NHVR
National Heavy Vehicle Regulator

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Our Reference: 0857

Mr Paul Retter AM
Chief Executive Officer, National Transport Commission
Level 15, 6280 Bourke Street
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Dear Mr Retter,

I would like take the opportunity to congratulate the National Transport Commission (NTC) on the publication of the *Developing a Heavy Vehicle Fatigue Data Framework Discussion Paper* (the Discussion Paper).

This paper reflects considerable effort by the NTC, and the National Heavy Vehicle Regulator (NHVR) welcomes the collaborative approach taken by the NTC in working with us to determine the scope and general direction in the paper.

The NHVR strongly supports improved data collection, management and interpretation in relation to heavy vehicle driver fatigue and drowsiness which, we believe, will contribute to more effective and appropriate regulation and will improve the NHVR's management of heavy vehicle driver fatigue.

However, the NHVR believes that there are elements within the Heavy Vehicle National Law (HVNL) that need to be changed to improve regulatory efficiency and help industry achieve improved safety, efficiency and productivity. These elements are largely administrative, with no discernible safety impacts. Accordingly, the NHVR maintains that the heavy vehicle driver fatigue data framework should not delay potential changes to the HVNL.

I am pleased to make the following submission to the NTC on:

- the scope of the data framework,
- the process for prioritisation of issues,
- priority issues identified in the discussion paper,
- additional issues for consideration, and
- governance and funding of the strategy.

A summary of our responses to the prompt questions in the Discussion Paper can be found in Attachment 1. A more detailed response expanding on the five themes above follows.

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Scope of the Heavy Vehicle Fatigue Data framework

The NHVR believes that national heavy vehicle driver fatigue data framework would be most useful and cost efficient if it:

1) includes a broad range of different data types from a range of different data sources and
2) the data is available for use across all the NHVR's functions to allow the best evidence base possible.

The NHVR was established by the Heavy Vehicle National Law (HVNL) to:

- promote public safety; and
- manage the impact of heavy vehicles on the environment, road infrastructure and public amenity; and
- promote industry productivity and efficiency in the road transport of goods and passengers by heavy vehicles; and
- encourage and promote productive, efficient, innovative and safe business practices. (section 3, *Heavy Vehicle National Law 2012 (Qld)*)

To achieve these objectives, the NHVR believes that a sound evidence base is essential to execute its' regulatory functions, which include:

- regulatory development and rule-making - by supporting the assessment of the social and economic impact of potential regulatory interventions
- statutory decision making – by informing the NHVR's accreditation and certification activities including the granting of Basic and Advanced Fatigue Management (BFM/AFM).
- compliance and enforcement activity - by informing the NHVR's investigation activities and compliance actions and by meeting the standards of evidence that are required to take necessary enforcement action
- educating and informing the industry - by informing the NHVR's safety promotion, training and education work, enabling the NHVR to more effectively target its activities and provide relevant and up-to-date advice to industry
- providing advice to governments - by enabling the NHVR to provide authoritative and independent advice on regulatory matters and to meet mandatory reporting obligations

The evidence base should encompass a diverse range of data including:

- *Industry data* – The NHVR collects data from drivers, the road freight industry and other industries through the exercise of statutory information gathering powers. This includes information on the number of hours worked and rested by drivers, driver fatigue management practices used by industry, and lead in and lag indicators of fatigue.
- *Compliance data* – The NHVR is responsible for the enforcement of offences against the HVNL and has access to information on this compliance activities and outcomes.
- *Consumer complaints data* – This data may inform compliance actions or comprise the evidence required for enforcement actions. This data is also essential for ensuring that the NHVR is delivering suitable education and information to industry.
- *Fatigue related incidents and insurance claims data* – Whilst there is considerable inconsistency between the collection of data on incidents and claims related to fatigue, this provides the most valid indicator of the effects of fatigue on driving performance.

- *International approaches to regulation* – The NHVR periodically reviews how other jurisdictions approach fatigue management for heavy vehicles and strategically engages with international regulators.
- *Expert knowledge and practical know-how* – The knowledge and experience of subject matter experts – including the NHVR's staff, external consultants, industry representatives and members of the Fatigue Expert Reference Group.

The NHVR is currently working on developing a Data Strategy and Data Sharing Protocol, which focuses on operational data needs and collection. To maximise efficiency and avoid unnecessary duplication, the NHVR believes that the Heavy Vehicle Driver Fatigue data framework should anticipate strategic inclusion in these projects.
Whilst recognising the concerns raised by industry on the potential abuse of identified information, the NHVR believes that the combination of statutory protections in the HVNL and the Queensland Information Privacy Principles provides sufficient safeguards to industry.

Prioritisation of policy issues

The NHVR partially supports the criteria for prioritisation of fatigue issues specified in the Discussion Paper. However, the NHVR believes that additional criteria are needed to prioritise:

- potential risks to driver and public safety
- potential benefits in terms of improved industry efficiency/productivity
- issues that improve national harmonisation

Potential risks to driver and public safety

The primary objective of the HVNL and NHVR is to promote public safety as it relates to heavy vehicle operations. Whilst obvious, the NHVR believes that the criteria should explicitly give priority to investigating heavy vehicle driver fatigue issues that offer the greatest opportunity for improving driver and public safety or rectifying unsafe activities.
Whilst there are a number of different definitions of safety, the NHVR believes that safety is achieved when acceptable control and management over the hazards and risks inherent to the task being performed exists. Accordingly, in order to understand the net safety position, the investigations into heavy vehicle driver fatigue issues will need to investigate both the hazard/risk and the controls and management of the issue.
This approach is particularly relevant when considering the impact of the continuous hours of work in AFM. Data collected by the NHVR shows that despite having permission to operate up to 15.5 hours in a work opportunity of 17 hours, which theoretically creates a high risk of a driver becoming impaired by fatigue, the controls and management practice required for participation mean that drivers work substantially less than this. This data is discussed further in subsequent sections.

Improved industry efficiency/productivity

After safety, a key objective of the HVNL is to encourage and promote productive, efficient, and innovative business practices. To do this, the NHVR believes an additional criterion is needed to give priority to issues and initiatives that have the greatest potential to improve the efficiency or productivity of industry.

Issues that improve national harmonisation

Despite the consolidation process that led to the drafting of the HVNL in its current form, there remains a number of local variations in the application laws in participating jurisdictions. These variations from the HVNL set different requirements for work and rest, for work diary use and distribution and for record keeping.
The inconsistencies between rules in different jurisdictions continue to confuse drivers, add to the regulatory burden of compliance as operators have to manage multiple different regulatory requirements and, in some circumstances provide an unfair commercial advantage over operators from other states.
We acknowledge that some of the inconsistencies do not require further investigation for harmonisation. Others, however, are based on contestable assumptions and would benefit from being investigated as part of the Heavy Vehicle Fatigue Management Data project. The NHVR has nominated three variations in the following section, which it believes should be investigated and, if appropriate, harmonised as a matter of priority:

- Extending the work diary radius
- Private use of heavy vehicles
- Occupying driver's seat as rest.

The NHVR believes that priority should be given to issues that help achieve improved national outcomes, with lower priority being given to issues that are regional, or limited to subgroups of regulated entities.

Priority issues in the Discussion Paper

The Discussion Paper provides a description of eight potential fatigue management issues identified through the consultation process. These eight issues have been prioritised using the criteria stipulated in the Discussion Paper. Whilst drawn from submissions received during the consultation process, the NHVR believes that, in some cases, the descriptions of the issues do- not reflect current research or industry knowledge and may overestimate the potential safety risk. Further, the description does not systematically investigate the potential perverse safety outcomes of changing the arrangements.

For example, the case is made that the residual fatigue risk of working nose-to-tail shifts could be avoided by the introduction of rolling 24 hour periods for counting of time. Whilst this may be true, there is no discussion of the potential safety impacts that might occur if drivers, fearing the increased complexity and potential enforcement uncertainty of the new approach, limit the number of the short rest breaks they take during a shift. In this example, expanded upon in the next section, it is possible that there would be no net benefit to industry or public safety as the "residual-risk" would be replaced with the risks associated with longer periods of continuous driving and not taking rest.

The following paragraphs outline the NHVR's response to the issues identified in the Discussion Paper.

Impact of nose-to-tail schedules on driver fatigue

The NHVR believes that the discussion paper does not adequately represent all issues associated with nose-to-tail schedules. Clearly, the more work a driver does in a certain period, the more likely they are to be at risk of fatigue impairment. This increased risk, however, should not be overstated and has to be assessed relative to the safety and compliance risks associated with any proposed or

potential alternative arrangements. Changes should only be considered when the empirical evidence shows that there are clear safety benefits to be gained.

Supporters of reform to the counting rules contend that linking counting to the end of a relevant major rest break has created a residual fatigue risk by allowing drivers to work for more than the daily work limits. It is assumed, though not explicitly stated, that this residual risk is equivalent to that of working for the same amount of time continuously.

The NHVR believes that this assumption over estimates the potential fatigue risks and is not founded by research literature on the fatigue risk associated with continuous hours of wakefulness. In her advice to the NTC, Professor Williamson acknowledges this, explaining that any fatigue risk associated with nose-to-tail shifts has more to do with the quality of sleep and rest "between the shifts".

According to the American Academy of Sleep Medicine and Sleep Research Society, optimal sleep for normal conditions is seven (7) continuous hours. The Academy further recommends nine (9) hours continuous sleep to allow a person to recover from a sleep debt (Watson, 2015).

An analysis of "nose to tail" shifts received by the NHVR shows that drivers working in this arrangement have a minimum seven (7) hour sleep opportunity on one day followed by a shorter work opportunity and longer sleep opportunity on the following day.

The NHVR observes that this sleep arrangement, a consequence of the mandatory maximum work and minimum rest limits stipulated by the law, provides drivers with an opportunity for adequate sleep in the seven (7) hour break and for recovery from any sleep debt on the following day.

Supporters of reform have also suggested that the risk of a driver being impaired by fatigue could be avoided by returning to a rolling 24 hour period linked to the end of any rest break. This statement is not correct. Whilst this arrangement may prevent any increased risk associated with the crunching of hours, it does not affect the risk associated with the length of the driver's shift.

Further, the creation of a rolling 24 hour period may be linked to other safety risks. For example, the NHVR has received repeated advice from industry that drivers respond to rolling counting periods by adopting driving routines with fewer stops from driving and longer periods of continuous driving. In a study of truck driver behaviour and perceptions (Haworth, *et al.*, 1991), it was found that truck drivers who stopped less frequently and drove continuously for longer were more likely to be involved in a fatigue related crash.

Clearly, any shift of fatigue risk from one scenario to another does not provide a net safety benefit. Accordingly, the NHVR recommends that any research into nose-to-tail schedules should include analysis of the potential safety and fatigue risks associated with alternative counting regimes, including the potential effects on within work rest and length of continuous driving.

Quantity and Quality of sleep attained in major rest breaks

The NHVR agrees that the duration and timing of a driver's sleep are important contributors to their potential fatigue impairment. However, the NHVR believes that research should focus on aspects of the regulatory framework that directly inhibit drivers from taking adequate rest. These include two-up driving (in both Standard Hours and BFM) and the "split rest defence".

As noted earlier, the *American Academy of Sleep Medicine and Sleep Research Society 2015 Consensus Statement* recommended seven (7) continuous hours of sleep as optimal for non-sleep deprived adults and nine (9) continuous hours of sleep for adults with a sleep debt. The current work and rest limits for Standard Hours solo and BFM solo allow operators and drivers to get this sleep.

However, the NHVR is concerned that the statutory limits for two-up drivers in Standard Hours and BFM do not allow drivers an opportunity for 7 continuous hours of sleep, the recommended optimal amount required each day.

Two-up drivers working under Standard Hours are, at a minimum, only required to rest for 5 continuous hours in a 24 hour period. This limit means it is likely that drivers will develop a sleep debt and continue to drive with this sleep debt affecting their performance. In the long term this risk may be partially offset by the requirement to have 10 continuous hours of stationary rest in a period of 52 hours. However, the NHVR is not aware of any research that demonstrates this.

In relation to BFM, the law sets no requirement for drivers to take long rest to allow them to sleep in a 24 hour period. In a seven (7) day period, drivers are required to the have 24 continuous hours stationary rest time and 24 hours stationary rest time in blocks of at least 7 continuous hours of stationary rest time.

The analysis of the real world data conducted by the NHVR during the development of the *Livestock Transport Fatigue Management Scheme* did not investigate the duration on sleep by drivers in two-up driving arrangements. This was because the sample only included one example of a BFM two-up driving arrangement. It was noted in this limited sample, however, that the average sleep opportunity over the three month period was shorter than that of the other solo drivers. The NHVR supports further research into the exposure to short sleep opportunities by two-up drivers.

We note in the Discussion Paper the claim that "a major rest break for a driver on BFM is six hours". This is not correct as the major rest break for a solo driver work under BFM is seven (7) continuous hours of stationary rest. It is also potentially misleading as it suggests that six (6) hours is acceptable practice on a routine basis when it clearly prevents a driver from getting optimal sleep.

A solo driver working under BFM who does not have at least seven (7) continuous hours of stationary rest in a 24 hour period commits an offence. However, in court, they may claim the ***split rest break defence*** if they can show they took six (6) continuous hours of stationary rest time and two (2) continuous hours of stationary rest time instead and had seven (7) consecutive hours of stationary rest in the previous 24 hour period.

The split rest break defence only applies to drivers – it does not apply to any other party in the Chain of Responsibility (CoR). It is possible for a scheduler who allows driver to work split rest arrangements to commit an offence, even if the driver successfully claims the defence themselves.

The NHVR believes that this distinction (between a statutory limit and legal defence) is significant as it discourages industry from habitually engaging in a higher risk activity because of the limited sleep.

Night time driving and ending shifts at night

The NHVR recognises that working at night carries a higher risk of becoming impaired by fatigue than working during the day. This can be for a variety of reasons – the circadian rhythm of the human

body, the length of sleep at night versus sleep during the day and the quality of sleep at night versus that of sleep during the day.

The NHVR observes that all work and rest modules currently try to specifically address the issue of night work, though there has been no systematic investigation of the effectiveness of these countermeasures since they were introduced in 2008. As with other potential fatigue risks, the NHVR would support regular analysis of work and rest records to assess the relative frequency of night sleep in heavy vehicle drivers in Australia.

Continuous hours of work - AFM

The NHVR does not believe that this is a priority issue for further research. A body of research literature already exists showing a link between time spent awake (prolonged wakefulness) and fatigue crash likelihood. However, data collected by the NHVR as part of post implementation surveillance suggests that the risk is infrequently used by AFM participants and is safely managed when it is used.

Advanced Fatigue Management offers transport operators who can demonstrate that they conduct an effective fatigue risk management system, the flexibility to set their own work and rest hours. Typically these hours involve longer periods of continuous wakefulness (up to 17 hours between sleep opportunities) or extended days of work (between 7 and 21 days between reset rests).

Potential participants in AFM are screened by the NHVR to ensure that their fatigue risk management system is able to identify and manage any increase fatigue risks with additional offsets or controls. To do this the NHVR uses the Risk Classification System to assess the level of fatigue risk and a modified version of the fatigue risk trajectory to assess the adequacy of proposed countermeasures.

The Risk Classification System is a composite measure of fatigue risk that looks at the relative fatigue risks associated with seven principles:

1. With-in work rest
2. Time spent continuously driving
3. Length of sleep opportunity
4. Working between midnight and six in the morning
5. Stopping work between midnight and six in the morning
6. Time spent between sleep opportunities
7. The number of days between reset rest/sleep.

The fatigue risk trajectory was developed as a defence-in-depth strategy for the management of fatigue risks, arguing that just as there are multiple layers of hazards and errors prior to a fatigue related incident, there needs to be multiple layers countermeasures factored into the fatigue risk management system (Dawson and McCulloch, 2005).

All applicants/accreditation holders must submit a description of their fatigue risk management system and describe the monitoring and countermeasures required during planning and before, during and after driving tasks. The greater the potential fatigue risks being asked for, the stronger and more comprehensive the countermeasures have to be.

In developing the Risk Classification System, the NHVR reviewed relevant research on the seven fatigue management principles and published a summary of the relevant research. The *Risk*

Classification System for Advanced Fatigue Management Evidence Statement, Version 1 (Evidence Statement) was then peer-reviewed by a group of industry, government and academic experts before publication on the NHVR's website (NHVR, 2013).
Because the fatigue risks associated with the risk principles are so well documented, stakeholders have expressed concerns that the Risk Classification System gives transport operators legal authority to schedule hours that are widely recognised as having high risks. Whilst there is a strong understanding of the fatigue risks associated with each of the seven principles, there is less understanding on risk exposure in under AFM and on the effects of safety management systems. However, there is sufficient evidence available for the NHVR to be satisfied that there are no unmanaged safety risks associated with AFM.

AFM accreditation originated from the Fatigue Management Program (FMP) Pilot conducted by the Queensland Department of Transport and several Queensland based transport operators in the 1990's. During the Pilot, participant operators and drivers were surveyed on three separate occasions (start, during and close of the Pilot) and their responses compared. The evaluation report (Burgess-Limerick, R and Bowen-Rotsaert, D, 2002), found that drivers involved in the FMP operators safety management systems were more likely to report:

- greater involvement in determining schedules and rosters
- that sufficient time was allowed in their schedule for breaks and non-driving work
- a reduced frequency of fatigue indicators overall, and particularly of performance related fatigue indicators
- greater knowledge of fatigue management
- that management played their role in managing fatigue, and
- that their company's fatigue management policy was effective.

Drivers were less likely to report:

- speeding to meet a deadline
- feeling tired and
- difficulty concentrating.

Drivers in the Pilot, on average, drove less hours on a weekly basis than an industry comparison group of drivers.

The report also found that, compared to an industry comparison group, transport operators in the Pilot were more likely to be well aware of the range of commonly recognised stressors and other fatigue inducing factors.

Businesses also reported that since commencing the pilot, they were more likely to respond to fatigue problems, and achieve a positive outcome for drivers and to take a proactive role in managing their drivers' fatigue.

These outcomes are consistent with emerging research supporting the importance of safety management systems in the heavy vehicle sector (Mooren, *et al.*, 2014). This research reviewed insurance claims of Australian transport businesses and found that companies with safety management systems that involved proactive risk assessment, worker consultation on safety issues, and paid for time worked were associated with fewer insurance claims.

Earlier this year, the NHVR commenced post implementation surveillance of AFM participant's with a view to better understanding the exposure to fatigue risks, use of fatigue management practices

and safety outcomes. The responsible officer of all AFM participants in Australia was called, informed of the post implementation surveillance and sent the survey shown in Attachment 2. Participants were given two weeks to complete and return the survey by email. Of the 39 parties called, survey responses were received from 22, given a return rate of 56.41%.

There was considerable variation in the data returned from the survey, reflecting the variation in businesses who participate in AFM, which ranges from owner-drivers to multi-national organisations. However, the data covered 777 drivers who had driven just short of 127 million kilometres in the past twelve months.

It was reported that, on average, drivers working under AFM

- worked 10:20 hours per day (range 5:00 to 15:00 hours)
- slept 8:15 hours per day (range 7:00 to 10:30 hours)
- worked 52:30 hours per week (range 7:20 to 100 hours)
- were more likely to sleep in a bed (67.06 %) than a sleeper berth (38.82%)
- were more likely to sleep at night (61.19%) than during the day

All participants (100%) reported training drivers of sleep related health conditions, including sleep apnoea and consulting the drivers on their health. The majority of the businesses (81.8%) factored additional discretionary rest into their schedules.

In terms of fatigue related incidents,

- 2.5% of drivers reported being fatigued at work,
- 36.3% of drivers were removed from work due to fatigue,
- 3 out 652 of vehicle incidents/crashes (0.5%) were due to fatigue.

The average work performed under by AFM each week, is consistent with that found during the FMP pilot and significantly lower than that permitted in Standard Hours and BFM. In terms of fatigue risk exposure, the average work and sleep of an AFM driver on a day would be rated by the Risk Classification System as low risk.

The data on fatigue related incidents suggests that AFM participants are able and willing to reallocate potentially fatigued drivers, even when the driver has not identified themselves as fatigued.

This information , combined with the previous research and post implementation data, indicates that despite having legal authority to operate under higher risks, these risks are not typical of AFM participants and that countermeasures are in place that minimise the effects of using the high risks. The NHVR believes these results address some of the concerns raised in the Discussion Paper and is committed to continuing the post implementation surveillance.

Continuous hours of work - BFM

Basic Fatigue Management was developed as a transitional scheme to facilitate the uptake of fatigue management accreditation by industry. Since its introduction, BFM has not been reviewed in terms whether it is an effective mechanism for managing fatigue and/or whether it is being utilised appropriately. During the post implementation surveillance of AFM participants, two operators provided responses in relation to their BFM operation. However, looking at the responses, it was deemed that they were not representative of broader BFM participants because of their AFM

system. Therefore, the NHVR supports further investigation of the risk exposure, risk management and safety performance of BFM participants as a priority outcome of the project.

Minimum rest times for BFM two-up drivers

The NHVR supports further investigation of short rest breaks for BFM two-up drivers. Under the current regulatory arrangements, it is possible for a driver to legally drive continuously for up to 14 hours. The Risk Classification System categorises five or more hours of continuous driving as a high fatigue risk and 14 hours or more of continuous work as a high fatigue risk. This is because there is clear evidence that both continuous driving and prolonged wakefulness elevate a driver's fatigue impairment.

Whilst the NHVR recognises that the current arrangements were developed in order to prevent potential safety risks of requiring under-rested drivers from being required to drive, the NHVR believes they allow uncontrolled, unaddressed high fatigue risks which could be simply managed by the introduction of short rest break requirements. Short rest breaks can both slow down the onset of fatigue and help offset any fatigue impairment.

The NHVR believes that data is needed to explore the relative risk exposure and, if the risk created by continuous driving is greater than the risk of driving by someone who hasn't had sufficient rest, the introduction of short rest breaks.

In any case, the NHVR believes that participants in BFM should be advised/educated of the potential safety risks associated with both activities and best practice two-up work and rest arrangements.

Impact of local work

The NHVR is aware of commercial data suggesting that there has been an increase in the crash rates for local work (100 km work). Whilst the trend is clear, what is less clear is what is causing this increase. The only difference between local work and 100+ km work is the requirement to keep a written work diary. The requirement to adhere to work and rest hour limits and the general duty to not drive while impaired by fatigue do not change.

A significant portion of the fatigue management regulatory framework is devoted to setting record keeping requirements, including mandating the completion of a written work diary when working outside of a 100 km radius. However, there is little evidence available that links record keeping requirements to safety outcomes. When considering the suitability of a 200km radius for the HVNL in 2011, the Independent Expert Panel advised Transport Ministers that there is no empirical evidence linking completion of the written work diary to improved safety outcomes (Independent Expert Panel, 2011).

In 2015, the NHVR requested the Fatigue Expert Reference Group to provide empirical evidence of the safety impact of increasing the radius to 160 km for primary production transport. The group's advice confirmed that there was no specific research evidence but that, in their opinion, the safety impact would depend on the nature of enforcement activities for driver working within the 160 km radius.

The NHVR and its partner agencies have a variety of tactics in place to enforce the driving hours and fatigue impairment of drivers working within the 100 km and 160 km radiuses. However, the NHVR has received reports from industry that operators who work only local area work are more likely to

disregard the work and rest limits in the HVNL and the general duty to not drive while impaired by fatigue.

The NHVR also recognises that heavy vehicle drivers can operate mixed rosters including both local 100 km and 100+ km work. When this occurs on a single day, the HVNL requires the drivers to record all work – local area or otherwise. However, when a driver works within the 100 km radius on one day, the HVNL does not require any records to be made in the driver's work diary. Therefore, it is possible, for work and rest records kept in a written work diary to underestimate the potential fatigue impairment, particularly the cumulative fatigue impairment.

The NHVR would support further research into the work and rest patterns of local area drivers, their fatigue management practices and safety performance.

Threshold application of fatigue laws and record-keeping

The NHVR is also aware of commercial data suggesting that there has been an increase in insurance claims relating to vehicles between 4.5 and 12 tonnes. The NHVR believes that it is less common for drivers to swap from an unregulated vehicle into a regulated vehicle but agrees that, as with local area work, there is a potential for unrecorded work to impact on a driver's regulated work. Nevertheless, only considerable safety concerns could justify any potential increase of regulatory burden to industry. Accordingly, the NHVR would support investigation of the exposure to fatigue risks, fatigue management practices and safety performance of drivers using heavy vehicles less 12 tonnes.

Driver wellbeing and fitness to work

It is generally acknowledged that a person's health affects their physiological reactions to the stresses of driving a heavy vehicle. Whilst recognising that this could be an a safety issue for drivers of fatigue-regulated heavy vehicles, the NHVR believes that it is currently assessed in most driver licensing legislation and, in the case of BFM and AFM is managed though health and fitness standards. Rather than investigation, the NHVR believes industry and public safety would be better served by ongoing health promotions and education to raise awareness of potential issues.

Additional specific issues

Drowsiness

The NHVR welcomes the opportunity to work with the Alertness, Safety and Productivity Cooperative Research Centre (ACRC) to investigate the role of drowsiness in heavy vehicle drivers. There is significant research literature that shows how drivers impaired by fatigue lose their ability to make good decisions about when to stop working. However, there is less evidence on a driver's ability to anticipate impending loss of alertness and the implications of this for their driving performance.

Whilst the NHVR supports attempts to develop technology that detects/predicts driver drowsiness, we believe that the research should be more than purely academic research aimed at validating predictive models. The research needs to provide specific insights into the development of drowsiness and its impact on driving performance and indicators of drowsiness that can be used by drivers to prevent any impaired performance.

Private use of vehicles

The NHVR understands that fatigue-regulated heavy vehicles are sometimes used for private purposes (such as driving to a hotel or shop at the end of a trip) and this use may be managed safely. Section 248B of the HVNL in New South Wales allows drivers up to one hour of driving time in their 24 hour break to drive for permitted personal activity. To minimise fatigue impacts of this additional driving, the law sets certain requirements about when the time can be used. The NHVR would welcome investigation of the fatigue risks and safety performance of drivers using this arrangement to assess if it is suitable for extension into other participating jurisdictions.

Occupying driver's seat as rest

The HVNL definition of work expressly includes "occupying the driver's seat of a fatigue-regulated heavy vehicle while its engine is running". This is a departure from the definition of work included in the previous model legislation, which did not include this arrangement. The NHVR has received several representations that the new definition of work creates an unreasonable impost on certain industries. Concrete agitator drivers, for example, are required to stay in the driver's seat with the engine running when working on infrastructure projects, even when they have no other duties to perform.

The NHVR understands that New South Wales introduced a variation into the application act for the HVNL (section 248A) that expressly allows drivers to record time spent occupying the driver's seat as rest. As the new arrangement has been in effect for over one year now, the NHVR seeks an investigation into the effects of this change on public safety and industry productivity and the potential exposure to risk and safety impacts of incorporating a provision similar to that of s248A into the HVNL.

Governance and Funding

The NHVR believes that the scope of the Data Framework will depend greatly on resource availability within participating agencies.

However, the NHVR agrees with the general approach set out in the paper, including:

- Alignment of the data definitions to facilitate comparability between data sets,
- Progress towards an open data approach for de-identified industry data, and
- Introduction of standard data elements relating to fatigue during crash investigation including the three questions in the Discussion Paper.

Ultimately, the NHVR believes that the most cost effective data framework model would be based on the NHVR integrating the heavy vehicle data framework with its other data work, including the Data Strategy and Data Sharing Protocols. Such an approach would minimise collection and management costs, provide a single point of the contact for data governance and allow for data to be used to improve day-to-day operations of the NHVR. However, the complexity, set-up costs and time required to develop a fully integrated data framework may make it more suitable as a long term objective.

To allow timely delivery of the potential regulatory improvements, the NHVR would support outsourcing various aspects of the data framework. This could include the engagement of:

- consultants to deliver key elements such as the data model, data definitions and stakeholder requirements,

- research bodies to investigate priority fatigue management issues and potential regulatory reforms, and
- survey professionals to undertake periodic industry surveys looking at risk exposure (based on driver's work and rest hours), risk management beliefs, attitudes and actions, and safety performance.

We welcome your ongoing collaboration on this project. If you require any further information on the NHVR's submission, please contact Andreas Blahous on 07 3309 8541 or andreas.blahous@nhvr.gov.au.

Yours sincerely,

Geoff Casey
Executive Director Productivity and Safety

Attachment 1 – Summary of NHVR responses to "Questions to consider"

1. Do you agree with the fatigue issues identified in the discussion paper? Are there other issues that should be included?

The NHVR agrees with some of the issues raised in the paper, but believes that some issues have been prioritised too highly, these include:

- Nose-to-tail shifts,
- Adequacy of sleep in major rest break,
- Continuous hours of work in AFM, and
- Impact of unlawful activities

The NHVR believes that additional issues for consideration in this project include:

- Drowsiness and education on driver's identifying/managing fatigue
- Suitability of the work diaries as a control/the 100 km work diary radius
- Impact of private use of vehicles
- Use of the driver's seat for rest.

2. What is your view on the proposed prioritisation of fatigue issues identified in the discussion paper?

The prioritisation does not seem to factor in the existing body of fatigue knowledge which may inform the definition of the issue or provide the evidence base for resolution of potential issues. The NHVR believes that additional criteria are needed, being:

- Risks to safety
- Benefit to industry
- Nationalisation of regulations

3. What other data collection activities exist in government or industry that the data framework should consider?

The NHVR believes that the Discussion Paper adequately captures data collection relating to heavy vehicle fatigue related incidents. The NHVR is currently working on developing a Data Strategy and Data Sharing Protocol, which focuses more on operational data needs and collection.

4. Do you agree with the need for more comparable and accessible fatigue data to underpin future reforms? If not, what alternative approach do you propose?

The NHVR believes that data is essential to informing potential reforms to fatigue management regulatory framework. The data is also essential to the delivery of NHVR's business as usual services, and the data framework needs to acknowledge this. In regards to regulatory reform, the NHVR believes that the research design should always encompass not just the fatigue risks of concern, but the potential safety risks associated with possible regulatory alternatives. The NHVR believes that regulatory reform should not proceed unless there is evidence of a net safety benefit.

5. Do you support an open data approach to fatigue data? Consider in your response the benefits and challenges of open data compared to other data handling approaches.

In general, the NHVR supports an open data approach. There are numerous precedents of Australian governments using of an open data approach as well as innovative data analysis through data prediction competitions (e.g., kaggle). However, the NHVR recognises the importance of protecting the rights of individuals and is bound by the Queensland Information Protection Principles.

6. What is your view on the proposed framework methodology relating to proposed terminology and coding, proposed system changes and proposed process changes?

The NHVR believes that the long term benefits of "data governance" outweigh the short term impositions. Agreeing stakeholder requirements, data definitions, access rights and processes for the supply and maintenance of data storage are essential elements of data governance and need to be addressed in the final data framework.

7. What is your view on the validity and characteristics of a fatigue likelihood scale?

The NHVR believes that this approach possibly duplicates the RCS, which also provides a composite measure of fatigue likelihood. However, if it can be used to assist in the identification and management of driver fatigue/drowsiness, the NHVR would be interested seeing the issue developed further.

8. What is your view on the proposed framework principles?

The NHVR supports the proposed framework principles.

9. What is your view on the data collection and research activities proposed in the discussion paper?

Research to inform regulatory reform is useful but the NHVR believes that the data project could deliver significant improvement if the evidence based used for the NHVR's business service delivery.

10. How best should the data framework be funded and governance arranged? Consider in your response organisations that could be best placed to undertake responsibility for the framework.

Three options have been historically reviewed: assumption by a single agency, collaboration in a federated data model or outsourcing to research agencies.

All options have their benefits and downsides but, long term, the assumption of the data project into the NHVR Data Strategy, would give the best return on investment provided the data could be used for both research and business as usual.

Regardless of the option preferred, the NHVR's participation would be subject to appropriate resource allocation.

Attachment 2 – Survey sent to AFM operators

Hi [NAME],

Thanks very much for taking my call earlier.

As discussed on the phone I have included some general questions below in reference to your organisation's use of the AFM module of the NHVAS.

I would very much appreciate it if you could supply answers to as many of the following questions as possible. Your answers can be as brief or comprehensive as you like.

Please note that all answers provided to the below questions will be de-identified to ensure anonymity and that they will not be used for enforcement purposes. Having said that, if you still do not wish to provide answers to any of the below questions, please feel free to leave them blank.

Questions	Answers
How long have you been accredited in AFM?	
Since being accredited,	
• How many incidents/crashes have occurred in total?	
• How many of these incidents/crashes were found to be related to fatigue?	
In the last 12 months,	
• How many incidents/crashes have occurred in total?	
• How many of these incidents/crashes were found to be related to fatigue?	
• Approximately how many kilometres has your fleet travelled?	
• How many drivers have participated in AFM?	
• How many drivers have reported being fatigued?	
• Have you withheld any routes/shifts from drivers because of fatigue?	
What is the average driving time for your drivers in a day?	
What is the average driving time for your drivers in a week?	
What is the average rest time for your drivers in a day?	
How much sleep, on average, would your drivers get each day?	
What percentage of sleep opportunities are in a sleeper berth?	
What percentage of sleep opportunities are in a bed?	
What percentage of sleep opportunities are at night (in the dark)?	
Are drivers informed and consulted about Sleep apnoea and other fatigue related diseases and conditions?	
Do schedules/rosters allow time for extra rest if necessary?	
How are your drivers remunerated?	
• Hourly rate	
• Flat day rate	
• Day rate with overtime	
• Flat weekly rate	
• Weekly rate with overtime	
• Flat rate for every truckload carried	
• Rate for each trip based on kilometres travelled and tonnage carried	

• Flat rate for each trip based on kilometres travelled	
• Other	

I very much appreciate your time and assistance in this matter.
Please don't hesitate to contact me if you have any questions.
[SIGNATURE BLOCK]

References

Heavy Vehicle National Law Act 2012 (Qld) s. 3 (Austl.).

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