–8 hours of night driving (when a driver starts a shift in the afternoon or evening);
    - When driving an early shift that starts after midnight and before 6 am;
    - During the first 1-2 night shifts a driver undertakes and during long night shift sequences;
    - When a driver undertakes a backward shift rotation (from an evening, back to the afternoon, or an afternoon back to a morning start);
    - After long shift sequences of more than seven shifts;
    - During nose-to-tail shifts where a seven-hour break only enables five hours of sleep – a duration previously associated with a three-fold increased risk for motor vehicle crashes.

The research findings provide significant evidence to help understand heavy vehicle fatigue risk and inform a safe and effective fatigue management approach as part of the HVNL Review. However the Issues Paper provides little evidence of how these findings have been analysed and applied in the consideration of a risk based approach to fatigue management.

1.3.2 Safe System

The Safe System approach to road safety involves four elements namely, safer people, safer roads, safer speeds and safer vehicles that work together as a whole to reduce road trauma.

It involves a holistic view of the road transport system and the interactions among roads and roadsides, travel speeds, vehicles and road users. It is an inclusive approach that applies to all groups using the road system, including drivers, motorcyclists, passengers, pedestrians, cyclists, and commercial and heavy vehicle drivers.

There are several guiding principles to this approach:

- People make mistakes. Humans will continue to make mistakes, and the transport system must accommodate these. The transport system should not result in death or serious injury as a consequence of errors on the roads.
- Human physical frailty. There are known physical limits to the amount of force our bodies can take before we are injured or killed.
- A 'forgiving' road transport system. A Safe System ensures that the forces in collisions do not exceed the limits of human tolerance. Speeds must be managed so that humans are not exposed to impact forces beyond their physical tolerance. System designers and operators need to take into account the limits of the human body in designing and maintaining roads, vehicles and speeds to avoid crashes and reduce the physical impact forces when a crash occurs.

While individual road users are expected to be responsible for complying with traffic laws and behaving in a safe manner, it can no longer be assumed that the burden of road safety responsibility simply rests with the individual road user. Many organisations—the 'system managers'—have a primary responsibility to provide a safe operating environment for road users. They include the government and industry organisations that design, build, maintain and regulate roads and vehicles. These and a range of other parties which are involved in the performance of the road transport system and the way roads and roadsides are used, all have responsibility for ensuring that the system is forgiving when people make mistakes.

1.4 Key Issues

1.4.1 Thresholds for fatigue regulation

Fatigue management requirements in the HVNL only apply to fatigue-regulated heavy vehicles[2] . As shown in the Issues Paper, the Survey of Motor Vehicle Usage, Australian Bureau of Statistics indicates nearly a third of heavy vehicles are not defined as 'fatigue related heavy vehicles'. Fatigue risks are associated with driver's fitness to drive and not with the vehicle's size or the distance travelled.

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[2] *Vehicles with a gross vehicle mass (GVM) of more than 12 tonnes, combinations with a GVM of more than 12 tonnes, buses weighing more than 4.5 tonnes and fitted to carry more than 12 adults (including the driver), trucks, or combinations including a truck, that have a machine or implement attached and a total GVM of more than 12 tonnes (s 7 of the HVNL).*

In *Working hours regulations and fatigue in transportation: a comparative analysis*, Jones et al[3] compared legislation concerning fatigue in Australia, Canada, United Kingdom and USA on eight criteria. These criteria based on their relationship with fatigue, were: time of day; the 24-hour rhythm; duration of sleep; quality of sleep; predictability of sleep; sleep deprivation; duration of task performance; and presence of short breaks.

The Issue Paper does not present the rationale as to why fatigue rules are set in at 12 tonnes GVM (rather than 4.5 tonnes GVM for all other regulations in the HVNL); or why the distance threshold is 100km from base, when the NTC has found that a significant amount of fatigue occurs at the start of the shift and may affect city drivers.

In comparison, in the EU, the fatigue regulatory framework applies to all vehicles with a GVM higher than 3.5 tonnes (in goods transport) and carrying more than 9 persons including the driver (in passenger transport) with the duty to install a digital tachograph to monitor and record the driving times and rest periods of professional drivers[4].

NSW consideration:

i. that the NTC investigate whether the fatigue regulation should be applicable to all vehicles with a gross vehicle mass (GVM) or aggregate trailer mass (ATM) of more than 4.5 tonnes.

1.4.2 Regulatory considerations

Risk-based approach & Safety Management Systems

The Issues Paper suggests a risk-based approach to regulating fatigue in greater alignment to WHS and safety management systems (SMS) approach to hazard reduction. This is compared to similar approaches to safety regulation in aviation and rail. However, the comparison is brief and provides little analysis of the advantages, disadvantages and applicability of these safety management systems in ensuring a safe driver – one who is well-trained, competent, fit for duty and alert when driving for the duration of the journey.

Industry continues to seek increased flexibility in fatigue management. Large operators in the heavy vehicle industry are willing to and in many cases are already embracing more sophisticated risk-based SMS approaches to manage fatigue which, would inherit in their view a greater flexibility and increase their safety by building a 'safety culture'. Telematics are being increasingly used to enhance this approach.

An SMS approach provides a planned, documented and verifiable method of managing hazards and associated risks while ensuring that risk controls are effective. According to *Jones et al* a major disadvantage to such a system is that its strength - allowing companies to

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[3] *Jones, C.B., Dorrian, J., Rajartnam, S.M.W. & Dawson, D. (2005) Working hours regulations and fatigue in transportation: a comparative analysis. Safety Science.*

[4] *Term utilised in EU for heavy vehicles drivers along with commercial drivers*

design their own SMS- is also its greatest weakness – with smaller operators that may find it too onerous.

Given approximately 70 per cent, of the heavy vehicle industry includes operators with less than 5 vehicles in their fleet a more detailed analysis is required to identify safety implications and options that maximise safety and productivity outcomes while minimising (potentially reducing) the regulatory and management burden on a significant proportion of the industry.

In this context, further consideration is needed to explore a mix of approaches including a general safety duty together with prescriptive rules and performance-based standards to address the safety risks posed by fatigue management.

A general safety duty aims to ensure that safety risks not identified are managed and unsafe behaviours not otherwise captured by prescribed offences are prevented.

A two tiered approach would be based on overarching safety risk management and safety assurance principles. It would identify mandatory requirements and performance outcomes that are designed to accommodate a flexible operating environment in which potential *fatigue* risks can be highlighted and managed to enable drivers to safely operate their vehicles and perform at adequate levels of alertness throughout the freight journey regardless of the size and complexity of their operations.

This approach would enable large freight operators with complex organisational and business models to design and implement multi-layered fatigue management systems to manage fatigue-related risks which may include data-driven, ongoing adaptive processes that can identify fatigue hazards and develop, implement and evaluate controls and mitigation strategies.

However, the cost and complexity of such a system may not be justified for small operators where compliance with prescriptive requirements including rest hours and mandatory monitoring maybe appropriate to manage fatigue-related risks.

The Issues Paper raises a number of issues with the current law around the lack of flexibility to accommodate sophisticated fatigue management systems and practices.

Many Australian road freight operators are already using in-vehicle telematics to improve their safety assurance, safety risk management systems and processes. There is significant opportunity to harness the potential of this technology to further improve compliance, enhance a safety culture and safety management systems, reduce administrative burden for industry and improve road safety outcomes for all road users.

NSW notes that, under the Advanced Fatigue Management (AFM) provisions of the HVNL, operators may already operate with greater flexibility in hours provided they have systems for managing fatigue risks. Industry is yet to use these provisions, despite general criticisms about the perceived prescriptive regulatory approach to fatigue management.

It is noted that the methodology and mechanics of AFM, including the cost and process to apply for AFM accreditation, sits outside of the HVNL and is a principally matter for the National Heavy Vehicle Regulator (NHVR).

Significant improvements in the adoption of fatigue management systems may be potentially be attained through improvements to AFM, rather than necessarily making significant reforms to the HVNL.

NSW also notes the NTC issues paper does not have regard to, or discuss, the role of government in a fatigue management approach which draws on elements of an SMS (as described by the NTC). This approach may have a comprehensive role for regulators, including setting standards, a robust audit program with supporting technologies and methods, or be underpinned by industry self-regulation with a light touch role for regulators.

NSW considerations:

ii. that a mix of approaches is needed, including a general safety duty together with prescriptive rules and performance-based standards to address the safety risks posed by fatigue management.

iii. more robust and comprehensive comparison of regulatory approaches in other jurisdictions both nationally and internationally would be beneficial. The Issues Paper limits discussion to four jurisdictions, Western Australia, Northern Territory, Canada and the United States of America. The EU is a significant omission.

'Work and rest' approach

Basic Fatigue Management (BFM) is the regulatory "stepping stone" between standard hours and AFM. It is comparatively popular for long-haul transport, and provides drivers with 14 hour limits (as opposed to 12 hour limits under Standard Hours) and split rest breaks, through what could be described as a light-touch accreditation approach, requiring some additional training and an annual medical examination.

As noted previously and corroborating with the key findings of the Alertness CRS Report and Jones et al, the key criteria influencing drivers fatigue are: time of day; the 24-hour rhythm; duration of sleep; quality of sleep; predictability of sleep; sleep deprivation; duration of task performance; and presence of short breaks.

In fact the flexibility levels prescribed by the BFM and AFM, allowing shifts longer than 12 hours were associated with at least a twofold increase in drowsiness events according to the Alertness CRS Report.

NSW notes that the Issues Paper has limited discussion about BFM, either in terms of opportunities to increase its scope or a reflection on the potential increased risk of driving 14 hours a day with nominal mitigation strategies in place.

By contrast, in Europe, a daily driving period shall not exceed 9 hours, with an exemption of twice a week when it can be extended to 10 hours. In addition, the rules provide[5] in summary that:

- Breaks of at least 45 minutes (separable into 15 minutes followed by 30 minutes) should be taken after 4 ½ hours at the latest.
- Daily rest period shall be at least 11 hours, with an exception of going down to 9 hours maximum three times a week. Daily rest can be split into 3 hours rest followed by 9 hour rest to make a total of 12 hours daily rest
- Total weekly driving time may not exceed 56 hours and the total fortnightly driving time may not exceed 90 hours.
- Weekly rest is 45 continuous hours, which can be reduced every second week to 24 hours.
- Night work: not more than 10 hours worked in any 24-hour period when a night shift is performed.

There is no evidence that the EU regulatory framework for managing fatigue in the heavy vehicle industry was examined in this review. The Issues Paper includes only a short description of the approaches in USA and Canada. There is no comprehensive comparative analysis or discussion.

A more comprehensive analysis is required of international jurisdictions with a longstanding expertise in fatigue management, such as the EU regulatory framework, which presents several elements that have been implemented for decades and that may potentially bring greater safety benefits to the Australian system.

NSW considerations:

iv. that the review investigate more closely why AFM has not been adopted in high numbers, and potential solutions that may include non-legislative changes.

v. explicitly evaluate the fatigue risk of BFM and whether BFM works as a barrier to adopting a sophisticated fatigue management system approach.

vi. a more comprehensive analysis of other international jurisdictions with a longstanding expertise in fatigue management is required. The EU regulatory framework has been implemented for decades and aspects of the approach may be applicable in the Australian context. (E.g. the rules provide that a daily driving period shall not exceed 9 hours, with an exemption of twice a week when it can be extended to 10 hour).

1.4.3 Adoption of new and emerging technology

Technology is increasingly being used by the heavy vehicle industry to manage risks to driver behaviour and safety, such as fatigue and alertness. Alertness monitoring technology is

[5] *Regulation (EC) No 561/2006 of the European Parliament and of the Council of 15 March 2006 on the harmonisation of certain social legislation relating to road transport and amending Council Regulations (EEC) No 3821/85 and (EC) No 2135/98 and repealing Council Regulation (EEC) No 3820/85 (Text with EEA relevance)*

already being deployed in heavy vehicle fleets, mainly larger operators, within Australia to monitor driver fatigue and alertness in real-time and to enable real-time time decision-making to manage these risks. It is noted that similar types of technologies, such as speed and mass monitoring, can be certified and type-approved by Transport Certification Australia (TCA) which could also be considered for alertness monitoring technology.

The current fatigue framework under the HVNL does not provide any recognition or incentive for the uptake of alertness monitoring technology. This technology has the potential to better detect and enable a risk to be managed.

However without robust monitoring as part of a safety management system and back end systems to intervene or provide any form of compliance link, using this type of technology alone will not provide the safety controls required to manage fatigue and reduce crash risk.

NSW consideration:

vii. further examination is undertaken into alertness monitoring technologies and the potential to incorporate the use of this technology into a risk based management approach to fatigue based on safety risk management and safety assurance principles.

1.4.4 Fatigue monitoring and reporting

The Issues Paper raises a number of issues relating to record-keeping and the complexity of recording work and rest hours. Transport for NSW has received feedback from the heavy vehicle industry that completing and maintaining paper-based work diaries can be complex. However, it does not explore the underlying function of record keeping in a risk management system where safety assurance and safety risk management system are the core activities. In order for the system to be effective it must be documented.

Effective record keeping and safety reporting enables a process of continuous monitoring and improvement, promotes compliance and a safety culture. It should facilitate the identification of safety deficiencies rather than apportioning blame. Record keeping provides evidence of non-compliance and enables more effective enforcement. In a flexible operating context these processes should match the size and complexity of the freight operations.

For example, the EU has implemented for decades mandatory digital tachographs which record the driving time, breaks, rest periods as well as periods of other work undertaken by a driver and allows more effective roadside testing. They are a key element in enforcing European legislation for professional truck drivers and are now deployed in more than 50 countries even among non-EU member states. In Germany for example, the tachographs were made mandatory under the German Traffic Safety Law for all commercial vehicles weighing over 7.5 tonnes, since 1952.

Smart tachographs are the next phase technology and are mandatory for EU Member States since June 2019[6] replacing the digital tachographs. The new generation tachographs features advanced digital technologies, like satellite position and short-range communications; automatic reading of journey times and delivers remote access.

NSW consideration:

viii. current and future record keeping and safety reporting methods and appropriate devices including mandatory fatigue monitoring technologies should be examined in the context of safety risk management and safety assurance principles rather than examining devices and technologies in isolation or limiting consideration to any particular device.

1.4.5 Compliance and Enforcement

Compliance with heavy vehicle laws remains important for the safety of road users, protection of the network and for the wellbeing of the community. Where compliance fails, enforcement of the law is essential.

Flexible compliance, efficient enforcement and proportional sanctions as defined the draft regulatory principles can only be considered in the context of a risk based approach where safety assurance and safety risk management systems are robust and in place.

NSW consideration:

ix. a more robust analysis of the regulatory principles relating to compliance and enforcement is required in the context of safety assurance and safety risk management systems.

1.4.6 Draft regulatory principles

The Issue Paper lists the following six draft regulatory principles:

- safer outcomes
- effective fatigue risk management
- continuous improvement in risk controls
- a harmonised approach, not a uniform one
- simple and flexible compliance options
- efficient enforcement and proportional sanctions

In addition to the comments on principles in the section 1.1 Overview, it is unclear whether these principles are applicable to the entire HVNL law or just for fatigue management. Each Issue Paper released to date lists a different set of principles. In some instances these 'principles' are either outcomes or output.

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[6] *Regulation (EEC) N° 3821/85 has been updated by Regulation (EU) N° 165/2014 which introduces the smart tachograph, which will be installed in vehicles registered for the first time as from 15 June 2019*

NSW consideration:

x. further clarification is required about how these principles apply in the context of the overarching principles for the HVNL review.