Reforms to Heavy Vehicle National Law (HVNL)

Consultation Regulation Impact Statement

National Transport Commission | 9 October 2023

Title:	Heavy Vehicle National Law (HVNL) Consultation Regulation Impact Statement (C-RIS).
Purpose	The purpose of this C-RIS is to seek feedback and comment from stakeholders on the problems identified in relation to Heavy Vehicle National Law Reform, the options considered and the preliminary assessment of these options.
Abstract	This document sets out the issues and options being considered as part of the National Transport Commission's (NTC) review of the Heavy Vehicle National Law. It considers three policy areas: fatigue, access and accreditation.
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More information about how to complete a RIS can be found in the Australian Government Guide to Regulation Impact Analysis, and the related User Guide. These guides can be found on the Office of Impact Analysis website https://oia.pmc.gov.au/resources/guidance-impact-analysis.

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Foreword

Michael Hopkins, Chief Executive Officer

The National Transport Commission (NTC) has worked closely with the heavy vehicle industry, governments, regulators, and law enforcement to develop the options in this Consultation Regulation Impact Statement (C-RIS).

While the Heavy Vehicle National Law (HVNL) has improved road safety and laid the foundation for a streamlined national system for regulating heavy vehicles, it has faced criticism for being overly prescriptive, inflexible, and complex.

The HVNL Review conducted by the National Transport Commission identified several overarching problems with the structure and design of HVNL, which present a barrier to an effective and flexible regulatory environment.

The objective of our work has been to improve the effectiveness of the HVNL by looking for new ways to achieve regulatory objectives – in particular, safety and productivity.

The C-RIS follows on from a Decision Regulation Impact Statement completed earlier this year that set the foundations for the updated law. It sets out options for three important policy areas of an updated Heavy Vehicle National Law that were considered out of scope for the previous D-RIS: fatigue management, regulatory reforms relating to access and regulation of the National Audit Standard.

This C-RIS considers how the focus of the law can shift from complex record keeping and looks at how the enforcement regime can be more balanced.

The current access regime is complex and challenging for operators to understand and comply. The C-RIS recognises the missed opportunity to improve operator productivity, leverage newer and safer vehicles and puts forward more contemporary options for consideration.

It also examines how the National Auditing Standard can be improved by removing duplication and increasing reliability.

I'd like to thank the many stakeholders who have given generously of their time to help develop these options. In particular, I'd like to thank the members of our Reform Advisory Committee + who have provided the practical insights needed to achieve reform that will make positive improvements to the heavy vehicle sector and set it up for a safe and productive future.

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Executive Summary

The review of the Heavy Vehicle National Law (HVNL) led by the National Transport Commission (NTC) and subsequent consultation processes have identified a series of foundational changes to the HVNL that are critical for the law to accommodate the current and future needs of Australia's heavy vehicle industry.

The NTC recently published a Decision Regulation Impact Statement (D-RIS) that outlined high level changes to the HVNL regulatory framework, principally the primary law, to create a modern platform for future reforms to HVNL policy (referred to as D-RIS (2023) henceforth). The proposed amendments to the HVNL recommended in D-RIS (2023) were endorsed by ministers at the 9 June 2023 Infrastructure and Transport Ministers Meeting (ITMM).

This Consultation Regulation Impact Statement (C-RIS) is part of the next phase of the HVNL reform program. The policy proposals presented in this C-RIS aim to deliver outcomes which will help improve the HVNL so it better meets its Object. It has been prepared by the NTC under direction from ITMM to consider options for future improvements to the HVNL, in line with the package of reforms endorsed for progression by ministers in August 2022.

This C-RIS focuses on ITMM reform package policy areas that were not considered in the previous D-RIS (2023), including fatigue management and increases to general mass and dimension limits for heavy vehicles. This C-RIS also considers the National Audit Standard (NAS), to build on the proposed changes to heavy vehicle accreditation that were presented in the previous D-RIS (2023).

The purpose of this C-RIS is to seek feedback and comment from stakeholders on the problems identified, the options considered and the preliminary assessment of these options.

Case for change

This C-RIS aims to address several issues within the HVNL, including:

- **Problem statement 1:** There are several limitations to the HVNL that contribute to ineffective fatigue management.
- **Problem statement 2:** Limits to general access to the road network under the HVNL creates administrative burden and impacts on freight industry productivity.
- **Problem statement 3:** Confidence in the robustness of the current National Heavy Vehicle Accreditation Scheme (NHVAS) could be improved; there is a lack of consistency or recognition between accreditation schemes and a regulatory environment where operators are faced with multiple and duplicative assurance audits.

To resolve these key problems, this C-RIS presents a series of policy proposals, the outcomes of which aim to improve the HVNL so that it better meets the object of the law.

Approach to analysis

A combination of quantitative and qualitative analysis has been undertaken to assess proposed options.

The proposals subject to quantitative analysis are:

- Expanding the scope of fatigue regulated heavy vehicles
- Increase to heavy vehicle general mass limits (GML)
- Increase to prescribed heavy vehicle height limits
- Increase to prescribed length limits for 19m vehicles.

Breakeven analysis has been used to assess options for expanding the scope of fatigue regulated heavy vehicles, while other proposals have been assessed through an estimation of benefits. Other reforms have been analysed through qualitative analysis, either via multi-criteria analysis or a discussion of potential impacts.

The level of analysis undertaken was informed by findings of the impact analysis, stakeholder feedback and the availability of data. The analysis of the proposed options in this C-RIS highlights the challenges of incomplete, inconsistent, and otherwise unknown information about the freight industry. Data availability, and challenges in identifying heavy vehicle crashes where fatigue is a causal factor have heavily shaped the approach to analysis.

It is anticipated that further analysis of costs and benefits will be undertaken in response to feedback on the C-RIS, to then be assessed as part of a further D-RIS process. Stakeholders are encouraged to provide evidence and information which could assist with further analysis of the proposed reforms. The D-RIS will be released in the first half of 2024 and will inform ITMM in determining what is the most efficient and effective regulatory approach, considering the outcomes of the consultation process.

Reform options and summary of impact analysis

Proposed options are presented across three reform areas: fatigue management, access, and enhanced operator assurance. Options considered under each of these reform areas, and a summary of their potential impacts is provided below.

Fatigue management

Policy options considered in this C-RIS related to fatigue management aim to deliver the package of fatigue reforms agreed by ITMM in August 2022. Policy options considered in this C-RIS include those described below.

Options are proposed that aim to simplify how **record keeping requirements** for operators are structured under the HVNL by streamlining requirements, moving them down the legislative hierarchy and giving the regulator more flexibility to change the form and format of fatigue records over time. These options also aim to remove duplicative offence provisions and administrative processes that no longer have a regulatory purpose.

Two options relating to simplifying record keeping requirements are considered, compared against the base case. A summary of impact analysis findings is provided below:

Table 1. Summary of record keeping requirements options and impact analysis

Overall impact	Summary of impact analysis findings
Option 1a: Remove duplicate prescriptive requirements and streamlining offences	
Improvement	Drivers and operators required to complete a work diary would be likely to benefit from the consolidation of information required in the work diary as it would be likely to reduce the risk of errors by drivers, thereby reducing the risk of committing an administrative offence.
Option 1b: Remove administrative process requirements and offences	
Improvement	There is potential to streamline the law, reduce red tape and ensure the right balance of record keeping requirements where a work diary is lost or stolen.

A number of options are proposed that enable the **scope of fatigue regulated heavy vehicles** (FRHVs) to be expanded in the law, such that vehicles over 4.5 tonnes are by default considered FRHVs.

Analysis of these options is qualitative and quantitative. A summary of impact analysis findings is provided below:

Table 2. Summary of scope of fatigue regulated heavy vehicle options and impact analysis

Overall impact	Summary of impact analysis findings
Option 2a: Prescriptive requirements for HVs >12 tonnes only, full written work diary requirements for HVs >12 tonnes	
Negative impact	Public safety would be likely to improve, as drivers and operators of over 12t vehicles have increased awareness of fatigue management and records that provide assurance of compliance with the standard schedule. However, there are likely to be significant costs for industry to establish new record keeping requirements, including training, and additional costs for drivers in keeping work diary records.
Option 2b: Prescriptive fatigue requirements for HVs >12 tonnes only, 'lite' diary requirements for lower risk operations	
Neutral	Public safety would be likely to improve as drivers and operators of higher risk (over 12t) vehicles have increased awareness of fatigue management and records that provide assurance of compliance with the standard schedule, while those with lower risk continue to

	have flexible record keeping to manage fatigue risk. However, there would be considerable costs to industry in establishing 'lite' record keeping requirements and providing training. Albeit lite record keeping requirements would minimise impact of changes. Current fatigue related crashes would need to reduce by 84% to deliver a positive net economic benefit, and outweigh the costs associated with implementing this option.
Option 2c: Prescriptive fatigue requirements for all HVs over 4.5 tonnes, full work diary requirements for all operations.	
Negative impact	Public safety would be likely to improve, as all HV drivers and operators over 4.5t vehicles have a consistent understanding of fatigue management and records that provide assurance of compliance with the standard schedule. However, there would be significant costs to industry in establishing record keeping requirements, providing training and ongoing completion of the work diary.
Option 2d: Prescriptive fatigue requirements for all vehicles over 4.5 tonnes, work diary exemption for local work (all HVs)	
Neutral	Public safety would be likely to improve, as all heavy vehicle drivers would have a consistent application of fatigue management requirements. For vehicles under 12t doing local work there is a requirement to comply with the general schedule, and a change in current record keeping for vehicles under 12t travelling over 100km from base which would create additional costs for industry. There would also be a regulatory burden impact to drivers in keeping work diary records. Current fatigue related crashes would need to reduce by 72% to deliver a positive net economic benefit, and outweigh the costs associated with implementing this option.
Option 2e: Prescriptive fatigue requirements for all HVs over 4.5 tonnes, 'lite' work diary requirements for lower risk operations	
Negative impact	Public safety would likely improve as higher risk drivers and operators over 4.5t vehicles would have increased awareness of fatigue management and records that provide assurance of compliance with the standard schedule, while those with lower risk would continue to have flexible record keeping to manage fatigue risk. However, there would be considerable costs to industry due to substantial changes to work diary requirements for a large proportion of the fleet. Similarly, there would be costs to drivers in needing to keep a work diary where they have not previously been required to, albeit lite.

A number of options are proposed that enable a more risk-based approach to **enforcement,** both at the roadside and relating to minor administrative offences e.g., recording information in written

work diaries. There may be benefit in implementing more than one of these options to achieve a more risk-based enforcement approach to fatigue management.
The Office of Impact Analysis (OIA) has advised that under its guidelines, changes in offences are not within scope of the regulatory impact assessment process and therefore the analysis conducted to assess enforcement options focuses on the advantages and disadvantages of each option compared against the base case. A summary of key findings is provided in the table below:

Table 3. Summary of advantages and disadvantages of enforcement options against base case

Summary of advantages	Summary of disadvantages
Option 3a: Limit on the timeframe for issuing a work and rest breach infringement	
Encourages a risk-based approach to enforcement by focusing on the immediacy of fatigue risks, with flow on impact of reduced regulatory burden for operators and drivers.	May encourage greater use of the judicial system (replacing infringement notices) and may increase non-compliant behaviour particularly in areas where the likelihood of being intercepted is low.
Option 3b: Risk profile for work and rest breaches	
Encourages a risk-based approach to enforcement by building a more sophisticated risk-based approach for breach of work and rest rules.	Increases the complexity of the HVNL and may be more resource intensive than current state, requiring tracking of incidents to inform new breach levels.
Option 3c: Enable a review of fines for 'trifling' work diary offences	
Encourages a risk-based approach to enforcement by providing drivers with an opportunity to challenge fines.	May be more resource intensive, authorities may need additional time to review fines. There may also be implementation challenges in establishment of a national approach.
Option 3d: Driver defence for minor administrative errors	
Encourages a risk-based approach to enforcement by providing drivers with an opportunity to challenge fines.	May be more resource intensive, as an officer would need to consider the driver's defence when issuing a fine.
Option 3e: Support the use of formal warnings for administrative offences relating to work diaries	
Encourages a risk-based approach to enforcement by providing authorised officers with broader abilities to issue formal warnings and may mean drivers are less likely to receive a fine.	Implementation would require consideration of a formal warning national database.
Option 3f: Allow for a formal education option in lieu of a fine	
Encourages a risk-based approach to enforcement by providing an option for formal education to be issued by authorised officers instead of traditional compliance practices.	Requires the creation, management (e.g., updating) and administration of 'formal education' modules of tools to facilitate formal education, which may be resource intensive.

Note, consideration of options relating to **changes to work and rest requirements outlined in the general schedule for fatigue** were also recommended as part of the ITMM reform package, which was subject to a safety assessment being carried out. However, options to this effect are not being considered in this C-RIS due to the findings of the fatigue and safety assessment conducted by the Sleep Health Foundation on behalf of the NTC in July 2023, provided in Appendix C.

Access

Policy options relating to access are designed to improve access arrangements for heavy vehicles by reducing administration burden and improving productivity. Policy options considered in this C-RIS include changes to the following prescribed mass and dimension vehicle limits:

- Options for an up to five per cent increase in general mass limits allowed for all heavy vehicles to establish a new general mass limit (GML). The new GML will effectively replace the current concession mass limits (CML). This change will result in only two mass limits under the HVNL: new GML and Higher Mass Limits (HML). The options consider the implications of potential mass increases for vehicles meeting Euro VI emissions control standards.
- Options for increasing the prescribed height limit of vehicles from 4.3m to 4.6m.
- Options for increasing the prescribed length limit of vehicles currently limited to 19m to 20m.

It is noted that increasing GML, height and length prescribed limits will benefit general access vehicles, though strictly speaking these prescribed limits also apply to some vehicles with restricted access. For simplicity, this report is focused on the benefits to general access vehicles.

Analysis of these options is qualitative and quantitative. A summary of impact analysis findings is provided below for each of the options considered:

Table 4. Summary of impact analysis for access policy options

Overall impact	Summary of impact analysis findings
Option 4a: New GML effectively replaces CML. No additional mass allowance is provided for Euro VI vehicles.	
Improvement	General freight that is mass constrained would benefit from up to a five per cent increase in mass limits which does not necessitate completing administrative requirements such as applications for NHVAS mass management accreditation. Operators not currently accessing CML would receive a direct productivity benefit of moving more freight per trip. There would be increased costs to road managers due to increased pavement wear from heavier vehicles, which would be partly offset by reduced number of trips.
Option 4b New GML effectively replaces CML. The new GML allows for Euro VI increased tare mass.	
Improvement	The same productivity benefits for general freight as Option 4a. Additional benefits would be provided to operators with Euro VI vehicles as they would have access to the same extra payload as non-Euro VI vehicles. This option may provide greater productivity

	benefits of increased mass capacity and fewer trips and greater asset management costs than Option 4a.
Option 5a: Increase prescribed height limit to 4.6m	
Improvement	Potential to improve productivity by increasing volumetric loads for some freight tasks without the associated regulatory burden of applying for individual permits. However, there would be some increased safety risk of lateral rollover and striking overhead hazards, creating additional costs for road managers.
Option 6a: Increase prescribed length limit to 20m for vehicles currently limited to 19m length	
Improvement	Would lead to improved productivity by increasing volumetric loads for some freight tasks. There also may be avoided costs from no longer requiring PBS certified vehicles to access 20m length limits. There are some potential safety concerns and potential risk of damage to roadside infrastructure.

Enhanced operator assurance

One option has been considered to improve confidence across industry in the robustness of the NHVAS and consistency between accreditation schemes, which builds upon the recommendation approved by ministers based on recommendations in the recent D-RIS (2023). Under this option (Option 7a), the NAS would be prescribed in primary law and NAS requirements would be prescribed in regulations. This is compared to the base case where NAS would be prescribed in primary law however NAS requirements would not be prescribed in regulations.

Option 7a has been considered via a discussion of potential impacts, compared to the base case. Potential impacts are summarised below:

- Ministers can set clear expectations for the NAS by approving the NAS requirements.
- Regulations will provide a framework in which the NHVR can develop the NAS.
- The implications of incorporating NAS requirements into regulations are yet to be fully realised and could significantly affect operators and auditors.

Next steps

The C-RIS aims to draw out, through stakeholder submissions, additional information that may inform further impact analysis. The NTC will undertake an extensive consultation process in relation to the proposals and options explored in this C-RIS.

Stakeholders are encouraged to provide evidence and information which could assist with further analysis of the proposed reforms by providing responses to the consultation questions detailed in this C-RIS. This will assist in the development of the final D-RIS.

Written submissions are due to the NTC by Friday 24 November 2023.

1 Introduction

Key points

- This C-RIS has been prepared to assist the NTC and ultimately Infrastructure and Transport Ministers to consider options for future improvements to the HVNL, in line with the package of reforms agreed by ministers in August 2022.
- It is the next phase in a series of reforms in recent years aiming to improve the HVNL.
- This C-RIS focuses on ITMM reform package policy areas that were not considered in the previous D-RIS (2023), including fatigue and some elements of access. It also considers changes to accreditation, beyond what was considered in the previous D-RIS (2023).

This Consultation Regulation Impact Statement (C-RIS) has been prepared to assist the NTC and ultimately Infrastructure and Transport Ministers Meeting (ITMM) to consider options for future improvements to the Heavy Vehicle National Law (HVNL), in line with the package of reforms endorsed for progression by ministers in August 2022.

Feedback from stakeholders on this C-RIS will inform the development of a Decision Regulation Impact Statement (D-RIS).

1.1 Strategic context of this Consultation RIS

In 2018, the National Transport Commission (NTC) was asked by the ITMM to review the HVNL and its supporting regulations (the Review). There was recognition that the law, which has been in place since 2014, may not be as effective as possible. As the law governing the conduct of heavy vehicles on Australian roads, improvements to the HVNL can improve the safety and efficiency of the road freight and passenger transport industries and provide significant benefits to the community.

As part of the Review, the NTC consulted with stakeholders to identify key issues with the HVNL and to develop potential solutions to these problems. The Review identified reform options that aimed to improve the effectiveness of the HVNL by looking for new ways to achieve regulatory objectives. In 2020, a C-RIS issued by the NTC explored some of these reform options, referred to in this document as “C-RIS (2020)”.

In May 2021, ministers agreed that the HVNL Review should transition to a programmatic approach, known as the Safety and Productivity Program. The NTC has since been actively advancing six agreed-upon reform streams.

In February 2022, ITMM appointed Mr Ken Kanofski to lead stakeholder consultation on the HVNL Safety and Productivity Program. Ministers were briefed by Mr Kanofski on his HVNL consultation report at the August 2022 ITMM meeting. Mr Kanofski recommended a package of changes to the HVNL, referred to in this C-RIS as the “ITMM reform package”. The ITMM reform package was endorsed for progression by ministers.

A D-RIS (referred to in this document as “D-RIS (2023)”) was subsequently prepared by the NTC which examined options for foundational reforms to the HVNL. However, the D-RIS (2023) did not assess all endorsed policy components expected to comprise the future HVNL, as set out in the ITMM reform package. The focus of the D-RIS (2023) was on foundational policy changes required to change the structure and design of the law to create a modern platform for future reforms to HVNL policy.

Several key policy areas were considered out-of-scope for the D-RIS (2023), including:

- Fatigue management. While the D-RIS (2023) outlined reforms to the HVNL to create a tiered assurance environment, specific fatigue management reforms were not assessed. Rather, it was agreed that these options would be developed and assessed as a complete package under a subsequent regulation impact assessment process.
- Access. The regulatory reforms relating to increasing prescribed vehicle mass and dimension limits.

The proposed amendments to the HVNL recommended in the D-RIS (2023) were endorsed by ministers at the 9 June 2023 ITMM.

For further information regarding historic reforms to the HVNL, refer to Chapter 2.

1.2 Matters in scope of this Consultation RIS

This C-RIS focuses on ITMM reform package policy areas that were not considered in the previous D-RIS (2023), including fatigue management and some elements of prescribed vehicle mass and dimension limits. This C-RIS also considers changes to National Audit Standard (NAS) for accreditation, to build on what was considered in the previous D-RIS (2023).

Policy reforms in scope of this C-RIS are summarised below:

- **Fatigue management**. Fatigue management has been consistently identified as a key concern for the heavy vehicle industry, as well as government agencies, the regulator, and police. A range of fatigue proposals have been considered through the HVNL review process, however none of them have received sufficient support from industry, jurisdictions, regulatory or police stakeholders to be achieved. As a result, fatigue management was a key consideration during the stakeholder engagement sessions chaired by Mr Ken Kanofski, and forms part of the ITMM reform package approved by ministers in August 2022.

  The options put forward in the previous C-RIS (2020) did not proceed to the D-RIS (2023) as the options in the C-RIS (2020) were canvassed as mutually exclusive options. Further consultation on these options revealed there was a need to consider fatigue reforms as an interconnected package. For this reason, Mr Ken Kanofski recommended that fatigue reforms be considered and assessed as a package.

The ITMM reform package proposed a suite of regulatory changes for a new Fatigue Regime, subject to tests[1]:

- Defining all vehicles over 4.5 tonnes as fatigue regulated heavy vehicles, with regulations allowing for categories/classes/types of vehicles to be excluded from certain provisions (e.g., record keeping).
- Developing a two-tiered regulatory regime for fatigue. Tier 1 is a General Schedule of prescriptive rules with existing outer limits, but increased flexibility for rest breaks. Tier 2 certification scheme would provide greater flexibility and alternative compliance options for accredited operators who can demonstrate active safety management of their businesses.
- Developing record keeping requirements to ensure that the HVNL is enforceable and provides safety and fairness for the heavy vehicle industry, as well as the community at large. However, record keeping requirements should not exceed what is necessary to ensure the law is enforceable.
- Focusing fatigue enforcement on patterns of behaviour, risk profiles, systemic issues, and serious deliberate breaches.
- Streamlining the number and type of penalty offences and the level of penalty that attaches to them to ensure that they are risk based and proportionate.

A new set of options consistent with the ITMM reform package will be tested through this C-RIS. Stakeholder feedback will inform future management of fatigue under the HVNL.

- **Access.** C-RIS (2020) feedback highlighted industry concerns about inefficiencies in current arrangements for managing heavy vehicle access. Mr Ken Kanofski's report to ITMM concluded that many of industry's concerns with how heavy vehicle access is regulated are largely a matter of operational and system deficiencies as opposed to problems inherent in the law. This C-RIS considers regulatory reforms relating to increasing prescribed vehicle mass and dimension limits that apply for general access to the road network and will consider whether these should be included under the future HVNL.
- **Enhanced operator assurance.** The D-RIS (2023) introduced a new approach to alternative compliance, which has been endorsed by ministers. Under this new approach, operators accredited under the National Heavy Vehicle Accreditation Scheme (NHVAS) can receive alternative compliance options from the regulator. In order to strengthen this new system, changes have been made to the NHVAS to make it more comprehensive and robust. A significant part of this reform is the introduction of a NAS, which is aimed at improving audit outcomes for the NHVAS. Additionally, this standard may also be applied by other Safety Management System (SMS) based schemes to encourage operators to meet their primary duty obligations. This C-RIS will further investigate the implementation options for the NAS at a high level.

[1] The Kanofski report proposed that the new Fatigue Regime proposed should be tested against existing industry operations and piloted under real world conditions, and subject to expert safety advice as required, to ensure it delivers reduced complexity without affecting safety. See Appendix A Ken Kanofski Package, Proposition 3.6.

1.3 Matters out of scope of this Consultation RIS

Critical HVNL topic areas that will be analysed through subsequent assessment and consultation processes are discussed below. The NTC notes that additional policies and issues that require impact analysis are likely to be raised by stakeholders. Consequential amendments to the HVNL may also arise from the operational work program and these may need to be incorporated into the subsequent assessment and consultation processes.

The ITMM Reform Package was a comprehensive range of reform propositions covering the overall structure of the HVNL, access, fatigue management, duties and driver health, enforcement, penalties and offences, accreditation, technology and data, the primary duty, registration, and delegation of authority in the HVNL. Many reforms identified were designated as "non-legislative", and therefore not subject to any formal regulatory impact analysis process.

Reforms to the structure of the HVNL, duties and driver health, accreditation, technology and data, and delegation of authority, were considered as part of the previous D-RIS process. These reforms were agreed, and further work is underway to progress them to the level of detail required for drafting instructions for the Office of Queensland Parliamentary Counsel to draft amendments to the HVNL for customary approval processes.

This work is out of scope of this C-RIS, and includes:

- work to be carried out in close consultation with the NHVR to ensure smooth transition of the current NHVAS to the future SMS-based scheme, including work on supporting arrangements for alternative compliance options,
- work to finalise the detail of the technology and data framework,
- a comprehensive review of penalties under the HVNL; and
- the ITMM reform package proposal to increase prescribed width limits of heavy vehicles through the amendment of the Australian Design Rules (ADRs) has recently been announced by the Commonwealth Government.[2] The width limit for trucks will be increased from 2.5m to 2.55m (trailers will remain limited to 2.50m). The NTC is working to amend the in-service provisions for width in the HVNL to align with the amended ADRs.

1.4 Document structure

This C-RIS presents the case for change, and options for change across a set of policy areas, including fatigue, access, and changes to accreditation schemes. It also analyses the likely impact of each option either quantitatively or qualitatively, to determine which solution may yield the greatest net benefit. Questions for stakeholders are provided at the end of each chapter. In providing responses to the consultation questions, stakeholders are asked to provide evidence and information references to support their statements.

[2] See media release 28 September 2023 Facilitating safer trucks in Australia | Ministers for the Department of Infrastructure.

This paper has been prepared to address key questions identified by the *National Regulatory Impact Analysis Guide for Ministers' Meetings and National Standard Setting Bodies.*[3] Responses to the questions will be used to develop a D-RIS, with a preferred option under each reform area recommended to ministers.

The remainder of this document is structured as follows:

- Background
- Case for change
- Need for government action – including objectives
- Impact analysis methodology
- Fatigue management (options and analysis)
- Access (options and analysis)
- Enhanced operator assurance (options and analysis)
- Stakeholder consultation and next steps

1.5 Assumptions and limitations

Key assumptions and limitations of this C-RIS are outlined below:

- Data availability relating to reforms as proposed in this C-RIS has been a considerable challenge. In some cases, it has not been possible to quantify impacts.
- Estimated costs and benefits discussed in this C-RIS are indicative. These will be refined through further consultation with key stakeholders and presented in the subsequent D-RIS.
- Analysis conducted to assess options to enable a more risk-based approach to enforcement is different from the analysis conducted to assess options relating to record keeping requirements and the scope of fatigue-related vehicles. This is because the OIA has advised that under its guidelines, changes in offences are not within scope of the regulatory impact assessment process.
- Options to improve confidence across industry in the robustness of the current NHVAS and consistency between accreditation schemes build upon the recommendation approved by ministers based on recommendations in the recent D-RIS (2023). As such, these options have been considered via a discussion of potential impacts, as opposed to a conventional impact analysis.

[3] Commonwealth of Australia, Department of the Prime Minister and Cabinet (2023), Regulatory Impact Analysis Guide for Ministers' Meetings and National Standard Setting Bodies.

2 Background

Key points

- The HVNL, administered by the NHVR, establishes the regulatory environment for heavy vehicles in Australia that exceed 4.5 tonnes in gross vehicle mass.
- While the HVNL has improved road safety and laid the foundation for a streamlined national system for heavy vehicles, it has faced criticism for being overly prescriptive, inflexible, and complex.
- The HVNL Review commenced in 2019. The Review aimed to identify issues and develop solutions for a modern, outcome focused law. The Review has led to a series of reform options being identified that could improve the effectiveness of the HVNL by looking for new ways to achieve similar regulatory objectives.
- This C-RIS represents the next phase in work to improve the HVNL and will test specific policy changes to a package of reforms endorsed by ITMM in August 2022.

2.1 Section overview

This section provides an overview of the HVNL, its objectives, and previous reforms. It addresses the prevailing issues and concerns, and highlights the purpose of this C-RIS in analysing the impacts of the proposed changes.

2.2 Heavy Vehicle National Law (HVNL)

The HVNL, administered by the National Heavy Vehicle Regulator (NHVR), is a set of provisions designed for heavy vehicles in Australia that exceed 4.5 tonnes in gross vehicle mass. The HVNL is established through a cooperative applied law scheme. The scheme involves the text of standard provisions promulgated through the Queensland Parliament and then applied or adopted in each participating jurisdiction, as if it were a law made in that jurisdiction. The HVNL has been adopted across multiple jurisdictions in Australia, including Queensland, New South Wales, the Australian Capital Territory, Victoria, Tasmania, and South Australia. Western Australia and the Northern Territory have not adopted the HVNL. The HVNL aims to enhance public safety, industry productivity and efficiency, innovative and safe business practice, and manage the impact of heavy vehicles.[4] Heavy vehicle drivers and operators are obligated to adhere to the standards, procedures, and processes outlined under the HVNL, and are subject to penalties in the event of non-compliance or a breach.

The HVNL has prescriptive key provisions on vehicle operations, vehicle mass, dimension and loading, fatigue management, access, performance-based standards, and enforcement[5]. The

[4] Heavy Vehicle National Law (NSW), Chapter 1, Part 1.1, Section 3.

[5] National Transport Commission (2020), HVNL Review Consultation Regulation Impact Statement.

HVNL establishes a primary safety duty for a defined list of chain of responsibility (CoR) parties, including employers, contractors, operators, packers, and loaders. This duty requires them to ensure the safety of transport activities, so far as is reasonably practicable. This includes managing hazards and risks that may arise in association with the heavy vehicle transport task.[6]

The NHVR was founded in 2013 as an independent statutory regulator for all vehicles over 4.5 tonnes in participating jurisdictions. The HVNL establishes the NHVR as the key entity charged with functions directed at ensuring the object of the HVNL is achieved.

2.3 Overview of the HVNL Review

While the HVNL has improved road safety and laid the foundation for a streamlined national system for heavy vehicles, it has faced criticism for being overly prescriptive, inflexible, and complex. The law's 'one size fits all' approach does not suit the diverse and evolving industry, and it also presents challenges when adapting to more risk-based approaches and technological advancements. Furthermore, the processes for road decision-making have remained complex, time-consuming, and costly.

These concerns about the HVNL prompted Infrastructure and Transport Ministers to direct the NTC to review the HVNL. The aim was to explore more outcome-focused and performance-based options, thereby improving safety, productivity, compliance, and enforcement. This review commenced in 2019 and was undertaken over two years, during which time the NTC consulted key stakeholders to understand issues with the existing law. The Review identified a series of overarching problems with the structure and design of the HVNL. At a foundational level the analysis found that:

- A better balance between prescriptive and performance-based obligations is required to support a highly diverse heavy vehicle industry that seeks both flexibility and certainty in complying with the intent and word of the law.
- The HVNL is currently unresponsive to changes in the operating environment.
- The HVNL alternative compliance options offered under the NHVAS are constrained by legislation.
- The HVNL is not technology neutral, does not provide a clear pathway for recognising modern technologies and does not provide adequate provisions for data sharing.
- The regulatory tools and powers for the NHVR are in some instances outdated, inflexible or unnecessarily constrained.
- Existing delegations of authority are, in some cases, inefficient. These limit the ability of the NHVR to be modern, risk-based regulator and to manage risks.

Between March 2019 and October 2019, the NTC produced a series of seven issues papers for public consultation exploring key issues identified within HVNL across several policy areas. In response to these issues papers, the NTC received a significant number of submissions from government, regulators, and industry. In January 2020, the NTC released a summary of

[6] Heavy Vehicle National Law (NSW), Chapter 1, Part 1.4, Section 26(c).

consultation outcomes that outlined industry feedback and helped inform the development of a C-RIS.

2.3.1 HVNL Consultation Regulation Impact Statement (June 2020)

The C-RIS (2020) analysed an extensive suite of reform options that had been identified by the review at that point. It sought further feedback from stakeholders on problems identified, the options considered and a preliminary assessment of options for the future HVNL. The C-RIS (2020) considered a full range of HVNL policy options, including many issues that have been subsequently determined to be unviable or best addressed through operational reform. The C-RIS (2020) covered issues, including:

- Primary duties and responsibility
- Regulatory tools
- Technology and data
- Assurance and accreditation
- Fatigue
- Access
- Safer vehicle design
- Roadworthiness.

The C-RIS (2020) provided an opportunity for stakeholders to comment on multiple policy options and the impact of these options. In May 2021, ITMM was presented with the C-RIS (2020) outcomes and an analysis of stakeholder sentiment towards various policy options.

2.3.2 HVNL Safety and Productivity Program and Kanofski Report

In May 2021, ministers agreed that the HVNL Review should transition to a programmatic approach, known as the Safety and Productivity Program. The NTC has since been actively advancing all six agreed-upon reform streams:

- Project A: Operator Assurance Scheme
- Project B: Technology and Data
- Project C: Duties and Driver Health
- Project D: Fatigue Management
- Project E: Vehicles and Access
- Project F: Legislative Approach

In February 2022, ITMM appointed Mr Ken Kanofski to lead further stakeholder consultation on the HVNL Safety and Productivity Program and to report back on:

- Policy settings for a new HVNL demonstrating how safety and productivity improvements can be achieved.
- Areas where policy positions are unresolved and recommend ways forward.

- Work required to deliver a new HVNL, including timeframes, process, and cost benefit analysis.
- Any systemic barriers to national heavy vehicle reform.

Ministers were briefed by Mr Ken Kanofski on his HVNL consultation report at the August 2022 ITMM meeting. In September 2022 ministers announced through an ITMM communique:

> Ministers have taken a significant step forward in delivering reforms to the Heavy Vehicle National Law, with agreement to implement the reforms recommended by Mr Ken Kanofski.

Ministers agreed to progress the recommended package of law and non-law changes that aim to improve safety and productivity in the heavy vehicle sector, known as 'the ITMM reform package'. The reforms are summarised below and provided in Appendix A:

- Improve both flexibility for industry and safety through a two-tiered fatigue management system, with a mandatory SMS a key feature of the second tier, where the NHVR will be able to provide greater flexibility to operators who show greater systemic focus on safety.
- Ensure that safety obligations for drivers, operators and third parties in the chain of responsibility are more clearly articulated and encourage all parties to manage risks so far as is reasonably practical, by prescribing specific obligations on off-road parties and developing specific penalties in the new HVNL.
- Improve safety by examining mandatory risk-based medical screening of drivers through the Assessing Fitness to Drive Guidelines (note that ministers had already asked the NTC to examine this).
- Re-focus roadside enforcement to be more safety risk-based on deliberate and systemic failures rather than administrative processes.
- Overhaul the Performance Based Standards (PBS) approval process to maximise the opportunities for use of these safer and more productive vehicles.
- Consider how to end the multiple and duplicative assurance audits to which some operators are subject.
- Make modest improvements to general access mass and dimension (subject to a cost benefit analysis and regulatory impact assessment).
- Take an outcome-based approach to regulation which encourages and enables innovative practices, while also allowing for prescriptive measures for heavy vehicle businesses that prefer to follow the rules-based system.
- Provide a more flexible legislative framework that moves many rules down from primary legislation to regulation and other subordinate instruments such as Codes of Practice. This will allow the regulator to deliver safety and productivity improvements more quickly and better adapt to future industry developments.
- Optimise the use of technology and data for both regulatory and road manager purposes by enabling the development of technology and data standards, protections for privacy and security and a certification system, via a new technology and data framework.

2.3.3 HVNL Decision Regulation Impact Statement (June 2023)

In response to the ITMM reform package, the NTC prepared a D-RIS (2023) that outlined the necessary changes to the regulatory framework (principally the primary law). The D-RIS (2023) informed ministers of the costs and benefits of foundational reforms to the HVNL that will deliver key policies that ministers have agreed to progress. The D-RIS (2023) considered several policy areas including:

- The HVNL regulatory framework, including the overarching structure of the HVNL and arrangements to deliver a tiered safety assurance environment, with new and modified ministerial regulatory powers to support increased flexibility and adaptivity.
- Changes to the NHVAS to make it more agile and to embed a broader SMS requirement as well as a more comprehensive auditing regime.
- Establishing a new national framework for the development of technology and data schemes by an administrator appointed by ministers.
- Clarifying amendments to duties to make it clear that drivers must be fit to undertake the driving task.

The proposed amendments to the HVNL recommended in the D-RIS (2023) were endorsed by ministers at the 9 June 2023 ITMM.

2.3.4 Consultation and Decision Regulation Impact Statement (October 2023 onwards)

As described in Section 1, the NTC is now required to develop a C-RIS and D-RIS to test specific policy changes contained in the ITMM reform package, beyond what was considered in the previous D-RIS (2023). Policy areas for consideration include fatigue management, mass and dimension limits for general access, and further changes to the NHVAS audit framework.

3 Case for change

Key points

- The HVNL Review identified several overarching problems with the structure and design of HVNL, which present a barrier to an effective and flexible regulatory environment.
- This C-RIS aims to address several key issues within the HVNL, including:
  - **Problem statement 1:** There are several limitations to the HVNL that contribute to ineffective fatigue management.
  - **Problem statement 2:** Limits to general access to the road network under the HVNL create an administrative burden and impact on freight industry productivity.
  - **Problem statement 3:** There is a lack of confidence across industry in the robustness of the current NHVAS; a lack of consistency or recognition between accreditation schemes and a regulatory environment where operators are faced with multiple and duplicative assurance audits.

3.1 Section overview

This section outlines the current problems with HVNL and contextualises the need for policy options to improve the current state.

3.2 Statement of the problem

The HVNL Review identified several overarching problems with the structure and design of the HVNL. These limitations present a barrier to an effective and flexible regulatory environment, and if resolved, will provide for a more responsive and adaptable law.

The problems identified with HVNL have been well documented through issues papers developed as part of the HVNL Review, and in the C-RIS (2020) and recent D-RIS (2023). As such, the problem statements described below aim to present a summary of key issues relevant to the scope of this C-RIS to provide context for the policy proposals presented in Chapters 6 to 8.

The policy proposals in this C-RIS seek to address several key issues:

- **Problem statement 1:** There are several limitations to the HVNL that contribute to ineffective fatigue management.
- **Problem statement 2:** Limits to general access to the road network under the HVNL impact on freight industry regulatory burden and productivity.
- **Problem statement 3:** Confidence in the robustness of the current NHVAS could be improved; there is a lack of consistency or recognition between accreditation schemes and a regulatory environment where operators are faced with multiple and duplicative assurance audits.

The following sections describe each of these problem statements, including sub-issues relevant to each.

3.2.1 Problem statement 1: There are several limitations under the HVNL that contribute to ineffective fatigue management.

Driver fatigue is a key road safety risk. Driving a heavy vehicle while fatigued increases the risk of a crash, and over time may impact the physical and mental well-being of the driver. There are a variety of factors that can contribute to driver fatigue; however, research suggests that the most significant causes of driver fatigue in heavy vehicles are longer periods of work, night driving and shift work.[7] Other recent academic research[8] suggests that the increased risk of fatigue in Australian truck drivers is linked with long working hours, poor sleep, and certain social aspects such as loneliness.

To help reduce fatigue-related crashes across the Australian freight industry, fatigue management requirements were introduced in 2009 and were incorporated into the HVNL. The primary goal of the HVNL fatigue management requirements is to prevent drivers from driving while fatigued. Operators and other CoR parties also have an obligation to ensure that drivers are not fatigued under the primary duty (s 26C). Here, CoR parties have a duty to ensure, so far as is reasonably practicable the safety of transport activities, including management of fatigue. Section 228 of the HVNL also imposes a duty on drivers to not drive a fatigue regulated heavy vehicle on a road while impaired by fatigue.

If drivers work for longer than the maximum work time stated in the law, or rest for less than the minimum rest time, they are subject to fines and other penalties.[9] Some drivers must also complete a National Driver Work Diary as evidence of their work and rest hours. If a driver is required to carry and use a work diary, and they fail to do so, they are subject to fines and other penalties.

Alternative options to prescriptive rules with more flexible work and rest options are available through the NHVAS Fatigue Management module (options include Basic Fatigue Management, BFM, and Advanced Fatigue Management, AFM) in which the operator needs to demonstrate management of their driver's fatigue risks. As outlined in the D-RIS (2023), changes to the approach to alternative compliance are being developed, see Appendix B for more information.

Despite these fatigue management requirements, driver fatigue continues to be the leading cause of fatal single vehicle crashes in Australia and is a key factor in 9.4% of major crashes involving heavy vehicles.[10] The object of the HVNL includes promoting public safety and the specific regulatory settings to support addressing the driver fatigue as a contributing factor to road trauma involving heavy vehicles have been under consideration through the HVNL review,

[7] Cooperative Research Centre for Alertness, Safety and Productivity (2019), *Heavy Vehicle Driver Fatigue Project - Final project report.*

[8] Ren X, Pritchard E, van Vreden C, Newnam S, Iles R, Xia T (2023), *Factors Associated with Fatigued Driving among Australian Truck Drivers: A Cross-Sectional Study*, Int J Environ Res Public Health.

[9] https://www.legislation.qld.gov.au/view/whole/html/inforce/current/sl-2013-0078.

[10] National Transport Commission (2019), *Effective fatigue management.*

A series of issues with fatigue requirements under the HVNL have been identified through the HVNL Review, these have been described in detail in the previous C-RIS (2020) and D-RIS (2023) and in an issues paper developed by the NTC in 2019.

This C-RIS seeks to address several key issues with heavy vehicle fatigue under HVNL. These are summarised below:

- **Controls under the HVNL focus on long-haul interstate journeys but not risks associated with short-haul journeys.** The HVNL primarily enforces fatigue regulations on large vehicles undertaking long-haul interstate journeys but does not place prescriptive requirements on smaller vehicles (i.e., those weighing less than 12 tonnes). The HVNL was developed under the assumption that these drivers of lighter vehicles had a lower fatigue risk, as they were usually doing shorter distance work. However, newer research suggests that fatigue risk is similar for long distance and short distance heavy vehicle drivers.[11] Additionally, driving a non-fatigue-regulated vehicle does not count towards work hours under the HVNL. This could lead to circumstances in which a driver does a full shift of work in a non-fatigue-regulated heavy vehicle, and then another shift in a fatigue regulated heavy vehicle, whilst still complying with the prescriptive requirements in the law.
- **Prescriptive work and rest requirements reduce a driver's ability to actively manage their fatigue.** As described above, in addition to the general duty to not drive while fatigued[12], drivers of fatigue regulated heavy vehicles must comply with certain maximum work and rest limits set by the standard hours schedule, unless they are working under BFM or AFM accreditation. Due to the prescriptiveness of fatigue management requirements, many drivers are critical of its inflexibility, as it does not support the entire range of tasks and variability of day-to-day work in the industry. Drivers have reported that they construct their work schedules around the prescribed hours, which makes them feel forced to sleep and drive at specific times that don't align with their circadian rhythms. This can cause them to be driving whilst tired and rest while awake and alert. It can be particularly challenging to meet fatigue requirements when unforeseen circumstances may result in drivers running out of driving hours before they reach their home base, potentially forcing them to take a long rest break in conditions unsuitable (or less suitable) for quality rest.
- **Current record keeping requirements are complex and onerous for heavy vehicle drivers.** Requirements for maintaining a work diary under HVNL are extensive and complex. A whole division of the HVNL is dedicated to work diary requirements. It outlines in detail the requirements for obtaining, filling in and carrying a work diary, and there are more work diary requirements in the regulations. Specific instructions for filling in the diary are also set out in the diary itself. These extensive requirements can mean that some drivers make mistakes when filling in their diaries. These mistakes may not lead to ambiguity in work and rest times or undermine the record as an evidentiary document, however, are punishable under the HVNL. For example, poor writing, crossing the page in a different direction or not connecting lines as prescribed can be penalised and could result in at least a fine of $189.

[11] Williamson, Ann, and Rena Friswell (2023), "The Effect of External Non-Driving Factors, Payment Type and Waiting and Queuing on Fatigue in Long Distance Trucking." *Accident Analysis and Prevention* 58 (2013): 26–34.

[12] Heavy Vehicle National Law (NSW), Chapter 6, Part 6.2, Division 2, Section 228.

- **Fatigue enforcement and compliance focuses on whether drivers conform to prescriptive rules.** Anecdotal feedback has suggested that enforcement can sometimes focus on historical breaches rather than the immediacy of fatigue risks. Some operators and drivers are of the view that attention on minor administrative or historical breaches is frustrating and does not result in improved safety outcomes. This approach fails to identify and target systemic risky behaviours, such as requirements set by specific operators that may encourage their drivers to drive while fatigued. Roadside enforcement should be refocused to be more safety risk-based, to identify deliberate and systemic failures rather than administrative processes.

3.2.2 Problem statement 2: Limits to general access to the road network under the HVNL creates administrative burden and impact on freight industry productivity.

Stimulating productivity growth across the heavy vehicle industry is a key goal of government to maintain international competitiveness and reduce costs for industry and consumers. According to the National Freight Supply Chain Strategy, a 1% improvement in productivity could generate $8-20 billion in savings to the national economy over 20 years.[13]

The productivity of heavy freight vehicles in Australia increased six-fold between 1971 and 2007[14], primarily due to:

- Progressive increases in mass and dimension for existing heavy vehicle combinations
- The introduction of government policy which facilitated the use of larger vehicle combinations and increased network access for larger vehicles.

However, productivity growth has stagnated considerably since the 1990s when the impact of these reforms was exhausted.[15] Slowing freight productivity growth increases the number of heavy vehicles and drivers required to transport the growing freight task, and impacts the competitiveness of Australian exports, including minerals and agriculture moving to international markets.[16] It also results in a higher cost of living for the Australian community. Put simply, the expected growth in the road freight task will result in more trucks on the road network but increases in payload will reduce truck movements and improve productivity.

Truck routes and operating conditions are regulated through a complex, multi-tiered access regime in the HVNL, and is influenced by jurisdictional freight initiatives. Heavy vehicle access to the road network is regulated for three main reasons:

a) To improve public safety by decreasing risks to public safety caused by excessively loaded or excessively large heavy vehicles.
b) To minimise any adverse impacts of excessively loaded or excessively large heavy vehicles on road infrastructure.

[13] Transport and Infrastructure Council (2019), National Freight and Supply Chain Strategy, p.11.

[14] BITRE (2011), Truck Productivity: sources, trends and future prospects, p. v.

[15] Transport and Infrastructure Council (2019), *National Freight and Supply Chain Strategy*, p.11.

[16] Ibid.

c) To minimise any adverse impact of excessively loaded or excessively large heavy vehicles on public amenity.

The current heavy vehicle access regime allows general "as-of-right" access to the road network for vehicles within specified mass and dimension limits, meaning they can travel on the entire road network (all roads) where it is safe to do so, and unless otherwise signposted. General access vehicles are those that do not exceed 2.5 metres in width, 19 metres in length (articulated combination), and 4.3 metres in height, and general mass limits (GML) are applied by vehicle type.[17] For these vehicles, limited controls and oversight are needed, the HVNL provides for general access for those vehicles within prescribed mass and dimension requirements. Operators of these general access vehicles do not require a permit or need to comply with a notice to operate on the road network.

For vehicles that do not fall within general access limits, these vehicles have restricted access to the road network. They operate on networks identified in a notice or a permit that have been specifically consented to by road managers and authorised by the regulator. These vehicles are considered higher risk and require particular risk controls and management.

It is noted that while GML, height and length prescribed limits apply to general access vehicles, strictly speaking these prescribed limits also apply to some vehicles with restricted access. For simplicity, this report is focused on the benefits to general access vehicles.

Given considerable improvements in vehicle safety and efficiency over the last several decades, industry has argued that there is a strong basis for additional modest increases to mass and dimension limits for general access vehicles to better reflect enhancements to road safety and support the growing freight task.

There are various schemes and mechanisms that allow operators to take advantage of higher mass and dimension limits under specific circumstances. However, feedback from industry suggests that requirements to access these schemes create significant administrative burden, take time, and in some instances create uncertainty and inconsistency of access decisions across different road networks.

Options presented in this C-RIS aim to address several key issues relating to general access and industry regulatory burden and productivity, including:

- **Despite the fast-growing national freight task and improvements in vehicle safety over time, this has not been reflected in expanded general access.** Most general access limits have not changed since the 1990s due to unresolved policy and engineering issues, however over this period there have been considerable advancements in the heavy vehicle fleet making them considerably safer. For example, the introduction of crash avoidance technologies (e.g., braking and vehicle stability devices), protective technologies (e.g., cabin strength standards and seatbelt and fatigue monitoring devices) and general safety features (e.g., improved cabin design and tipping trailer stability systems) have made a proven

[17] Refer to NHVR website for further details on all general access vehicle mass and dimension limits, at https://www.nhvr.gov.au/road-access/access-management

contribution to reducing the number and severity of heavy vehicle crashes.[18] In parallel, the national road freight task has grown significantly and is likely to grow by another 77% by 2050.[19] As such, the HVNL review has identified that the conditions of general access may be more stringent than required given advances in vehicle designs to ensure safety and avoid damage to road pavements and infrastructure. As most of the heavy vehicle fleet operate under general access limitations[20], this holds considerable implications for freight productivity, as more vehicles are required to move the growing freight task.

- **Red tape in road access arrangements creates significant regulatory burden for operators seeking to operate above general access limits.** Under the HVNL there are several options that allow vehicles to operate beyond general mass and dimension limits. However, operators must follow sometimes lengthy and onerous processes and meet specific requirements which can have a large administrative cost. Pathways to access higher mass or dimension limits for road operators include:
  - Mass limit schemes: Concessional Mass Limits (CML) and Higher Mass Limits (HML) access are provided through accreditation via the NHVAS. CML and HML allow NHVAS members to operate at mass limits above the national general mass limits subject to several conditions. Vehicles operating under CML have access to the same network as currently applies to that vehicle class. To access the scheme a transport operator must apply through the NHVR and pay a fee, as well as maintain their accreditation, auditing and renewals.
  - Commodity-specific schemes: Concessional schemes also exist for specific commodities to enable particular vehicles to exceed regulated total mass limits under specific circumstances for example the movement of grain (Grain Harvest Management Scheme in NSW, VIC, QLD and SA) or livestock (Livestock Loading Schemes). Eligible vehicles must operate under the conditions of the scheme, and most only travel on approved routes for that vehicle type and or as per any road manager consent conditions. Some of these commodity-specific schemes may permit mass concessions higher than CML.
  - Access authorisation by notice: Operators may access specific parts on the road network under a notice. A notice is published in a Commonwealth government gazette which notifies operators that particular types of vehicles have been granted access to particular roads under certain conditions. Notices can be national or involve one or more jurisdictions and require the NHVR to work with road managers to agree on the terms of the notice. Operators prefer notices as they remove the need for a permit and provide a higher level of access certainty. Operators may be required to obtain permission to travel on roads that connect to routes identified in notices (often referred to as the 'last mile').
  - Access authorised by permit: Heavy vehicle permits grant a vehicle access to a particular route or network, allowing operators to operate above the national general limits. To receive a permit, an operator must apply to the NHVR. The NHVR will assess the route

[18] NSW Government (2020), Safety features and technologies in heavy vehicles. NHVR (2020), Vehicle Safety and Technology Uptake Plan.

[19] BITRE (2022), Australian aggregate freight forecasts – 2022 update (summary), p.3.

[20] NTC (2019), *Easy Access to Suitable Routes Issues paper* estimates based on 2017-2018 state and territory registration data, there were 368,380 General Access Vehicles and around 64,304 Restricted Access Vehicles (the exact number of RAVs is particularly difficult to estimate). See page 37.

and vehicle and determine who the relevant road managers are (e.g., state and territory road authorities and local councils). The NHVR refers the application to the relevant road manager(s) to get consent for use of the route. Relevant road managers will consider the application and provide their decision to the NHVR. The NHVR will issue a permit if all road managers provide consent. This process can take up to 28 days and sometimes longer. Operators have identified that the permit application process is administratively cumbersome, can be uncertain, inconsistent, and take significant time for decisions. The NHVR has set a goal of targeted elimination of permits, and a future where permits are required by exception rather than as a rule.[21] [22] ITMM has also set the target of 50% permit reduction in three years and 95% in five years.

  - PBS Scheme: Operators also have opportunity to take advantage of the PBS scheme administered by the NHVR, which enables industry to use the latest systems and technologies to design innovative vehicles for specific freight tasks to operate on suitable networks for their level of performance. Most PBS vehicles have access to specific road networks, and PBS Level 1 Vehicles (up to 20m in length) have recently been granted general access (for GCMs less than the GML for the PBS vehicle combination). Under the HVNL, PBS vehicles receive exemptions from vehicle length, and height limitations, and overall vehicle mass restrictions.[23] As a result, productivity improvements range from 15% for the transport of cars and groceries, to over 30% for transport of general freight and containers.[24] However, the PBS Scheme is complex and may require significant financial input from operators.[25] The PBS approval is a two-stage process, first requiring PBS design approval from the NHVR, and then requiring PBS vehicle approval, both from the NHVR and relevant road managers. While the PBS scheme offers considerable productivity improvements for industry, PBS vehicles make up a relatively small proportion of the heavy vehicle fleet compared to general-access vehicles - although the number of PBS vehicles is growing.

- **The current access regime is complex and challenging for operators to understand compliance requirements, available concessions, and available networks.** The multitude of pathways available to operate above general mass and dimension limits, as described above, create considerable complexity for operators in navigating the current access regime. For example, the general access length limit for semi-trailers and prime movers is 19m under the law. However, there are some vehicles that have general access with 20m limits, for example PBS Level 1 vehicles, and truck and dog vehicles that come under a new notice. Similarly, for vehicle height, certain commodities such as livestock carriers can operate with general access at 4.6m under certain conditions, however there are also notices for 4.6m height road networks, for vehicles such as curtain-siders (or taut liners),

[21] NHVR (2020), Heavy Vehicle Productivity Plan 2021-2025.

[22] Refer to NHVR (2020), *Heavy Vehicle Productivity Plan 2021-2025* and NTC (2019), *Easy access to suitable routes Issues Paper* and the NVHR website for further details on the permit process.

[23] Typically, PBS vehicles have individual axle group mass that are the same as prescriptive vehicles, however PBS combinations are allowed increased Total Combination Mass (TCM) compared to the prescriptive fleet. The additional TCM often comes from the increased vehicle dimensions and additional axle groups.

[24] NTC (2017), Assessing the effectiveness of the PBS Scheme, p.12.

[25] Ibid, p.34.

which have operating requirements to address the higher centre of gravity and consequent roll-over risk. Notices such as these vary by state.

- **There is potential missed opportunity to improve operator productivity in prescriptive vehicle combinations.** Current access arrangements under the HVNL aim to balance the safety risk, amenity, and road wear costs posed by heavy vehicles with the need for productive and efficient freight movements. Ideally, the controls on heavy vehicle access should enable heavy vehicle access to roads close to 'optimal' levels – where the marginal social benefits balance the marginal social costs of access[26]. The pathways to access higher mass and dimension limits described above are effective in managing risk for higher risk freight movements, providing road managers with an opportunity to assess vehicle movements on a case-by-case basis, outweighing the cost of compliance to operators. However, there is a question about whether the red tape surrounding low risk, prescriptive combinations that are regularly granted access under these schemes and as such already operate widely on the national freight network should be reduced. Modest improvements to general access limits could provide efficiency and productivity benefits and reduce the need for individual notices and schemes.

3.2.3 Problem statement 3: Confidence in the robustness of the current National Heavy Vehicle Accreditation Scheme could be improved; there is a lack of consistency or recognition between accreditation schemes and a regulatory environment where operators are faced with multiple and duplicative assurance audits.

The NHVAS provides an alternative pathway for complying with some HVNL requirements. Chapter 8 of the HVNL provides a regulatory framework for the NHVAS. The purpose of accreditation is "… to allow operators of heavy vehicles who implement management systems that achieve the objectives of particular aspects of this Law to be subject to alternative requirements under this Law, in relation to the aspects that are more suited to the operators' business operations."

The NHVAS is a national formal process for recognising operators who have robust safety management systems in place and is administered by the NHVR. It is increasingly being used to show compliance with general duty requirements under road transport law.[27] Accreditation schemes such as NHVAS are intended to provide confidence and trust that a regulated party can comply, and is complying, with the law or other requirements.[28] Accredited operators may also be eligible for concessions related to their increased risk management and control of operational processes.

[26] See the Kanofski report to ministers for discussion regarding the philosophical approach to access decision making of roads fulfilling a significant economic purpose of moving people and freight, an approach adopted by the Tasmanian Government, online at https://www.infrastructure.gov.au/sites/default/files/documents/ken-kanofski-advisory-report-to-ministers-on-hvnl-public-release-version-accessible.docx

[27] NHVR Website, online at https://www.nhvr.gov.au/safety-accreditation-compliance/national-heavy-vehicle-accreditation-scheme

[28] NTC (2019), Assurance Models Issues Paper.

Fellows Medlock and Associates conducted a review of heavy vehicle accreditation schemes, commissioned by the NHVR in 2018 (The Medlock Report).[29] The Medlock Report concluded that available evidence pointed to improvements in operational safety performance through membership of an accreditation scheme (or multiple schemes). This was evident in terms of lower crash rates, insurance claim rates, incidence of non-conformities and major defects.

However, the Medlock Report found limitations with the accreditation model and opportunities for improvements. Concerns expressed by operators included:

> "Lack of mutual recognition between schemes
>
> Audit processes varied between schemes and between NHVAS third party and internal auditors
>
> The rigour of audits varied depending on the auditors – in some cases, it seemed auditors were "looking for compliance"
>
> Multiple audits – as well as internal audits and accreditation audits, many companies are also subject to audits from clients and insurance companies
>
> Enforcement authorities (Police) took little or no notice of accreditation standards and had their own requirements." (p.36)
>
> Medlock also found operators reported that "major clients were increasingly looking for evidence of strong management systems to mitigate their insurance risks and ensure that Chain of Responsibility provisions are met." (p.36)

During the Medlock review, jurisdictions raised the issue of the quality of scheme audits, with concerns that State-based inspectors identified issues with accredited operators that should have been detected in scheme audits.

These broad concerns were also raised by stakeholders during Mr Ken Kanofski's consultation. Peak bodies and operators indicated that because the NHVAS is not comprehensive, third parties cannot be confident that they are engaging with a safety-assured operator. This situation partly explains the rise of duplicative auditing practices by customers seeking to assure their primary duty obligations.

The recommendations approved by ministers set out in the DRIS (2023) enabled a high-level regulatory framework for a new NHVAS which included a SMS as an accreditation requirement and a new audit framework. The future law will allow ministers to approve a NAS, developed by the regulator and designed to improve audit outcomes for SMS-based accreditation schemes.

This C-RIS proposes options for the NAS which aim to address the following key limitations of the current approach:

[29] Medlock (2019) Analysis of Heavy Vehicle Accreditation Schemes in Australia. Report published on NHVR Website, at https://www.nhvr.gov.au/consultation/2020/06/23/final-report-of-the-national-heavy-vehicle-accreditation-working-group

- **Audits can be improved to increase reliability and confidence.** Under the current NHVAS auditing regime, audits are undertaken to check compliance with NHVAS Business Rules and Standards for relevant modules (mass, maintenance, fatigue). NHVAS audits are based on meeting minimum compliance standards and are not conducive to continuous improvement of an operator's system over time. There are concerns that these audits do not provide a sufficient level of assurance regarding safety competency and safety outcomes, and consequently operators have been asked to provide multiple customer audits across the chain of responsibility. The current approach does not align with best practice approaches under the international auditing standard ISO 19011 which ensure that audits include measures to assess the effectiveness of the operator's system in achieving the outcomes desired by the accreditation scheme.
- **Auditor competency requirements may not be fit-for-purpose for the new NHVAS SMS requirements.** Auditing requirements have changed to meet the new NHVAS including an outcomes-based review of the SMS. The higher the risks, the more independent, robust, and comprehensive audit processes need to be to assess if the risks are being managed. An auditor that is an impartial, competent third party establishes confidence and trust in the assurance system, giving an assurance scheme its value.[30] An audit that is undertaken to determine the effectiveness of the system in producing the desired outcomes, in addition to verifying compliance with the system, may require activities and expertise beyond what is required in the current audit framework. Feedback suggests that competency requirements are not fit for purpose for the new NHVAS regime.
- **There is a lack of consistency and capacity for mutual alignment of accreditation schemes across Australia.** Currently there are different accreditation schemes available to the industry for regulatory concessions. Operators who wish to use restricted access vehicles in Western Australia must enrol in the Western Australian Heavy Vehicle Accreditation Scheme (WAHVAS). Those operators seeking regulatory concessions in HVNL states may enrol in the NHVAS – administered by the NHVR. As a result, some operators are forced to join multiple schemes for different activities. This creates multiple audit requirements and financial and administrative burden for operators because they must pay multiple membership and audit fees.[31]

3.3 Consultation questions

Consultation Question 1: To what extent has the C-RIS fully and accurately described the problem to be addressed within the scope of identified issues? What other factors should be considered in the problem statement? Please provide detailed reasoning for your answer.

[30] NTC (2019), Assurance Models Issues paper.

[31] Ibid.

4 Need for government action

Key points

- Governments have a responsibility to help to protect road users in the community from the safety risks associated with sharing the road with heavy vehicles.
- The HVNL exists as a national scheme for facilitating and regulating the use of heavy vehicles in a way that, amongst other things, focuses on ensuring that heavy vehicles and their drivers are safe, and that they are operating on suitable routes to minimise risks to public safety.
- The policy proposals presented in this C-RIS aim to deliver outcomes which will help improve the HVNL better meet its Object.

4.1 Section overview

This section outlines the need for government action to implement the reforms in this C-RIS, setting out key policy objectives, and discussing potential barriers to achieving these.

4.2 Justification

The justification for government action to implement the reforms in this C-RIS remain unchanged from the rationale presented in the previous C-RIS (2020) and D-RIS (2023), which is that governments have a responsibility to attempt to protect road users in the community.

By virtue of their size and kilometres driven, heavy vehicles are disproportionately involved in casualty crashes and these crashes tend to be more severe than those involving light vehicles. In the year to June 2023, 14.5% of all fatal crashes involved heavy vehicles.[32] However, this does not necessarily indicate that the heavy vehicle driver is at fault. It is estimated that around 70-80% of fatal crashes, the heavy vehicle driver was not at fault.[33] Crashes involving heavy vehicles often result in death or severe injury, especially to vulnerable road users such as pedestrians, cyclists, and drivers of passenger cars, because of the heavy vehicle's size and mass.

The costs associated with a heavy vehicle crash extend beyond just road users. These costs include:

- Medical costs: These encompass both physical and mental healthcare expenses, covering everything from immediate treatment to long-term rehabilitation.

[32] Derived from BITRE (2023), *Road deaths in crashes involving heavy vehicles – quarterly bulletin, Apr-Jun 2023,* online at https://www.bitre.gov.au/sites/default/files/documents/heavy_bulletin_jun2023.pdf

[33] Commonwealth of Australia (2021) National Road Safety Strategy 2021-30 and NTI Data.

- Economic costs: These include property and infrastructure damage compensation, damages to goods, lost productivity, supply chain disruptions, and other related expenses.
- Social costs: There is a loss of workforce in the economy. These also account for lost income due to injuries or fatalities, as well as families, friends, and relatives that face emotional and financial challenges.
- Environmental costs: These include the environmental cleanup costs post-crash and potential hazards from spilled materials.
- External costs: These encompass road closures leading to traffic delays and expenses related to emergency services like ambulances.

Governments are fundamentally obligated to ensure the public safety and well-being of its citizens, however the measures that governments take to achieve this outcome must be justified in terms of their benefits exceeding the costs. As pointed out in the Productivity Commission's review into national transport regulatory reform:

> Transport activities involve inherent risks to safety. Governments have a role in encouraging and informing safe practices as well as ensuring that safety standards are not compromised by commercial pressures. At the same time, regulation should achieve safety objectives while minimising compliance costs and barriers to innovation, the latter being key to productivity growth and improved living standards.[34]

Self-regulation of heavy vehicle activities is not considered to be an acceptable alternative to government regulation. This is due to the motivations of heavy vehicle drivers and operators, typically commercial, and guided by competition. Together, these factors have the potential to encourage some operators to 'cheat' by sacrificing safety standards or compliance with regulations for commercial advantage.

As such, the HVNL exists as a national scheme for facilitating and regulating the use of heavy vehicles on roads in a way that, amongst other things, focuses on ensuring that heavy vehicles and their drivers are safe, and that they are operating on suitable routes to minimise public safety. This C-RIS considers opportunities to improve key elements of HVNL to ensure that the risk posed by heavy vehicles is reduced to protect other road users in the community.

4.3 Objectives

This C-RIS presents a series of policy proposals, the outcomes of which aim to help improve the HVNL so that it better meets its overarching objectives as set out below, across key policy areas.

The HVNL has a single object with four component parts, set out as follows[35]:

[34] Productivity Commission (2019), National Transport Regulatory Reform: Productivity Commission Inquiry Report No.94, p.3.

[35] Heavy Vehicle National Law (NSW), Chapter 1, Part 1.1, Section 3.

The object of this Law is to establish a national scheme for facilitating and regulating the use of heavy vehicles on roads in a way that –

a) promotes public safety; and

b) manages the impact of heavy vehicles on the environment, road infrastructure and public amenity; and

c) promotes industry productivity and efficiency in the road transport of goods and passengers by heavy vehicles; and

d) encourages and promotes productive, efficient, innovative, and safe business practice.

4.4 Barriers and constraints

Constraints that could impact on the success of the policy proposals set out in this C-RIS are discussed below:

- Changes to general access to the road network by increasing vehicle mass and dimension limits may impact on road infrastructure. For example, higher vehicles may increase the risk of strikes to overhead power lines, vegetation and bridges, and longer vehicles create potential swept path issues and short stacking at intersections. As noted by Mr Ken Kanofski, road managers are the asset owner and ultimately responsible for access decision-making and performance of roads. Furthermore, "Road Managers generally are concerned about the balance of heavy vehicle access and degradation and funding of roads".[36] For example, the Australian Local Government Association (ALGA) states that councils manage around 77 per cent of Australia's roads by length and in their pre-budget submission 2023-24, sought a commitment of $300 million per year for local governments to improve freight productivity on their road networks and support implementation of the HVNL reforms.[37] This includes providing route and asset assessment support to councils to better understand the condition of infrastructure for better-informed access decisions, and fixing, upgrading, and maintaining key route infrastructure to support increased productivity on first and last mile freight networks.
- The HVNL aims to improve productivity, efficiency and safety of the Australian heavy vehicle industry and the policy proposals set out in this C-RIS aim to ensure the object of the law is met. However, some of these matters are outside the influence of HVNL for example, the largest drivers for heavy vehicle productivity are likely to be prioritisation of infrastructure spending and efficient road pricing, which are outside the scope of heavy vehicle regulation. Therefore, while the policy proposals in this C-RIS are likely to assist in reducing red tape and minimising road safety risk, they will improve productivity, efficiency, and safety only to the extent enabled by the scope of the HVNL.

[36] Ken Kanofski Advsory Report to ministers on the HVNL, online at www.infrastructure.gov.au/sites/default/files/documents/ken-kanofski-advisory-report-to-ministers-on-hvnl-public-release-version-accessible.docx

[37] Australian Local Government Association Pre-Budget Submission 2023-24

- The HVNL's scope does not encompass the Northern Territory or Western Australia, which gives limited capacity to resolve issues in these states.

4.5 Consultation questions

Consultation Question 2: Has the C-RIS provided sufficient evidence to support the case for government intervention? What else should be considered and why?

Consultation Question 3: In addition to the barriers and constraints identified, what other impediments could impact on the success of implementing options presented in the C-RIS?

5 Impact analysis methodology

Key points

- This section outlines the approach taken to analyse proposed reforms to the HVNL.
- The proposed options have been assessed and compared using a qualitative, multi-criteria impact analysis (MCA) as appropriate. Qualitative impact analysis is supplemented with quantitative analysis of costs and benefits for selected proposals.
- The quantitative analysis includes assumptions informed by findings of the impact analysis, stakeholder feedback and the availability of data. It is anticipated that further analysis of costs and benefits will be undertaken in response to feedback on the C-RIS. Stakeholders are encouraged to provide feedback on the assumptions and to provide evidence and information that could assist with further analysis of the proposed reforms.
- Data limitations have meant that a traditional Cost Benefit Analysis (CBA) and benefit-cost ratio (BCR) has not been calculated to assess the impact of options. Assumptions have been made to enable different analyses for some of the proposals including a breakeven analysis and estimate of costs and benefits.

5.1 Section overview

This section outlines the approach taken to analyse proposed reforms to the HVNL. The C-RIS examines how each option will lead to incremental changes in costs and benefits for industry, government, and the community.

A combination of quantitative and qualitative analysis has been undertaken for key items in the reform package.

Measuring the net benefit of policy change requires the costs and benefits to be compared. Office of Impact Analysis (OIA) guidelines state that a RIS should attempt to quantify all highly significant costs and benefits. Assessments of costs and benefits, whether quantitative or qualitative, should be based on evidence, with data sources and assumptions clearly identified.[38]

Given that this C-RIS encompasses a package of reforms that are broader in scope than other proposals typically considered in a RIS, advice was sought from the OIA on elements of the reform package that should be subject to analysis. The OIA has advised that under its guidelines, changes in offences are not within scope of the regulatory impact assessment process. Changes in fatigue offences have therefore not been subject to impact analysis. Because proposed reforms have been developed as part of a package, these elements are included in this C-RIS for stakeholder feedback and detailed in Section 6.8.

[38] The Office of Impact Analysis (2020), The Australian Government Guide to Regulatory Impact Analysis, p.34.

Ministers have agreed to introduce a NAS, for accreditation schemes with a SMS, in response to the D-RIS (2023). Two options for implementing the NAS have been identified. Because these options are focused on high level implementation, they have not been subject to regulatory impact analysis, but have been included in this C-RIS to invite stakeholder feedback.

5.2 Qualitative impact analysis

The impacts of most proposed options are assessed and compared using a qualitative, multi-criteria impact analysis. This approach is commonly used where full monetisation of costs and benefits are not appropriate or possible, consistent with the OIA cost-benefit analysis (CBA) guidelines.

For some options, use of the multi-criteria analysis has not been possible. Where this is the case, explanation is provided, and an alternative approach is taken.

The NTC selected six impact categories for multi-criteria analysis, modelled on the C-RIS (2020) and D-RIS (2023). The impact categories are as follows:

a) **Public safety** – having safe vehicles on Australian roads is a fundamental accepted standard under existing regulation and will continue to be under any changes to fatigue management, changes to mass and dimension for general access vehicles, or assurance of the accreditation schemes for alternative compliance.

b) **Productivity and efficiency** – the performance of the freight supply chain operating on Australian roads is critical to Australia's future economic success and competitiveness.

c) **Regulatory burden to industry** – changes to fatigue management regulation have the potential to create additional administrative burden on the heavy vehicle industry. If costs are too high, there may be detrimental effects to the sustainability of heavy vehicle businesses.

d) **Regulatory costs to government** – changes to fatigue management regulation and the introduction of a NAS will have some upfront and ongoing costs to government, these costs need to be proportionate to the benefits.

e) **Asset management** – road infrastructure has large investment and maintenance costs, and road networks support safe and efficient movement of people and goods.

f) **Flexibility and responsiveness** – the heavy vehicle industry is operating in a dynamic environment with rapid advances in technology and business practices. Any modern regulatory framework needs to be sufficiently flexible to adapt to realise opportunities.

Table 5 provides further information about the criteria used in the analysis. This assessment is conducted at a national level, considering all jurisdictions that have applied the HVNL. The specific costs and benefits in each state or territory will depend in part on the nature of the heavy vehicle fleet and its use in each state and territory. Subject to data availability and feedback on this C-RIS, impacts on individual jurisdictions may be undertaken as part of the D-RIS.

Table 5. Assessment criteria for each Consultation RIS impact category

Consultation RIS Impact Category	Assessment Criteria
a) Public Safety	▪ Ensures responsibility sits with the party best able to manage the risk ▪ Addresses emergent safety risks that may not have been specifically identified or considered. ▪ Enables targeted compliance and enforcement options, including sanctions and penalties for non-compliance ▪ Provides community assurance that heavy vehicle safety risks have been comprehensively addressed ▪ Supports industry to develop and invest in safer technology and safer management practices.
b) Productivity and Efficiency	▪ Enables more efficient scheduling and business practices. ▪ Enables industry to develop and deploy innovative technology and practices to lower costs. ▪ Reforms apply regulatory requirements equitability across the industry and support competition
c) Regulatory burden to industry	▪ Results in low upfront and ongoing compliance, administrative and delay costs ▪ Provides clear and consistent regulatory expectations to industry about its responsibilities and what is required to comply. ▪ Supports an approach that is consistent across all jurisdictions
d) Regulatory costs to government	▪ Minimises upfront structural, organisational, and regulatory change to implement the model, including a minimal impact on existing processes and minimal regulatory layers. ▪ Supports efficient ongoing administrative and operational processes.
e) Asset Management	▪ Ensures the impact on road infrastructure – including bridges, other structures and pavements – is sustainable and services the needs of all road users, including all general access and restricted access heavy vehicles. ▪ Minimises the impact on community amenity.
f) Flexibility and responsiveness	▪ Allows flexibility for industry by focusing on safety outcomes, minimizing prescriptive requirements. ▪ Allows flexibility for government in addressing emerging safety risks. ▪ Reflects and supports the diversity of the heavy vehicle industry across different freight tasks, geographical areas, and scale and type of operations.

Individuals and groups likely to be affected

To assess the impacts of the reform options it is important to identify the individuals and groups affected by the reform. Table 6 outlines the key groups and individuals that are likely to be affected by the reform options.

Table 6. Groups impacted by each Consultation RIS impact category

Consultation RIS Impact Category	Group impacted
a) Public Safety	▪ Heavy vehicle drivers and other road users (who may be killed or injured) including vulnerable road users such as cyclists, motorcyclists and pedestrians. ▪ Chain of responsibility parties ▪ General public (through wider costs of crashes) ▪ Public and private providers of transport, emergency response, health, infrastructure, and insurance services (secondary beneficiaries). ▪ Enforcement agencies, including police and the NHVR.
b) Productivity and Efficiency	▪ Heavy vehicle drivers, operators, and businesses ▪ Off-road chain of responsibility parties (reduced costs of moving goods) ▪ General public (through reduced costs of moving goods)
c) Regulatory burden to industry	▪ Heavy vehicle drivers, operators, and businesses ▪ Off-road chain of responsibility parties
d) Regulatory costs to government	▪ Australian government ▪ State and territory governments ▪ Local government ▪ Enforcement agencies, including police and the NHVR
e) Asset management	▪ State and territory governments ▪ Local governments and other road managers ▪ Heavy vehicle drivers, operators, and businesses ▪ the Australian community
f) Flexibility and responsiveness	▪ Heavy vehicle drivers, operators, and businesses ▪ Off-road chain of responsibility parties ▪ Vehicle suppliers ▪ Vehicle safety (and other) technology suppliers

Assessing the options

Table 7. Scale for the comparative advantage or disadvantage of options

Significant negative impact	Negative impact	Neutral	Improvement	Large improvement
The option would most likely result in a **large decline** compared with the baseline option.	The option would most likely result in **some (limited or moderate) decline** compared with the baseline option.	The option would most likely have a **negligible impact** compared with the baseline option.	The option would most likely result in **some (limited or moderate)** improvement compared with the baseline option.	The option would most likely result in a **large improvement** compared with the baseline option.

5.3 Analysis of costs and benefits

5.3.1 Introduction

The qualitative impact analysis is supplemented with quantitative analysis of costs and benefits for selected proposals.

The proposals subject to quantitative analysis are:

- Expanding the scope of fatigue regulated heavy vehicles
- Increase to vehicle general mass limits
- Increase to vehicle height limits
- Increase to vehicle length limits.

The level of analysis was informed by findings of the qualitative impact analysis, stakeholder feedback and the availability of data. It is anticipated that further analysis of costs and benefits will be undertaken in response to feedback on the C-RIS, to then be assessed as part of a further D-RIS process. Stakeholders are encouraged to provide evidence and information that could assist with further analysis of the proposed reforms.

5.3.2 Data limitations

Our approach to quantitative analysis has been developed based on several key factors and data limitations. These are set out below:

- Data availability relating to reforms as proposed in this C-RIS have been a considerable challenge. In some cases, it has not been possible to quantify impacts. In others, it has been challenging to estimate baseline figures for the cost of current HVNL requirements. As a result, the analysis is subject to some assumptions with respect to:
  - Compliance costs of current fatigue requirements for operators (e.g., time required to complete written work diary vs. time required to complete electronic work diary).

- Breakdown of fatigue-related crashes by vehicle tonnage for some states.[39]
- Proportion of the freight task operating under CML, as NHVAS data does not distinguish those operating vehicles at CML and HML.
- Proportion of the freight task operating under GML that is mass constrained and would take up increased mass.

Other detailed assumptions for proposals are provided in subsequent sections providing the detailed descriptions of the analysis.

- Estimating public safety benefits is challenging and relies on crash data, which has various limitations, including:
  - There is a lack of national consistency of definitions for crash data and the information collected relating to crashes varies across Australian jurisdictions, making it challenge to estimate national figures for heavy vehicle crashes (including by type of heavy vehicle and mass).
  - For multi-vehicle crashes where fatigue is a causal factor, any driver involved in the crash may have been fatigued, but the data may not be clear on which driver was fatigued, so may not necessarily be attributable to the heavy vehicle driver.
  - There is limited quantifiable evidence linking changes to regulatory settings with a reduction in heavy vehicle crashes.
- The impact of changes to vehicle mass and length on road infrastructure for state and local roads is difficult to quantify due to unavailability of data.

5.3.3 Approach to analysis

As a result of the data limitations discussed above, a traditional CBA and benefit-cost ratio (BCR) has not been calculated to assess the impact of options. Instead, two types of analysis have been used:

- **Breakeven analysis:** Breakeven analysis identifies the point at which total costs and total benefits would be equal. This analysis has been used to assess options for expanding the scope of fatigue regulated heavy vehicles. This involves estimating the reduction in crashes involving heavy vehicles that would be required to offset the costs associated with increased work diary and record keeping requirements.
- **Estimation of benefits:** Analysis has been undertaken to estimate potential benefits of access reforms. Analysis to consider increases to mass limits estimates the potential productivity benefit and potential road wear associated with this change for the relevant cohort of vehicles. Analysis to consider dimension increases has focused on the potential administrative time saving benefit for operators of a reduced need to apply for permits.

[39] Note, crash data has been provided by the NHVR to support this analysis. This data is incomplete for some states. Due to constrained timeframes, the validity of the data has not been confirmed with jurisdictional stakeholders. This will be undertaken as part of developing the D-RIS.

5.3.4 Quantifying costs and benefits

A summary of costs and benefits considered in the quantitative analysis are shown in Table 8 below. These costs and benefits are presented here in summary and described in detail in relevant sections of this C-RIS below.

Table 8. Costs and benefits considered in the qualitative analysis

Reform area	Consultation RIS Impact Category					
	Public Safety	**Productivity and Efficiency**	**Regulatory burden to industry**	**Regulatory costs to government**	**Asset management**	**Flexibility and responsiveness**
Expanding the scope of fatigue regulated heavy vehicles	Changes in crashes required to offset costs	-	Changes in work diary compliance	-	-	-
Changes to general access limits to increase mass	Changes in crashes	Changes in vehicle operating costs, travel time, and externalities and emissions	-	-	Changes in road wear costs	-
Changes to general access limits to increase height	-	-	Changes in costs associated with permit applications	-	-	-
Changes to general access limits to increase length	-	-	Changes in costs associated with permit applications	-	-	-

5.4 Consultation questions

Consultation Question 4: Are there any potential changes to the impact analysis methodology that you would suggest? Please provide reasons and evidence.

6 Fatigue management

Key points

- This section of the C-RIS sets out policy options designed to address limitations within the HVNL that currently contribute to ineffective fatigue management.
- Fatigue management is being considered as a package, as per recommendations agreed by ITMM in August 2022.
- Options presented in this section consider changes to record keeping requirements, the scope of fatigue regulated heavy vehicles, and enforcement of minor work and rest and administrative offences.
- Options are described, followed by analysis of their potential impacts.
- Consultation questions are provided throughout this section. Stakeholders are encouraged to provide responses to these questions to inform the development of a D-RIS.

6.1 Section overview

This section of the C-RIS sets out a suite of policy options designed to address limitations within the HVNL that currently contribute to ineffective fatigue management.

Policy options considered in this C-RIS aim to deliver the package of fatigue reforms proposed by Mr Ken Kanofski and agreed by ITMM in August 2022. The policy options aim to address several key problems as raised in Chapter 3, namely:

- Controls under the HVNL focus on long-haul interstate journeys but not risks associated with short-haul journeys.
- Prescriptive work and rest requirements reduce a driver's ability to actively manage their fatigue.
- Current record keeping requirements are complex and onerous for heavy vehicle drivers.
- Fatigue enforcement and compliance focuses on whether drivers conform to prescriptive rules.

Policy options considered in this C-RIS include:

- Options that aim to simplify how **record keeping requirements** for operators and drivers are structured under the HVNL by streamlining requirements, moving them down the legislative hierarchy and giving the regulator more flexibility to change the form and format of fatigue records over time. Options also aim to remove duplicative offence provisions and administrative processes that no longer have a regulatory purpose.
- Options that enable the **scope of fatigue regulated heavy vehicles** (FRHVs) to be expanded in the law, such that vehicles over 4.5 tonnes are by default considered FRHVs to address both long-haul and short-haul journey driver fatigue risks. The ITMM reform packages specifies that the C-RIS test exemption options for classes of vehicles or areas of

operation from being covered by fatigue regulation. This is includes removing the exemption for vehicles between 4.5 tonnes and 12 tonnes and/or removing the 100km work diary exemption.

- Options that enable a more risk-based approach to **enforcement,** both at the roadside and relating to minor administrative offences e.g., recording information in written work diaries.

It is important to note that consideration of options relating to changes to work and rest requirements outlined in the general schedule for fatigue were also recommended as part of the ITMM reform package, subject to a safety assessment being carried out. However, options to this effect are not being considered in this C-RIS due to the findings of the fatigue and safety assessment conducted by the Sleep Health Foundation on behalf of the NTC in July 2023 (see Appendix C). The assessment evaluated the fatigue and safety implications of proposed changes to the standard hours schedules in the HVNL and concluded that the proposed changes would result in greater sleepiness and safety risks compared to the current law. As such, it is likely that the standard hours will remain unchanged in the future HVNL. Industry and government agency stakeholders agreed that in light of the safety assessment findings, the proposed changes could not be supported and were not viable.

Flexibility in work and rest requirements will, however, be offered through accreditation and alternative compliance options. As agreed by ministers following consideration of the D-RIS (2023), the new regulatory environment for alternative compliance will enable the NHVR to develop a greater range of alternative compliance options than what is currently available. For managing fatigue, this may include developing options involving small adjustments to standard operating hours to grant increased flexibility where appropriate. See Appendix C for more details.

Policy options are set out in the following subsections.

6.2 Record keeping requirements – options

There are two options which aim to streamline record keeping requirements structured under the HVNL, as different to the base case. These options are not mutually exclusive.

Base case 1: Current record keeping requirements under the HVNL are retained.

Under the Base Case, current record keeping requirements under the HVNL are retained, i.e.,

- Drivers of fatigue regulated heavy vehicles are not allowed to drive or work more than the maximum work hours or rest less than the minimum rest hours in a certain period set out by law under the standard hours.
- The National Driver Work Diary must be completed by drivers working more than 100km from based under standard hours, or working under accreditation or exemption hours. The Work Diary is evidence of a driver's work and rest hours and must be completed in accordance with specific requirements under the HVNL. The Work Diary can be written or electronic.
- The HVNL sets out requirements for drivers and record keepers where a work diary is filled up, lost, stolen, or destroyed.
- Record keepers are required to keep an account of specific information about the drivers of fatigue regulated heavy vehicles. Drivers must provide record keepers with their work and rest hour totals and any other relevant vehicle information (such as registration numbers, work

dates etc.). All records must be kept for three years from the date of their creation. For drivers undertaking local work, record keepers must maintain local work records, while for other drivers, record keeping includes retaining duplicate pages of the work diary.

Option 1a: Remove duplicate prescriptive work diary requirements and streamlining offences

This option focuses on removing duplicative prescriptive work diary requirements in the law (particularly around how information is recorded) and streamlining offences relating to these requirements.

Under this option, there would be a single requirement in the law that the driver must record the required information in the driver's work diary in the manner and at the time prescribed by the national regulation, like the current s296. There would be different risk categories and associated penalty levels for this single requirement to reflect the seriousness of the offending. Separate offence provisions for failing to record specific information (s298) when information is to be recorded (s297) and how information is to be recorded (s301) would be removed from the law.

The regulations would prescribe the required information, as it does now under Part 3 Division 1 of the Regulations. The regulations would also specify when the required information needs to be recorded (i.e., at the start of a shift or at a work rest change).

This option removes the duplication of requirements (and associated offences) that currently exists between the law and the written work diary instructions. It also gives the NHVR more flexibility to:

- redesign the written work diary,
- split the instructions into those that are mandatory and guidance/non-essential information (where guidance would not be captured by the offence provision),
- consolidate repetitive information.

It is expected that the NHVR would consult with stakeholders when making any changes to the instructions (and redesigning the written work diary). This requirement could be included in the law.

Under this option, there would also be an opportunity to consolidate certain information at the front of the work diary, where this information does not change regularly and is not required to be recorded daily. Information that could be consolidated includes:

- driver's name
- time zone of driver's base
- hours option

It is noted that the law (and the design of the work diary) already allows for consolidation of some information at the front of the diary, including the address of the driver's base, the address of the driver's record location and the operator's accreditation number if applicable.

In addition, police and the regulator have identified the following as potential simplifications to the written work diary:

- Some of the information on the written work diary page is not essential for checking work and rest requirements or as an evidentiary requirement to prove an offence. These could be optional for the driver to complete (i.e., not completing them would not be an offence). This information includes:
  - Tallying total hours
  - Day of the week
- Other information such as the time zone and the hours option could become "taken as … unless otherwise stated" information – this means drivers would not have to complete this information unless it has changed (reducing the potential for fines where this information is omitted from each page)

Compared to the base case, this means:

- Separate offence provisions for failing to record specific information (s298) when information is to be recorded (s297) and how information is to be recorded (s301) would be removed from the law.

Option 1b: Remove administrative process requirements and offences

This option focuses on removing unnecessary administrative processes from the law.

The HVNL sets out requirements for drivers and record keepers where a work diary is filled up, lost, stolen, or destroyed (s306 to s313). This part of the law was adopted from former jurisdictional laws and was in place to ensure a record of work diaries. However, there is no system in place to record this information and the NHVR has indicated that it does not require this information. These requirements no longer appear to serve any regulatory purpose. They create an administrative burden and act as regulatory red tape for industry participants trying to comply with the law.

Under this option, these requirements would be removed from the law. If required, further information could be included in the instructions and/or guidance for the written work diary. It is noted that some requirements relate to the use of electronic work diaries. If required, these could be incorporated into the technology and data framework development.

The requirement to keep supplementary records if a work diary is filled up, lost, stolen, or destroyed would be retained. Police have identified the lack of consistency in how supplementary records are currently kept creates a potential loophole for the enforcement of work and rest hours. There is a view that the current administrative processes relating to work diaries that are filled up, lost, stolen, or destroyed help to identify the misuse of supplementary records.

To address the potential loophole in the use of supplementary records, under this option, it is proposed to require that these records be kept in a format set by the regulator.

It is noted that, from a compliance and enforcement point of view, it would be preferable to have a national database accessible by authorised officers that records to whom written work diaries have been issued. Removing the provisions identified in this option from the law does not prevent this. The future law will continue to define a written work diary as a diary issued by the regulator, allowing the regulator to develop a system to track diaries if required.

Initial feedback from government agency stakeholders has suggested that if these provisions are removed from the future HVNL they should be replaced with a specific requirement on the NHVR to establish a national database to record the issuing of work diaries.

Compared to the base case, this means:

- Requirements for drivers and record keepers in the case that a work diary is filled up, lost, stolen, or destroyed are removed from the HVNL.
- The requirement to keep supplementary records if a work diary is filled up, lost, stolen or destroyed would be retained in the HVNL.
- The format of supplementary records would be defined by the NHVR.

6.3 Record keeping requirements – impacts, costs and benefits

6.3.1 Approach and limitations

The impacts of options proposed to simplify how record keeping requirements under the HVNL have been assessed and compared using a qualitative, multi-criteria impact analysis. As previously noted, this approach is commonly used where full monetisation of costs and benefits are not appropriate or possible, consistent with the OIA cost-benefit analysis guidelines. Options 1a and 1b have been assessed through the MCA, and a discussion of findings in terms of costs, benefits, and impacts is provided below.

Due to lack of information and data regarding the cost of compliance with current record keeping requirements, a quantitative impact analysis has not been undertaken.

Note, there are no specific impacts for buses arising from the options for change to record keeping requirements.

Analysis of options is set out below.

6.3.2 Options analysis

Table 9 below provides a summary of the record keeping requirements options and the impact analysis which is discussed in more detail below.

Table 9. Summary of record keeping requirement options and impact analysis

Overall Impact	Public Safety	Efficiency and Productivity	Regulatory burden to industry	Regulatory Costs to government	Asset Management	Flexibility and responsiveness
Option 1a: Remove duplicate prescriptive work diary requirements and streamlining offences						
Improvement.	Neutral.	Neutral.	Neutral.	Neutral.	N/A	Improvement.

			Reduced time taken for record keeping.			NHVR has more flexibility to make changes to work diary requirements

Option 1b: Remove administrative process requirements and offences

Improvement.	Neutral. The requirement is not being enforced now and there is no evidence to suggest that this is having an adverse impact on road safety.	Neutral	Improvement. Limited evidence to suggest that drivers and operators are returning/reporting stolen or lost diaries now, however some burden may be removed.	Neutral.	N/A	Neutral.

The overall impact of both options to streamline record keeping requirements is expected to be marginally positive.

Under Option 1a, drivers and operators required to complete a work diary would be likely to benefit from the consolidation of information required in the work diary as it would be likely to reduce the risk of errors by drivers, thereby reducing the risk of committing an administrative offence. However, it remains the case that work diaries are an important compliance monitoring tool, and records must be easy to access and interpret by roadside authorised officers. As such, the extent to which the work diary could be consolidated under this option is yet to be determined, and it is unlikely that the work diary could be consolidated to the extent that there would be a material reduction in the time taken by drivers to fill out a written work diary, or on training costs to learn how to complete a work diary compared to the current requirements.

In comparison, under Option 1b, there is potential to improve compliance by introducing options that minimise loopholes by non-compliant drivers reporting “lost or stolen” work diaries. This option has the potential to reduce regulatory burden for operators and drivers. However, there is no evidence to suggest that drivers and operators are returning/ reporting stolen or lost diaries now, and therefore the net benefit of Option 1b may not be significant.

As such, generally, it is assumed that there would be negligible change in regulatory burden for operators under these options. While both options are likely to deliver benefits, the extent to which these benefits could be realised is difficult to estimate with currently available information but are likely to be marginally positive.

6.4 Consultation questions

Consultation Question 5: Do you agree with the potential impacts of Options 1a and 1b as described above? Are there any additional impacts you think should be considered?

6.5 Scope of fatigue regulated heavy vehicles – options

Options to change the scope of fatigue regulated heavy vehicles have been included in this C-RIS to consider the impact of changes to the cohort of vehicles included under prescriptive fatigue requirements.

Base Case 2: Prescriptive fatigue requirements for HVs >12 tonnes only, work diary exemption for drivers doing local work.

Under this option, the scope of fatigue regulated heavy vehicles and work diary requirements would remain consistent with current requirements under the HVNL, i.e.:

- Drivers of vehicles over 4.5 tonnes and <12 tonnes are not subject to prescribed work and rest limits, however they are legally required to ensure they are not impaired by fatigue while driving a fatigue regulated vehicle. Operators and other chain of responsibility parties also have a duty to ensure these drivers do not drive while impaired by fatigue under their primary duty obligations. There are no prescriptive work diary requirements for drivers of HVs over 4.5 tonnes and <12 tonnes and no prescriptive record keeping requirements for these drivers.
- National heavy vehicle driver fatigue laws apply to FRHVs, which are:
  - a vehicle with a Gross Vehicle Mass (GVM) of over 12 tonnes
  - a combination when the total of the GVM is over 12 tonnes
  - buses with a GVM over 4.5 tonnes fitted to carry more than 12 adults (including the driver)
  - a truck, or a combination including a truck, with a GVM of over 12 tonnes with a machine or implement attached.
- The same prescriptive work and rest rules apply to drivers of HVs >12 tonnes. Driver's working more than 100km from base have full work diary requirements if the vehicle is >12 tonnes.
- There are exemptions from fatigue management requirements for FRHV when undertaking local work. Drivers undertaking local work, where a driver is driving in an area with a radius of 100km or less from the driver's base, are not required to record required information in a work diary or carry a work diary when driving. Record keepers of drivers doing local work are required to keep specific information about their drivers.

– Note, a notice[40] extends the statutory exemption to work diary requirements for drivers of fatigue regulated heavy vehicles who are carrying primary produce within a 160km radius of their base.

Option 2a: Prescriptive fatigue requirements for HVs >12 tonnes only, full work diary requirements for HVs >12 tonnes.

Under this option, the application of prescriptive fatigue requirements will remain consistent with current state, however the current work diary exemption for local work drivers would be removed. Full driver work diary requirements would apply to all drivers of HVs >12t. Record keeping requirements would also be the same for all drivers of HVs >12 tonnes.

Compared to the base case, this means:

- There would be no change for drivers of HVs <12 tonnes and no change for their record keeping requirements.
- Drivers of vehicles >12 tonnes undertaking local work would have to meet the full work diary requirements.
- Record keepers of drivers undertaking local work would have different record keeping requirements (only an obligation to keep duplicate pages, and payment records) as the responsibility would be shifted to the driver through the work diary requirements.

Option 2b: Prescriptive fatigue requirements for HVs >12 tonnes only, 'lite' diary requirements for lower-risk operations.

Under this option, the application of prescriptive fatigue requirements will remain consistent with current state, however drivers doing lower risk operations would have simplified driver record keeping requirements.

This option introduces the concept of a 'lite' work diary requirement. This concept is described in the call-out box below.

'Lite' work diary requirement: This means that the information a driver is required to keep is simplified to the following:

- Driver's name, licence number and base location
- Vehicle registration
- Date for the day worked
- Start time and finish time for the day worked
- Total of driver's work and rest times for each day they worked

[40] Heavy Vehicle National Law, National Primary Production Work Diary Exemption Notice 2021 (No.1).

- Total of driver's work and rest times for each week they worked

The driver would be required to record this information in a simplified work diary. A driver would be required to carry the 'lite' work diary while they are driving a heavy vehicle.

Implementation of the 'lite' work diary by the NHVR may include an NHVR produced or approved 'lite' work diary or business records (such as timesheets) that meet minimum information requirements set by the NHVR.

This option also introduces the concept of a 'lower risk operations'. This concept is described in the call-out box below.

Lower risk operations: These cover both limited day-time operations and local work operations. Either of these factors make an operation 'lower risk'.

Limited day-time operations are those where the driver:

- Does not start work before 6am or finish after 8pm and
- Does not work more than 10 hours a day; and
- Does not work more than 50 hours in 7 days.

Local work operations are the same as under current law, that is where the driver is driving in an area with a radius of 100km or less from the driver's base.

Compared to the current state, this means:

- No change for drivers of HVs <12 tonnes.
- Drivers of HVs >12 tonnes undertaking local work would have to fill out a 'lite' work diary and carry this with them when driving.
- Drivers of HVs undertaking limited daytime work would have less record keeping obligations (if they aren't currently undertaking local work).

Option 2c: Prescriptive fatigue requirements for all HVs over 4.5 tonnes, full work diary requirements for all operations.

Under this option, the same prescriptive work and rest rules would apply to all HVs >4.5 tonnes. Record keeper requirements would also be the same for all drivers of HVs >4.5 tonnes.

Full driver work diary requirements would apply to all drivers of HVs. Record keeper requirements would also be the same for all drivers of HVs >12 tonnes.

Compared to the base case, this means:

- Drivers of vehicles <12 tonnes would have prescriptive rules that currently don't apply to them.

- Record keepers for drivers of vehicles <12 tonnes would have record keeping obligations that currently don't apply to them.
- Drivers of vehicles >12 tonnes undertaking local work would have to meet the full driver work diary requirements.
- Obligations of record keepers of drivers undertaking local work would have less record keeping requirements (only obligation to keep duplicate pages and payment records), but drivers would have more.

Option 2d: Prescriptive fatigue requirements for all HVs over 4.5 tonnes, work diary exemption for local work (all HVs).

Under this option, the same prescriptive work and rest rules would apply to all HVs >4.5 tonnes. Full work diary would apply to drivers except those undertaking local work, i.e., a driver is driving in an area within a radius of 100km from the driver's base. Record keeper requirements would also apply to all drivers, except those undertaking local work.

Drivers undertaking local work would not be required to record information in or carry a work diary. Record keeper requirements for drivers undertaking local work would be the same as current HVNL requirements.

Compared to the base case, this means:

- Drivers of vehicles <12 tonnes would have prescriptive work and rest rules that current don't apply to them.
- Drivers of vehicles <12 tonnes not doing local work would have prescriptive work diary requirements that don't currently apply to them.
- Record keepers for drivers of vehicles <12 tonnes would have record keeping obligations that current don't apply to them.
- No change for drivers of HVs >12 tonnes (both local work and 100km+ work) or their record keepers.

Option 2e: Prescriptive fatigue requirements for all HVs over 4.5 tonnes, 'lite' work diary requirements for lower-risk operations.

Under this option, the same prescriptive work and rest rules would apply to all HVs >4.5 tonnes. Drivers undertaking lower risk operations would have simplified driver record keeping requirements, in the form of a 'lite' work diary, as described above.

The definitions of 'lower risk operations' and 'lite' diary requirements as described above apply to this option.

Compared to the current state, this means:

- Drivers of vehicles <12 tonnes would have prescriptive rules that don't currently apply to them.
- Record keepers for drivers of vehicles <12 tonnes would have recordkeeping obligations that don't currently apply to them.

- Drivers of vehicles >12 tonnes undertaking local work would have to fill out a 'lite' work diary and carry this with them while driving.
- Drivers of vehicles >12 tonnes undertaking daytime work would have less driver recordkeeping requirements (if they aren't currently undertaking local work).

6.5.1 Summary of scope of FRHV options

Options to change the scope of fatigue regulated heavy vehicles are complex, differ across multiple areas and uniquely impact different vehicle cohorts. To assist in understanding the differences between each option, this section presents a summary of key differences between options, by vehicle cohort (over 12 tonnes, over 12 tonnes with local work exemption, between 4.5 tonnes and 12 tonnes), and across four key areas:

- Duties – i.e., the primary duty under the HVNL to ensure so far as is reasonably practicable the safety of transport activities, and the core driver duty that a driver must not drive a fatigue regulated heavy vehicle on road while impaired by fatigue.
- Work and rest rules – i.e., the maximum work and minimum rest limits defined by standard hours.
- Work diary requirements – i.e., requirements for filling out the National Driver Work Diary as evidence of a driver's work and rest hours.
- Record keeping requirements – i.e., requirements for retaining work and rest records for three years (either duplicate pages of work diary, or local area records)

Key differences are set out in Table 10 below. Cells highlighted in light blue indicate that these requirements are different to the base case.

Table 10. Differences in FRHV scope options against the base case

	Vehicle cohort	Duties	Work and Rest Rules	Work Diary	Record Keeping
Base case	Over 12t	Primary duty & driver duty	Standard hours	Full work diary requirement	Work diary records retained
	Over 12t (local work <100km)	Primary duty & driver duty	Standard hours	N/A	Local area records
	4.5t – 12t	Primary duty & driver duty	N/A	N/A	N/A
Option 2a	Over 12t	Primary duty & driver duty	Standard hours	Full work diary requirement	Work diary records retained
	Over 12t (local work <100km)	Primary duty & driver duty	Standard hours	Full work diary requirement	Work diary records retained

	4.5t – 12t	Primary duty & driver duty	N/A	N/A	N/A
Option 2b	**Over 12t**	Primary duty & driver duty	Standard hours	Full work diary requirement	Work diary records retained
	Over 12t (local work <100km)	Primary duty & driver duty	Standard hours	Lower risk operations = 'lite' work diary Standard operations = full work diary requirement	Lower risk operations = 'lite' work diary records retained Standard operations = Work diary records retained
	4.5t – 12t	Primary duty & driver duty	N/A	N/A	N/A
Option 2c	**Over 12t**	Primary duty & driver duty	Standard hours	Full work diary requirement	Work diary records retained
	Over 12t (local work <100km)	Primary duty & driver duty	Standard hours	Full work diary requirement	Work diary records retained
	4.5t – 12t	Primary duty & driver duty	Standard hours	Full work diary requirement	Work diary records retained
Option 2d	**Over 12t**	Primary duty & driver duty	Standard hours	Full work diary requirement	Work diary records retained
	Over 12t (local work <100km)	Primary duty & driver duty	Standard hours	N/A	Local area records
	4.5t – 12t	Primary duty & driver duty	Standard hours	>100km from base = full work diary requirement <100km from base = N/A	Work diary records retained >100km from base <100km from base, local area records
Option 2e	**Over 12t**	Primary duty & driver duty	Standard hours	Daytime work (lower risk) = 'Lite' work diary requirement Other time periods = Full work diary requirement	Daytime work (lower risk) = 'Lite' work diary records retained Other time periods = Work diary records retained
	Over 12t (local	Primary duty & driver duty	Standard hours	'Lite' work diary requirement	'Lite' work diary records retained

	work <100km)				
	4.5t – 12t	Primary duty & driver duty	Standard hours	Lower risk operations = 'lite' work diary Standard operations = full work diary requirement	Lower risk operations = 'lite' work diary records retained Standard operations = Work diary records retained

6.6 Scope of fatigue regulated heavy vehicles – impacts, costs and benefits

6.6.1 Approach and limitations

Determining the impacts of the proposed options to change the scope of fatigue regulated heavy vehicles is challenging due to several factors:

- Data available to quantify the impact of changing the scope of fatigue requirements for heavy vehicles under the HVNL is limited. Data limitations create challenges for all relevant cohorts of vehicles and for establishing the base case, as set out below:
  - Heavy vehicles over 12 tonnes (operating 100km+ from base) – work and rest standard schedule and work diary requirements. It is difficult to estimate the compliance costs of these requirements for individual drivers and operators. Compliance costs are likely to vary depending on the type of operation and which type of work diary is adopted (i.e., written versus electronic). Over the analysis period it may be expected that the market uptake of electronic work diaries will increase, although the likely rate of take up is not possible to estimate with available information. Reliable work/rest records underpin the fatigue management regulatory framework and provide assurance of safe practices. However, it is difficult to estimate the public safety benefits or reduced crash risks that can be directly attributed to compliance with the schedule.
  - Heavy vehicles over 12 tonnes (local work) – record keeping requirements. It is difficult to estimate the costs of these basic record keeping requirements. It is also unclear what proportion of the fleet keeps these fatigue management records in practice now. Anecdotal evidence suggests that enforcement of local work is limited.
  - Heavy vehicles under 12 tonnes – work and rest times could be regulated (new), introducing new record keeping requirements. Road freight businesses with a fleet that includes vehicles under 12 tonnes may in some cases also have a fleet that includes FRHV and therefore have system of fatigue management record keeping in place.
- Data limitations also create challenges in assessing options where new concepts are introduced, for example the 'lite' work diary, and 'lower risk operations'. As the time savings associated with the 'lite' work diary are not known, an assumption has been made to estimate the expected cost saving associated with this regulatory approach. Furthermore, due to the lack of information to understand the cohorts of vehicles that may be impacted by

introduction of ‘lower risk operations’, an assumption has also been made to estimate the cost savings associated with this regulatory approach.

- Establishing the base level of national crashes associated with fatigue is challenging. Crash related data has been obtained from relevant jurisdictions as part of the development of this C-RIS. However, due to inconsistencies in the way data is collected and discrepancies between approaches to defining that a crash was ‘fatigue-related’, establishing a base level national figure for fatigue-related crashes has required extrapolation. A multiple vehicle fatigue-related crash involving a heavy vehicle does not necessarily mean that the heavy vehicle driver was the fatigued driver.
- The impact of proposed options on buses has not quantified as part of this analysis. A qualitative discussion of impacts is provided in Section 6.6.2.

Due to the data limitations as set out above, a BCR has not been calculated as part of this analysis. Instead, for analysis of options for expanding the scope of fatigue regulated heavy vehicles, break-even analysis was adopted. In economics, breakeven analysis refers to the point at which total costs and total benefits would be equal. This approach helps to avoid some of the challenges created by data limitations, by not making assumptions about the potential reduction in crashes that could be achieved with reforms which is not possible to estimate with available information. Instead, breakeven analysis has been used to estimate the reduction in crashes involving relevant heavy vehicles that would be required to offset the costs associated with additional fatigue, work diary and/or record keeping requirements.

In addition, qualitative analysis of options, through multi-criteria analysis, has been conducted to provide an indication of overall impact. The qualitative impact of options to change the scope of fatigue regulated heavy vehicles is provided in Section 6.6.2 below. Quantitative analysis of these options is provided in Section 6.6.3.

While the assumptions employed might not exactly reflect the conditions observed in practice, the use of simplified parameters helps in providing an indicative monetised value of the costs incurred in the base case, and the potential for improvement through the reform.

6.6.2 Qualitative analysis

The likely impact of proposed options is provided in Table 11 below, followed by a brief discussion of findings.

Table 11. Likely qualitative impacts of proposed FRHV scope options

Overall Impact	Public Safety	Efficiency and Productivity	Regulatory burden to industry	Regulatory Costs to government	Asset Management	Flexibility and responsiveness
Option 2a: Prescriptive requirements for HVs >12 tonnes only, full written work diary requirements for HVs >12 tonnes						
Negative impact.	Improvement. Drivers and operators of over 12t vehicles have increased	Neutral.	Negative Impact. Costs to establish record keeping requirements,	Neutral. The local work exemption requires record	N/A	Negative impact. Drivers have to keep WD records.

Overall Impact	Public Safety	Efficiency and Productivity	Regulatory burden to industry	Regulatory Costs to government	Asset Management	Flexibility and responsiveness
	awareness of fatigue management and records that provide assurance of compliance with standard schedule.		training, and ongoing completion of WD (costs higher for WWD than EWD).	keeping which can be enforced.		
Option 2b: Prescriptive fatigue requirements for HVs >12 tonnes only, 'lite' diary requirements for lower risk operations						
Neutral.	Improvement. Drivers and operators of higher risk (over 12t) vehicles have increased awareness of fatigue management and records that provide assurance of compliance with standard schedule. Those with lower risk continue to have flexible record keeping to manage fatigue risk.	Neutral.	Negative Impact. Costs to establish 'lite' record keeping requirements, training, and ongoing completion of 'lite' records.	Neutral. The local work exemption requires record keeping which can be enforced.	N/A	Neutral. The 'lite' record keeping requirement minimises changes.
Option 2c: Prescriptive fatigue requirements for all HVs over 4.5 tonnes, full work diary requirements for all operations.						
Negative Impact.	Improvement. All HV drivers and operators over 4.5t vehicles have consistent understanding of fatigue management and records that provide assurance of compliance with standard schedule.	Neutral.	Significant Negative Impact. Costs to establish record keeping requirements, training, and ongoing completion of WD (costs higher for WWD than EWD).	Negative impact. Increased need to check assurance of compliance with the general schedule.	N/A	Negative impact. Drivers have to keep WD records.
Option 2d: Prescriptive fatigue requirements for all vehicles over 4.5 tonnes, work diary exemption for local work (all HVs)						
Neutral	Improvement. All HV drivers and operators over 4.5t vehicles have consistent	Neutral.	Negative Impact. For vehicles under 12t doing local work there is a requirement to comply with	Neutral. No material change in resourcing of current heavy vehicle regulation.	N/A	Negative impact. Drivers have to keep WD records.

Overall Impact	Public Safety	Efficiency and Productivity	Regulatory burden to industry	Regulatory Costs to government	Asset Management	Flexibility and responsiveness
	understanding of fatigue management. Different record keeping requirements to provide assurance of compliance with standard schedule.		the general schedule, and a change in current record keeping for vehicles under 12t travelling over 100km from base.			
Option 2e: Prescriptive fatigue requirements for all HVs over 4.5 tonnes, 'lite' work diary requirements for lower risk operations						
Negative impact.	Improvement. Drivers and operators higher risk over 4.5t vehicles have increased awareness of fatigue management and records that provide assurance of compliance with standard schedule. Those with lower risk continue to have flexible record keeping to manage fatigue risk.	Neutral.	Significant negative impact. Substantial changes in work diary requirements for large proportion of the fleet. For vehicles under 12t doing local work there is a requirement to comply with the general schedule. Costs to establish 'lite' record keeping requirements, training, and ongoing completion of 'lite' records. However, likely to deliver time saving benefits to operators in long term.	Neutral. The "lite" work diary requirement requires record keeping which can be enforced.	N/A	Negative impact. Drivers have to keep WD records which previously have not been required, albeit 'lite' in some cases. The 'lite' record keeping requirement minimises changes.

Changes to the scope of fatigue-related heavy vehicles would have varying impacts for operators of different cohorts of freight vehicles. Namely, vehicles over 12 tonnes, vehicles over 12 tonnes undertaking local work <100km, and vehicles between 4.5 tonnes and 12 tonnes. These options are also likely to positively impact road safety. The potential impacts on road safety, for each cohort of the heavy vehicle fleet, and enforcement costs are discussed below.

Public safety

Options presented in this section expand the cohort of vehicles required to manage work and rest times and maintain records to prove compliance. As there is currently no definitive roadside test for fatigue, managing hours of work and rest are the best approach and the current mechanism used to mitigate fatigue-related risks. While difficult to quantify due to the limitations as discussed above, it can be assumed that by expanding the scope of vehicles required to manage fatigue in this way, all options considered under this reform area have the potential to improve road safety outcomes by reducing fatigue-related crashes.

A consistent approach to fatigue management across the heavy vehicle fleet and applicable to all drivers of heavy vehicles may also assist in better understanding of fatigue risks for all heavy vehicle drivers and operators and help to manage short distance fatigue risks.

Impacts for heavy vehicles over 12 tonnes (operating >100km from base)

Options to change the scope of fatigue regulated heavy vehicles have the lowest impact on the fleet of heavy vehicles over 12 tonnes. This is because these vehicles are already subject to fatigue requirements under the schedule of standard hours, which requires completion of a work diary and retention of work diary records. It is estimated that this cohort of vehicles make up 22% of the total heavy vehicle fleet.[41]

Only Option 2e, has any implication for this cohort of vehicles whereby the introduction of the 'lite' work diary could reduce the time taken to record work and rest times for vehicles considered 'lower risk' (e.g., undertaking daytime operations). While this cohort is likely to be negatively impacted by the additional costs of establishing 'lite' record keeping arrangements, including training, they are likely to accumulate time saving benefits over time.

Impacts for heavy vehicles over 12 tonnes undertaking local work (operating <100km from base)

Options to change the scope of fatigue-related vehicles would have considerable impact for vehicles over 12 tonnes undertaking local work (i.e., operating <100km from base). These vehicles must currently follow the schedule of standard hours, and maintain local area records, however, have no requirement to maintain a work diary. These vehicles comprise approximately 47% of the heavy vehicle fleet.[42]

With the exception of Option 2d (which would have no impact for this cohort), each of the options would introduce greater regulation, in the form of work diary requirements, beyond what is currently required. The introduction of either full or 'lite' diary requirements would create additional regulatory burden for drivers of this cohort of vehicles and would change record keeping requirements. Under all but Option 2d, the responsibility of record keepers would change from the maintenance of local area records, to retaining duplicate pages of the full or 'lite' work diary.

Impacts for heavy vehicles between 4.5 tonnes and 12 tonnes

Options to expand the scope of fatigue regulated vehicles would have significant implications for the cohort of vehicles between 4.5 tonnes and 12 tonnes. These vehicles are not currently subject to prescriptive work and rest rules, work diary requirements or record keeping requirements, and make up approximately 31% of the heavy vehicle fleet.[43]

Under Options 2c, 2d and 2e, vehicles included in this cohort would be required to follow the schedule of standard hours and maintain a work diary under some or all operational circumstances. The work diary could be 'lite' or full. These options will considerably increase the

[41] NTC (2019), Effective fatigue management, p.31.

[42] NTC (2019), Effective fatigue management, p.31.

[43] Ibid., p.31.

regulatory burden for drivers operating vehicles in this cohort, from a low base. There are also costs associated with training to support expanded work diary requirements. Record keeping requirements would also create additional costs for operators.

Enforcement Costs

It is assumed that the impact of these options on enforcement costs for the NHVR would be negligible as the resourcing of regulatory enforcement is not likely to materially change. Irrespective of how fatigue regulated heavy vehicles are defined in legislation, enforcement activities and other regulatory services would continue to target high risk vehicles, drivers, and operators. This assumes that the NHVR is already working efficiently, and that this would continue under this option.

Impacts on buses

Fatigue regulated buses are defined in the current HVNL as a heavy vehicle that is built to carry more than 12 adults (including the driver) and weighs more than 4.5 tonnes. Options proposed in this C-RIS suggest no change to this definition. Where there is a potential impact on bus drivers is the removal of the work diary exemption for local work (<100km). Under Options 2a and 2c, drivers would be required to complete full work diaries for local work, under Option 2e, drivers would be required to complete a 'lite' work diary, while under Option 2b drivers may be required to complete a 'lite' or full work diary depending on risk levels. This could have significant implications for bus drivers completing short local trips.

Note, there is a work diary exemption for certain types of bus services in NSW. This would not be impacted by any of the options being put forward, as the NHVR will have the same powers as it currently must issue work diary exemptions by notice.

6.6.3 Quantitative analysis

Breakeven analysis has been undertaken in place of a traditional quantitative analysis. The breakeven analysis considers the required reduction in fatigue-related heavy vehicle crashes to offset the costs associated with each proposed change.

Benefits in this assessment relate to the reduction in fatigue-related heavy vehicle crashes. This takes the form of both crashes involving fatalities and crashes involving injuries.

The primary cost considered in this assessment is the operator compliance cost associated with completing work diaries. That is, the value of the time required to fill out work diaries by operators who were previously not required to participate.

As discussed in Section 6.6.2 changes to compliance costs for the NHVR are assumed to be negligible under these options as it is expected that the same resources as currently allocated to fatigue management would be required in future.

The analysis estimates the impact of the proposed options on the costs to operations in HVNL jurisdictions, with the exception of the Australian Capital Territory (ACT). Crash data at the level of granularity needed for the analysis was unavailable for ACT (and therefore benefits have not been captured), so costs have also been excluded to ensure that the scope of costs and breakeven benefits is comparable.

Data sources

A number of data sources were used to inform the analysis. These include:

- Motor Vehicle Census, 2020, Australian Bureau of Statistics
- Survey of Motor Vehicle Use, 2020, Australian Bureau of Statistics
- Road Freight Movements, 2014, Australian Bureau of Statistics
- Jurisdictional crash data from various sources.

Key assumptions

The following general assumptions underpin the analysis:

- Due to the lack of a robust base of data on trips and vehicle kilometres travelled (VKT), the results are limited to an annual estimate for 2023. This removes uncertainties relating to forecasting costs and safety benefits.
- Prices and cost parameters have been escalated to 2023 using the Consumer Price Index (CPI).
- Data on trips and VKT is not available at the tonnage-cohort level. This has therefore been determined using the number of trucks in relevant tonnage-cohorts as reported in the Motor Vehicle Use Survey dataset[44]. At a granular level, this approach implicitly assumes that all trucks have the same annual VKT – while this is not the case in practice, the distribution of trips and VKT to tonnage cohorts averages out at the national level (excluding non-HVNL states). Given that operator compliance burden of work diaries is directly linked to the number of trips taken, supplementary analysis has been carried out to ensure that alternative approaches provide similar results pertaining to the operator compliance burden of work diaries. Further information on this supplementary analysis is detailed below.
- Some of the fatigue-related crash data used for safety benefits has variables that identify whether the heavy vehicle is the key or main vehicle, which does not necessarily attribute fault, however, is a proxy for assuming that the heavy vehicle driver was fatigued. For further details on the crash data and statistics used, please see Appendix D.
- Fleet data from 2020 has been escalated at a growth rate of 1.5% per annum to estimate the freight task for 2023.

Specific cost assumptions have been made for the analysis relating to the scope of fatigue regulated vehicles. These are outlined in Table 12 below.

[44] Survey of Motor Vehicle Use, 2020, Australian Bureau of Statistics

Table 12. Cost assumptions used in the impact assessment of the scope of fatigue regulated heavy vehicle options – 2023 dollars

Crash Injury Cost Assumptions			
Injury parameters	**Core analysis value**	**Share of non-fatal injuries**	**Source**
Value of statistical life (VSL) – value of a fatal injury	$5.3 million	n/a	Value of Statistical Life Guidance Note, Office of Impact Assessment[45]
Value of serious injury (VSI)	$526,606	36%	Australian Transport Assessment and Planning (ATAP), PV2 Road Transport, Crash costs
Value of hospitalized injuries (VHI)	$100,431	51%	
Value of minor injuries (VMI)	$31,739	14%	

Other Costs		
Key parameter	**Core analysis value**	**Source**
Work-related labour costs	$79.63/hr[46]	Regulatory Burden Measurement Framework, Office of Impact Assessment

Furthermore, assumptions on key parameters have been made for determining cost of burden to operators associated with work diary compliance. These are detailed in Table 13 below.

[45] ATAP provides a different value of statistical life which is considerably higher than that provided in OIA guidelines. This has been tested as part of the sensitivity analysis.

[46] Work-related labour cost is used as recommended by the OIA where appropriate/accurate labour rates are unknown or would add undue complexity to the costing process. Note that this is an economy-wide value for employees that is adjusted to include income tax. This value is also scaled up to account for non-wage labour on-costs (for example, payroll tax and superannuation) and overhead costs.

Table 13. Key parameters used in the impact assessment of the scope of fatigue regulated heavy vehicles options

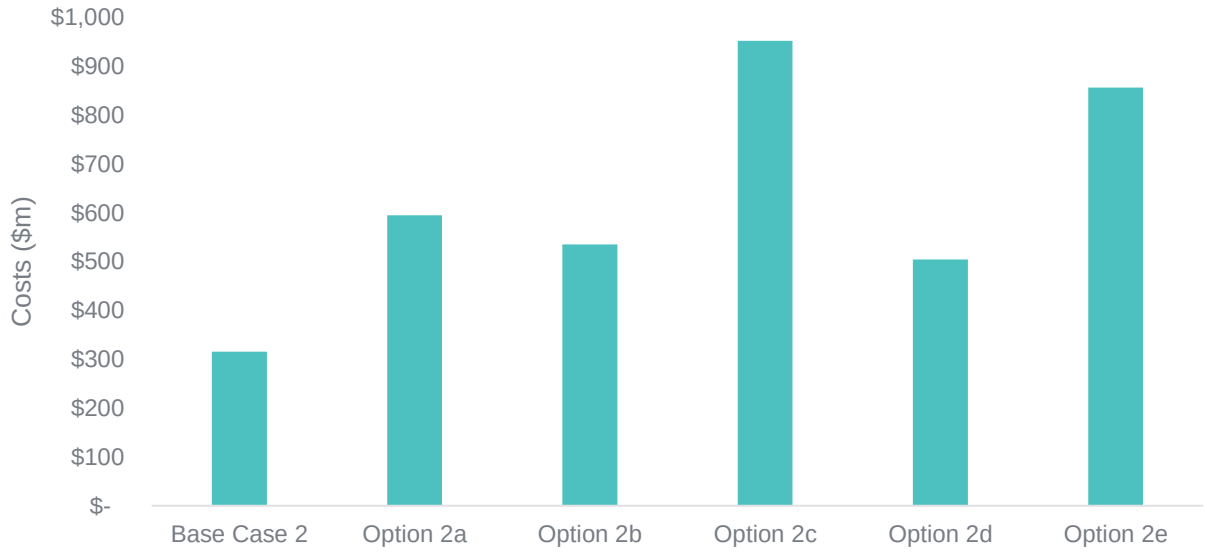
Key parameters	Core analysis value	Source
Proportion of trips classified as local (<100km from base)	47%	Effective fatigue management, Issues Paper, NTC
Proportion of trips classified as lower risk operations	40%	In the absence of data for verifying the proportion of lower risk operations, it is assumed that 40% of trips are classified as lower risk operations.
Daily time required by operator to complete written work diary requirements – minutes	7.5	Study assumption regarding time taken each day
Adjustment to operator's daily written diary compliance burden to account for burden associated with completing a lite/electronic work diary	25%	In the absence of data for verifying the time taken to complete lite work diary requirements or EWD, the compliance burden is tested at 25% of the Written Work Diary.
Truck utilisation – rigid trucks	75%	It is assumed that a certain proportion of the fleet is not in service at any point in time. In the absence of data to provide an insight on the proportion of the heavy vehicles listed in the Motor Vehicle Census, 2020 that are currently actively in service, assumed proportions were tested.
Truck utilisation – articulated trucks	90%	It is assumed that a certain proportion of the fleet is not in service at any point in time. In the absence of data to provide an insight on the proportion of the heavy vehicles listed in the Motor Vehicle Census, 2020 that are actively in service, these proportions are applied. This marginally helps with the overstatement of costs.

Overview of costs

The cost impacts of the proposed reforms to the scope of fatigue regulated heavy vehicles primarily include those associated with the cost of operator compliance for work diaries. This is the cost associated with the time taken to fill out diary entries for cohorts subject to the prescriptive requirements.

Figure 1 presents the estimated costs in the base case (current state) and each regulatory option. These figures represent the potential estimated burden for operators in the HVNL states excluding the ACT.

Figure 1. Cost profile associated with work diary operator compliance burden



These cost estimates show that proposed changes to expand the scope of fatigue regulated heavy vehicles will result in an increased operator compliance burden in all the proposed options, as compared to the Base Case. Options 2c, and 2e are reflective of expanding the work diary requirements across all heavy vehicle tonnage cohorts, while also removing any exemptions, whereas Option 2a reflects removing the local work diary exemption from the Status Quo.

The impact of removing the local work exemption and introducing 'lite' diary requirements for lower-risk operations can be seen in Option 2b. This option results in a 70% increase in operator compliance burden. Option 2d leads to the smallest increase in costs from the status quo – a result of maintaining existing local work exemptions for heavy vehicles over 12 tonnes and providing local work exemptions for heavy vehicles under 12 tonnes, which limit increases in compliance burden compared to other options.

Overview of benefits

Safety benefits (crash cost savings) have been identified as the primary benefit to the change in scope of fatigue regulated vehicles. As described in previous parts of this C-RIS, the impact of the reform proposals on crash cost savings has been challenging to quantify, due to a lack of data and evidence on the impact of work diaries or the general schedule on crash rates or crash severity. To overcome this limitation, the estimated cost of crashes has been calculated for the base case, and then used to determine the reduction in crash rates required to offset the cost of work diary operator compliance as part of the break-even analysis.

The cost of fatigue-related crashes in the HVNL states (excluding the ACT) for the base case is estimated to be **$261.9 million**. This has been calculated using crash data made available by the NHVR, and assumptions on the value of fatal and non-fatal crashes using a series of assumptions

identified in Section 6.6.1 An overview of the crash data and its application is provided in Appendix D. This is the crash cost considered for analysis of all options, including the base case, due to a lack of evidence on the impact of work diaries or general schedule on crash rates. The breakeven analysis considers the reduction in fatigue related crashes that would be required as a result of the reform to overcome the compliance burden of the reforms to operators.

Summary of results

The results of the breakeven analysis are presented using two key metrics:

- Incremental costs – this is the difference between the cost profile of work diary-related operator compliance burden in the base case and the proposed options.
- A breakeven rate which measures the percentage reduction of fatigue-related heavy vehicle crashes that is required to enable the options to breakeven with their associated operator compliance burden.

Table 14 below presents the headline results from the breakeven analysis.

Table 14. Breakeven analysis results (2023 dollars)

Option	Total Estimated Costs - work diary operator compliance burden (millions)	Incremental Costs (millions)	Estimated Breakeven Rate (%)
Base Case 2	$315.3	$ -	-
Option 2a	$952.0	$279.6	-
Option 2b	$535.5	$220.1	84%
Option 2c	$952.0	$636.7	-
Option 2d	$504.6	$189.2	72%
Option 2e	$856.8	$541.5	-

There is no estimated breakeven rate provided for Option 2a, 2c and 2e because the estimated incremental costs of these options are greater than the total cost of fatigue-related heavy vehicle crashes. This means that crashes would need to reduce by greater than 100% to breakeven with the cost associated with operator work diary compliance burden, which is not possible. Within the limited scope of this analysis, this implies that these three options would not achieve a positive NPV in the long term and would not achieve a BCR of greater than 1, and therefore are unlikely to deliver a net economic benefit.

The results also show that current fatigue-related crash rates would need to reduce by 84% for Option 2b to deliver a positive net economic benefit, and by 72% for Option 2d to do the same. It should be noted that these are substantial crash reductions that would be challenging to achieve in practice. Both options are characterised by a comparatively lower operator compliance burden of having to fill out work diaries. In Option 2b, this is driven by a combination of work diaries only being applicable to heavy vehicles that are greater than 12 tonnes, in addition to limited increases in compliance burden for lower-risk operations (compared to other options). In Option 2d, an

exemption for local work trips limits increases in compliance burden compared to other options. These reduced work diary compliance burden costs influence the options' potential for achieving a net economic benefit.

Caution should be taken in interpreting these results. While breakeven rates were calculated for Option 2b and 2d, this does not necessarily mean that they are the most effective at improving safety. As mentioned in Section 6.6.1, this analysis has been subject to significant data limitations that has led to the need for making assumptions on the burden associated with work diary compliance which needs to be refined through the consultation process. Furthermore, data on crashes in the HVNL jurisdictions that has been used for this analysis was incomplete, with gaps being filled through extrapolation of data from other states.

Supplementary analysis

As highlighted in the general assumptions list, data on trips and VKT is not available at the tonnage-cohort level. This has therefore been determined using the number of trucks in relevant tonnage-cohorts, which implicitly assumes that all trucks have the same annual VKT. Since this is not the case in reality, a supplementary test has been carried out that calculates work diary burden using a simplified bottom-up approach to confirm that the results achieved can be duplicated using other methodologies.

Instead of extrapolating the operators' work diary compliance using trip data, this methodology uses the number of trucks in service and the same compliance related assumptions to achieve very similar results. Variance between the cost calculations in the core analysis and the supplementary analysis ranges from between 0.5% to 3%, confirming the general magnitude of costs calculated using the core analysis.

Sensitivity testing

It is noted that the breakeven rate is sensitive to several key inputs and assumptions that have been made as part of this analysis – particularly those related to the operators' compliance burden of filling out work diaries. Sensitivity testing can help to identify those input values and assumptions that can materially change the results. This has been undertaken to demonstrate the impact of changes in the inputs on the headline results, with a particular focus on variables that were uncertain. Table 15 below provides an overview of the sensitivity analysis undertaken and the rationale for specific items considered.

Table 15. Overview of sensitivities tested

	Sensitivity	Description of sensitivity analysis	Rationale
1.	50% - portion of trips classified as lower risk operations	It is assumed that 50% of all trips are classified as lower risk operations	Given the lack of supporting data, and the anecdotal nature of the assumptions used, it is prudent to test the sensitivity.
2.	5 minutes – daily driver time required to complete written work diary	It is assumed that drivers spend 5 minutes every day completing work diaries.	Given the lack of supporting data, and the anecdotal nature of the assumptions used, it is prudent to test the sensitivity.
3.	50% - adjustment for daily operator burden of completing a lite/EWD	It is assumed that the operator burden for completing a lite or electronic work diary is half that of completing a written work diary.	Given the lack of supporting data, and the anecdotal nature of the assumptions used, it is prudent to test the sensitivity.
4.	$7,531,681 – average Value of Statistical Life as per ATAP, PV2 Road Transport Guidelines	ATAP value for VSL is used instead of OIA guidance.	To reflect the considerably lower value attributed to VSL in OIA guidelines, as compared to the ATAP guidelines.

The summary results of the sensitivity analysis are presented in Table 16 below, with the shaded cells highlighting a change in breakeven rate as a result of the sensitivity tests. It is noted that flexing the selected inputs did not result in any other options apart from Option 2b and Option 2d becoming more viable, highlighting the significant work diary compliance burden associated with the other three options. Increasing the assumption on the portion of trips classified as lower-risk operations (Sensitivity 1) led to the largest change in breakeven rate, as seen with Option 2b. Changing the adjustment for lite or electronic work diaries (Sensitivity 3) had the most significant impact on the breakeven rate for Option 2d. It is noted that only sensitivities that reduce the cost of the intervention have been tested. Due to the high costs associated with the options, the sensitivity analysis aims to flex assumptions and parameters that could result in increased viability of options and lower breakeven rates.

Table 16. Headline results of sensitivity analysis[47]

Options	Core Analysis	Sensitivity 1	Sensitivity 2	Sensitivity 3	Sensitivity 4
Option 2a	-	-	-	-	-
Option 2b	84%	22%	44%	39%	44%
Option 2c	-	-	-	-	-
Option 2d	72%	72%	52%	28%	52%
Option 2e	-	-	-	-	-

6.7 Consultation questions

Consultation Question 6: Do you support one or more options to change the scope of fatigue regulated vehicles? Please give reasons for your preference(s).

Consultation Question 7: Do you have any information to support analysis of these options? Do you have any feedback on the key parameter estimates as presented in Section 6.6.3? Provision of anecdotal evidence would be welcomed.

Consultation Question 8: Are there any additional impacts you think should be considered? If so, why?

Consultation Question 9: Do you agree with the key impacts that changes to the scope of FRHVs may have on buses, as described above? Do you foresee any additional impacts?

6.8 Enforcement – options

Options to enable a more risk-based approach to enforcement have been included in this C-RIS to support industry in seeking more proportionate responses to minor work and rest and administrative offences that do not impact on safety. Options presented articulate ways that the focus of enforcement can be shifted towards high-risk offences rather than minor offences and infringements.

The majority of options described below are not mutually exclusive, and an appropriate solution could involve implementing one or a combination of these options, however it is unlikely that all options would be implemented. This is not the case for Options 3c and 3d, which could not be implemented together.

[47] All sensitivity analysis has been conducted with all other inputs held constant. All breakeven rates consider incremental costs and incremental benefits compared to the base case.

Base Case 3: No changes to current enforcement of work and rest breaches and administrative offences.

Under this option, the enforcement of work and rest breaches and administrative offences would remain as is currently set out under the HVNL, as described below.

Breaches of fatigue laws under the HVNL are categorised by risk, i.e., minor, substantial, severe, and critical. These categories establish the level of consequence of the breach.

Authorised officers have powers relating to heavy vehicle fatigue requirements, including inspecting drivers' work and rest record.

Enforcement action for any breach of fatigue, work and/or rest hours or diary requirements will depend on the severity of the breach of the HVNL. Options available to authorised officers include, but are not limited to:

- **Informal education** – Informal education usually occurs at the roadside and does not require that an offence be committed or proven. While authorised officers can use discretion to offer informal education, there is no provision in the HVNL that provides an ability to require an offender to undertake education in lieu of a punitive penalty.
- **Formal warnings** – A formal warning can be issued by an authorised officer if they reasonably believe that a person has contravened the HVNL but has exercised reasonable diligence to prevent the contravention and was unaware of it. Currently, authorised officers can issue formal warnings under the current HVNL under s590. This section applies if an authorised officer reasonably believes:
  - A person has contravened the law; and
  - The person has exercised reasonable diligence to prevent the contravention and was unaware of the contravention; and
  - The contravention may appropriately be dealt with by way of a warning.
- **Infringement notices** – An authorised officer can issue an infringement notice as an alternative to prosecution of an offence under the HVNL. Infringement notices set out the details of an alleged offence and gives the person to whom the notice is issued the option of either paying the penalty amount set out in the notice or electing to have the matter dealt with by a court. The payment level for infringeable offences in the HVNL is 10% of the maximum court posable penalty. There is no restriction on the timeframe for when an infringement notice can be issued after the work and rest breach.
- **Court imposed penalties –** The more serious offences are not infringeable and must be dealt with by a court. The HVNL sets out the maximum penalty a court may impose. A court may make a Supervisory Intervention Order requiring a defendant to change their behaviour through training and education on the requirements of the HVNL.

Option 3a: Limit on the timeframe for issuing a work and rest breach infringement.

Under this option, the period between the work and rest breach and the issuing of the infringement to the driver at the roadside would be restricted. This means that an authorised officer who detected a breach at the roadside that is outside this period could not issue an infringement to a driver. Other enforcement options, including referral for prosecution would still be available. The

restricted period would not apply to penalty infringements issue from data collected by the safety camera network.

The implementation of this option would be achieved by creating specific offences for different circumstances. For example, an infringeable offence would be created for a work/ rest breach within the set timeframe, while a separate non-infringeable offence would be created for work and rest breaches outside of that period.

The policy intention of this option is to focus roadside enforcement on the immediacy of fatigue risks and more serious breaches while encouraging the use of other regulatory tools against CoR parties to address more systemic breaches. Deliberate and/or systemic breaches by drivers should be picked up and addressed by operators as part of their primary duty obligations, noting that the driver has an obligation to provide their record keeper with a copy of their work diary information within 21 days.

During consultation on the design of this option it was suggested that the time-limit on infringement should be extended to include a similar time-limit on prosecuting drivers for work and rest breaches. This would further tighten the focus of disciplinary action against drivers to the time-limited period. While this is consistent with the policy intent it may undermine general deterrence.

Length of the restricted period

In terms of the timeframe, 14 days was put forward in the ITMM package. It is noted that some jurisdictions may already have a general timeframe built into their jurisdictional infringement laws. The NTC considers 28 days to be another option as it aligns with the requirement that a driver's work diary must be up to date with required information for the previous 28 days (s293 of the HVNL). A longer timeframe may also reduce the incentive for non-compliant behaviours by drivers.

Type of breach

The restricted period could be applied to specific work and rest breaches. For example, it could apply to minor risk breaches only.

Use of other regulatory tools outside the restricted period

There are three potential options for enforcement action outside the restricted period:

- No action against the driver outside the restricted period – this means that an authorised officer could not use any regulatory tools against the driver, however, would be able to take action against other CoR parties for these breaches. For example, issuing improvement notices for an operator where their driver is found to have a number of work and rest breaches outside the restricted period.
- Use of other regulatory tools against drivers for breaches outside the restricted period – this means an authorised officer could use tools such as formal warnings to address these breaches. An authorised officer would be able to investigate a breach after the fact, which may lead to a prosecution outside the restricted period. This may be appropriate depending on the circumstances and available evidence, including any safety risk. The officer would also be able to take action against other CoR parties for these breaches.
- Different penalty level for breaches outside the restricted period – this means that an authorised officer could issue a driver with an infringement for work and rest breaches outside

the restricted period. However, the level of the fine would be lower than for breaches that have occurred within the restricted period.

Compared to the base case, this means:

- The period between when a work and rest breach occurs and when an infringement could be issued to a driver at the roadside would be restricted under the HVNL to either 14 or 28 days.
- Enforcement action against drivers for breaches outside this period would be restricted.

Option 3b: Risk profile for work and rest breaches.

Under this option, a single incident of non-compliance with the work and rest rules (circumstance of contravention to regulations) would be disaggregated from the breach.

It is proposed to keep the risk level for each incident (minor, substantial, severe and critical) as described under the base case. This means, for example, if a driver worked more than 5 ¼ hours in a 5 ½ hour period, it would be considered a minor incident, where currently this is a minor risk breach.

A new set of breach levels would be defined in the law. These breach levels would be based on the number of single incidents, for example:

- A 'level 1' breach = three minor incidents
- A 'level 2' breach = a combination of three minor and substantial incidents or more than three minor incidents
- A 'level 3' breach = two or more substantial incidents
- A 'level 4' breach = any severe incident
- A 'level 5' breach = any critical incident

Different penalties would be set to reflect the risk associated with each breach level.

The policy intention of this option is to build a more sophisticated risk-based approach for breaches of work and rest rules and to allow for the setting of penalty levels that better reflect the seriousness of the behaviour.

This option may also require a period to be set within which the incidents occur. However, this period would need to be longer than that proposed under Option 3a.

Compared to the base case, this means:

- The risk level for each incident as currently described in the law would be retained (i.e., minor, substantial, severe and critical)
- A new set of breach levels would be defined in the law for work and rest breaches that relates to the number of incidents, allowing penalty levels to better reflect the seriousness of behaviour.

Option 3c: Enable a review of fines for 'trifling' work diary offences.

Under this option, the future HVNL would replicate something like the South Australian infringement law to guide that a fine should not be issued where the offence is trifling to allow for a work diary fine to be reviewed if the offence is trifling.

In South Australia (SA), the Expiation of Offences Act 1996 states that an expiation notice should not be issued in respect of a trifling offence. An offence is considered trifling if "*…the conduct allegedly constituting the offence was merely a technical, trivial or petty instance of a breach of the relevant enactment"* (S4(2)I).

This definition of trifling could be incorporated into the future HVNL. Alternatively, the definition of trifling could specifically relate to work diary offences. For example, an omission or error could be considered trifling if:

- An omission or error cannot be used to manipulate work/ rest time or the work rest hours option. For example, the driver records the correct date but the incorrect day of the week.
- An omission cannot be used to falsify a work record or the reliability of such record as evidence i.e., identity details, date, or another point of proof for any related offence. For example, the driver's name is missing but their driver's licence details are recorded.
- An omission does not create ambiguity regarding work/ rest times, record of work rest times or the requirement to record work/ rest. For example, a location name is spelled incorrectly but is understandable to the authorised officer.

The SA infringement law allows for the review of an expiation notice on the grounds that the offence is trifling. The person issued with the notice may apply to the issuing authority for a review (Section 8A). It is noted that this currently applies to fines issued under the HVNL in SA. The same approach could be taken under the future HVNL, and consistently applied across all jurisdictions covered by the HVNL.

Compared to the base case, this means:

- The definition of 'trifling' and a review mechanism would be included in the HVNL to allow for a work diary fine to be reviewed if the driver considers the fine has been issued for a 'trifling' offence.

Option 3d: Driver defence for minor administrative errors.

Option 3d would provide drivers with a defence for a work diary offence (covered in the current HVNL in under chapter 6 part 6.4) if the driver can prove the error or omission is low-risk. Similar to Option 3c, an error or omission would be considered minor if the driver can prove that:

- An omission or error cannot be used to manipulate work/ rest time or the work rest hours option.
- An omission cannot be used to falsify a work record or the reliability of such record as evidence i.e., identity details, date, or another point of proof for any related offence.
- An omission does not create ambiguity regarding work/ rest times, record of work rest times or the requirement to record work/ rest.

The driver's defence would need to be considered by an authorised officer when issuing a work diary offence.

Compared to the base case, this means:

- The HVNL would allow for an administrative error or omission to be considered minor if the driver can prove it so against a set of stated criteria.

Option 3e: Support the use of formal warnings for administrative offences relating to work diaries.

Under this option, the law would be amended to provide authorised officers with broader abilities to issue formal warnings. This could be applied to administrative offences relating to work diaries.

Currently, authorised officers can issue formal warnings under the current HVNL under s590. This section applies if an authorised officer reasonably believes:

- A person has contravened the law; and
- The person has exercised reasonable diligence to prevent the contravention and was unaware of the contravention; and
- The contravention may appropriately be dealt with by way of a warning.

However, the NHVR has advised that authorised officers are challenged by the requirement that they reasonably believe the person has exercised reasonable due diligence to prevent the contravention and was unaware of the contravention. As a result, they use tools further up the enforcement pyramid (e.g., infringements) rather than issuing formal warnings. If this clause was removed, then an authorised officer could issue a formal warning where a contravention of the HVNL has occurred and the officer is of the view the offence can be reasonably dealt with through a formal warning.

It is noted that the law prevents a warning being given for a contravention of a maximum work requirement or a minimum rest requirement constituting a substantial risk breach, severe risk break or a critical risk breach. However, this approach could also be applied to minor risk breaches of work and rest requirements.

Compared to the base case, this means:

- Removal of the clause “The person has exercised reasonable diligence to prevent the contravention and was unaware of the contravention” from s590 of the HVNL.

Option 3f: Allow for a formal education option in lieu of a fine.

Under this option, it is proposed to embed an education requirement in the law for specific minor, low risk offences by first-time offenders. This would allow an authorised officer to issue a requirement that an offender undertake mandatory education, in lieu of a fine. The education could be developed by the NHVR as an electronic learning option, to be undertaken within a set timeframe. Alternatively, this option could make use of existing VET training modules such as TLIE 3028 – Complete a work diary in the road transport industry.

Formal education is a measurable way to support industry participants understand the law and achieving ongoing compliance, and aims to:

- Respond proportionately and appropriately to minor offences of a low safety risk
- Support industry participants understand the law and reduce recidivism
- Provide an alternative to punitive enforcement tools

While authorised officers can use discretion to offer informal education, there is no provision in the HVNL that provides an ability to require an offender to undertake education in lieu of a punitive penalty. Informal education usually occurs at the roadside and does not require that an offence be committed or proven. Formal education can be used to reinforce the informal education given roadside.

An example of how authorised officers can offer education for a minor offence is the police drug diversion program that exists in Queensland. This program is legislated under s379 of the *Police Powers and Responsibilities Act 2000*. The criteria for who police can offer the program to is set in the Act. Once the person agrees to undertake the program, it is an offence not to complete it. It is noted that similar programs exist in other jurisdictions, although the legislative mechanisms that enable the programs appear to differ.

As with Option 3e, for this tool to be effectively used by authorised officers it would need to be supported by a national database that allows the information to be recorded and for that information to be readily accessed by enforcement officers at the roadside. It may be an option to add this functionality to the NHVR Regulatory Compliance Mobility Solution and make it more broadly available across the HVNL jurisdictions.

The circumstances in which the formal education option can be used could be defined in the law. However, initial feedback has generally been to leave the use of the appropriate regulatory tool to the discretion of the authorised officer.

Compared to the base case, this means:

- An education requirement would be embedded in the law for specific minor, low risk offences. This would allow officers to issue a requirement that an offender undertake mandatory education, in lieu of a fine.

6.9 Discussion of enforcement options

6.9.1 Approach and limitations

The analysis conducted to assess options to enable a more risk-based approach to enforcement is different from the analysis conducted to assess options relating to record keeping requirements and the scope of fatigue-related vehicles. As discussed previously, this is because the OIA has advised that under its guidelines, changes in offences are not within scope of the regulatory impact assessment process.

As such, the analysis conducted to assess enforcement options focuses on the advantages and disadvantages of each option compared against the base case and discusses the implications of these findings. This analysis and discussion are presented in the following subsection.

Note, there are no impacts specific for bus operations that arise from the enforcement options.

6.9.2 Options analysis

Table 17 below compares the advantages and disadvantages of each option with the Base Case, as set out under Section 6.8.

Table 17. Advantages and disadvantages of enforcement options against the base case

Option	Advantages	Disadvantages
Option 3a – Limit on the timeframe for issuing a work and rest breach infringement	▪ **Encourages risk-based approach to enforcement** - Roadside enforcement is focused on the immediacy of fatigue risks. ▪ **Reduced regulatory burden for operators –** Drivers are not penalised by infringement notice at the roadside for work and rest breach infringements that no longer pose an immediate safety risk.	▪ **May encourage greater use of judicial system –** If other regulatory tools could be used against drivers outside the restricted period, there may be greater use of prosecutions or other tools for low level offences. ▪ **Increased non-compliant behaviour –** May create an incentive for non-compliant behaviour by drivers, particularly in areas where the likelihood of being intercepted at the roadside within timeframe is low. A longer timeframe may reduce the incentive for non-compliant behaviours by drivers.
Option 3b – Risk profile for work and rest breaches	▪ **Encourages a risk-based approach to enforcement –** builds more sophisticated risk base approach for breaches of work and rest rules. Allows for setting of penalty levels that better reflect the seriousness of behaviour.	▪ **More resource intensive –** This option adds the requirement for the tracking of incidents to inform the new breach levels, which requires more resources to determine what level of breach occurs when an incident occurs. ▪ **Increases HVNL complexity –** Introduces an additional layer of complexity to the HVNL through additional risk profile.
Option 3c – Enable a review of fines for 'trifling' work diary offences	▪ **Encourages a risk-based approach to enforcement –** allows operators to challenge fines of low-risk administrative errors in work diaries. ▪ **Reduced fines for operators –** operators are provided with the opportunity to challenge fines for low-risk administrative errors.	▪ **More resource intensive –** Requires additional time for authorities to review fines to confirm 'trifling' offences. ▪ **Implementation challenges –** may not be practical to implement across multiple jurisdictions because of differing infringement laws.
Option 3d: Driver defence for minor administrative errors	▪ **Encourages a risk-based approach to enforcement –** drivers are provided with an opportunity to challenge fines for minor work diary errors or omissions.	▪ **More resource intensive –** An authorised officer would need to turn their mind to the defence, potentially increasing the complexity of an intercept, and the potential for a debate at the roadside.

	▪ **Reduced cost to operators –** An authorised officer would be disincentivised to issue a fine in certain circumstances where it can be argued a fine is unnecessary.	
Option 3e: Support the use of formal warnings for administrative offences relating to work diaries	▪ **Encourages a risk-based approach to enforcement –** Authorised officers would be provided with broader abilities to issue formal warnings, providing less complexity in decision making. ▪ **Reduced cost to operators –** Drivers may be less likely to receive a fine.	▪ **Implementation challenges –** Implementation would require consideration of a formal warning national database. Police stakeholders have indicated that they do issue warnings and cautions for work diary offences at the roadside. In some jurisdictions, police record these warnings within a database. However, if a driver receives multiple formal warnings from police and the NHVR across different jurisdictions, an authorised officer would not have visibility of this roadside.
Option 3f: Allow for a formal education option in lieu of a fine	▪ **Encourages a risk-based approach to enforcement –** Recognises that education and the encouragement of better safety management practices can be just as powerful as enforcement and provides an option for formal education by authorised officers instead of traditional compliance practices. ▪ **Reduced regulatory burden for operators –** authorised officers would be able to issue a requirement that an offender undertake mandatory education, in lieu of a fine.	▪ **Resource intensive –** Requires the creation, management (e.g., updating) and administration of 'formal education' modules of tools to facilitate formal education. May also require the tracking of the completion of formal education, to ensure compliance.

As the Table above suggests, options to change fatigue enforcement under the HVNL aim to encourage a more risk-based approach to enforcement and this is a key advantage of implementing each of the proposed options. Options to improve fatigue enforcement practices aim to reduce the regulatory and administrative burden associated with minor, low-risk work and rest breaches and instead redirect enforcement resourcing to high-risk, moderate and major work and rest breaches that may have immediate safety risks. The key benefit to drivers and operators of these options is reduced regulatory burden for work and rest breaches that are considered minor, and no longer pose an immediate safety risk.

As each of the six options engage a separate approach to achieving a risk-based approach to enforcement, there are different disadvantages associated with them. While operators, and especially drivers, would be expected to benefit from these options in terms of reduced fines for

low-risk work and rest breaches, the opportunity to challenge fines may under some options may require drivers to prove a specific incident should be considered low risk, which could be costly and time consuming (Options 3c and 3d).

Additionally, a common disadvantage of proposed options would be the additional impact on the judicial system and authorities for the tracking and implementation of the new offences. The introduction of opportunities for drivers to challenge fines may create additional resourcing costs for the NHVR (Option 3c and 3d). So too would the introduction of formal education under Option 3f, which would require the development of a new education program by the NHVR. There may also be some implementation challenges, for example, a national database as may be required under Option 3e could be challenging and expensive to create and maintain. These differences across jurisdictions could also create problems with the consistency of fines, as in in the current state, police are not aware of formal warnings issued by police departments in other jurisdictions.

The likely safety and compliance impacts associated with these options are challenging to estimate. However, there is a potential that Option 3a may create an incentive for non-compliant behaviour by drivers, particularly in areas where the likelihood of being intercepted at the roadside within the set timeframe is low.

6.10 Consultation questions

Consultation Question 10: Do you support one or more options to change enforcement of fatigue-related breaches? Please give reasons for your preference(s).

Consultation Question 11: Are there any implications of options to change enforcement of fatigue-related breaches you think should be considered? What issues would need to be considered as part of implementation of these reforms?

Consultation Question 12: If some of the proposed changes to enforcement of fatigue-related breaches were adopted, would this give you confidence to transition your business to EWDs?

Consultation Question 13: Taken as a package, would these reforms to fatigue management create a fairer regulatory approach overall?

Consultation Question 14: Regarding Option 3A, would a timeframe of 14 days or 28 days be more appropriate? Please provide reasons for your answer.

7 Access

Key points

- This section of the C-RIS sets out policy options designed to improve access arrangements for heavy vehicles by reducing administrative burden and improving productivity.
- Options presented in this section consider potential increases to prescribed limits for mass, height, and length for general access heavy vehicles.
- Options are described, followed by analysis of their potential impacts.
- Consultation questions are provided throughout this section. Stakeholders are encouraged to provide responses to these questions to inform the development of a D-RIS.

7.1 Section overview

This section of the C-RIS sets out policy options designed to improve access arrangements for heavy vehicles by reducing administrative burden and productivity impacts.

The policy options aim to address several key problems as raised in Chapter 3, namely:

- Despite the fast-growing national freight task and improvements in vehicle safety over time, this has not been reflected in expanded general access.
- Red tape in road access arrangements creates significant regulatory burden for operators seeking to operate above general access limits.
- The current access regime is complex and challenging for operators to understand compliance requirements, available concessions, and available networks.
- There is potential missed opportunity to improve operator productivity in prescriptive vehicle combinations, (e.g., low-risk prescriptive combinations that are regularly granted higher access limits via schemes and already operate on the network).

Access policy options in scope for this C-RIS

Policy options considered in this C-RIS include changes to the following prescribed limits:

- Options for an up to five per cent increase in mass to establish a new GML. The new GML will effectively replace the current CML. This change will result in only two mass limits under the HVNL: new GML and HML. The options consider the implications of potential mass increases for vehicles meeting Euro VI emissions control standards (see call out box below).
- Options for increasing the prescribed height limit from 4.3m to 4.6m.
- Options for increasing the prescribed length limit from 19m to 20m.

It is noted that increasing GML, height and length prescribed limits will benefit general access vehicles, though strictly speaking these prescribed limits also apply to some vehicles with restricted access. For simplicity, this report is focused on the benefits to general access vehicles.

Access policy options out of scope for this C-RIS

The maximum vehicle width is not being tested as part of this C-RIS as an increase has recently been announced by the Commonwealth Government, see Section 1.3.

The Euro VI compliant vehicle mass increase is not being determined through this C-RIS, as this will be considered via a separate reform project and consultation processes. However, it is practical to consider the impacts of proposed changes to GML on Euro VI vehicles and this is provided in the options outlined.

Euro VI Compliant Vehicles

The current minimum noxious emission standard for new heavy vehicles in Australia is based on the international standard commonly known as Euro V. However, the Australian Government has recently adopted a new Australian Design Rule 80/04, mandating Euro VI standards for all newly approved heavy vehicle models supplied from 1 November 2024, and all existing models supplied from 1 November 2025, to reduce noxious emissions from the road transport sector.[48]

Newer trucks that meet Euro VI standards are heavier than equivalent Euro V trucks due to the additional mass and space required by the upgraded emission systems which may include batteries or storage tanks (e.g., natural gas, hydrogen, diesel emission fluid e.g., AdBlue). Under current general mass limits, this higher tare weight (unladen weight) may reduce the amount of freight heavy vehicles can legally carry which impacts on productivity and profitability of advanced emissions vehicles.[49,50]

Euro VI compliant vehicles include zero emission vehicles such as battery electric and hydrogen fuel cell vehicles.

[48] See media release October 2022 “Cleaner emissions standards for trucks and buses”, online at: https://minister.infrastructure.gov.au/c-king/media-release/cleaner-emissions-standards-trucks-and-buses.

[49] Department of Infrastructure, Transport, Regional Development, Communications and the Arts (2022), *Questions and answers on the new ADR 80/04*

[50] NHVR (2020), Vehicle Safety and Environmental Technology Uptake Plan, Truck Industry Council Budget Submission 2019/20

7.2 Increase general access vehicle mass limits - Introduce new General Mass Limits (replacing Concessional Mass Limits) Options

Base Case 4: Status Quo

To access the road network, heavy vehicles must be within general mass limits unless they are authorised to exceed them. Heavy vehicles can operate under mass limits which include GML, CML, and HML.[51]

GML apply to all heavy vehicles. The GML state the allowable mass for all types of heavy vehicle axle groups unless the vehicle is operating under an accreditation scheme or an exemption under the HVNL. These are detailed in the HVNL.

CML allow operators to access increased mass limits if the operator is accredited under the NHVAS. This permits operators to increase mass by up to five per cent above the GML, subject to:[52]

- A maximum of 1 tonne for a vehicle or combination with an allowable gross mass not exceeding 55 tonne
- A maximum of 2 tonne for vehicle combinations with an allowable gross mass exceeding 55 tonne
- The mass of each axle group for a vehicle or combination not to be more than the mass limits set out in the HVNL.

Accreditation under the current NHVAS mass management module is required, which involves meeting the eight standards of compliance under the Mass Management module and nominating vehicles to participate in the scheme.

CML does not apply to the following vehicles (due to safety reasons or because they are eligible to operate at masses higher than those afforded by CML):

- a bus
- a combination consisting of a truck and pig trailer
- class 1 vehicles including special purpose vehicles, agricultural machine or agricultural implement
- Any other vehicle operating under a mass exemption or condition, via either a permit or notice, over those specified in the HVNL.

CML can be applied to Class 2 vehicles (e.g. B-doubles) under permit or notice, where access has been granted at GML and the combination is eligible for CML.

[51] Higher Mass Limits (HML) are permitted through accreditation (NHVAS) and other conditions and are not part of this proposal.

[52] https://www.nhvr.gov.au/road-access/mass-dimension-and-loading/concessional-mass-limits

Most heavy vehicles in participating HVNL jurisdictions are general access vehicles with general access to the road network. This means the HVNL does not restrict vehicles from accessing any road without a permit or notice. Under the Australian Road Rules, the road may be signposted to restrict access, for example, bridge load restrictions or 'no truck' signs on residential streets or other roads not suitable for heavy vehicles.

Option 4a: Establish new GML in the HVNL by increasing the current General Mass Limits by up to five per cent to match the current Concessional Mass Limits (CML). An additional mass allowance is provided for Euro VI vehicles (steer and / or drive axles) to account for an increase in prime mover / truck tare mass, but this does not translate to a GVM limit increase above current CML.

Under this option, new GML are introduced to the HVNL. Current GML are increased to be equivalent to current CML levels. This provides an increase of up to five per cent to the total GVM for vehicles that currently operate under GML.

This proposed change also simplifies mass limits in the HVNL from three mass limit levels (GML, CML and HML) to two (GML and HML).

An example of the practical application of this proposal, for a 'standard' semi-trailer combination, is given in Table 18 below. Under the new GML, the semi-trailer would benefit from a 1 tonne increase in GVM limit. This provides a potential productivity gain of up to 1 tonne in payload per vehicle per trip.

Table 18. Example of changes to GML under option 4a for a 'standard' semi-trailer combination

	Base Case 4 GML (Status Quo) (t)	Option 4a – Establish new GML The new GML replaces CML, no additional GVM mass allowance for Euro VI (t)
Single steer axle	6.5	6.5 (7.0 for Euro VI)
Tandem drive axle group	16.5	17.0
Tri axle group	20.0	21.0
Total Combination must not exceed	**43.0**	**44.0**

Under Option 4a, the expected increase in mass limits to compensate for an increase in tare mass for Euro VI compliant vehicles does not 'flow through' to an increase in GVM limit. Option 4a assumes a Euro VI mass limit allowance of 0.5 tonne, which can be on either the steer axle or the drive axle group or shared between them (in order to provide for different vehicle designs, e.g. cab-over and bonneted prime movers)[53].

[53] The Euro VI reform is still in development, and an appropriate mass limit increase for twin-steer trucks and road train prime movers has not yet been determined.

As Euro VI vehicles are likely to be up to 0.5 tonnes heavier than earlier vehicles due to upgraded emissions systems and safety equipment, under Option 4a some of the payload benefit of the move from GML to CML will likely be consumed by the vehicles' increased tare weight. The potential increase in productivity for a Euro VI 'standard' semi-trailer under Option 4a would likely be between 0.5 tonnes and one tonne.

The productivity benefit may therefore be less for Euro VI vehicles due to higher tare mass than non-Euro VI vehicles under Option 4a.

The specific mass increase for Euro VI vehicles will depend on the type and size of vehicle. Some Euro VI vehicles may have the potential to use a greater amount of the GML to CML mass increase for loads.

Option 4b: Establish new GML in the HVNL by increasing the current General Mass Limits by up to five per cent to match the current CML. An additional mass allowance is provided for Euro VI vehicles for their higher tare weights which translates to up to five per cent increase to GVM, so there is no productivity loss for Euro VI vehicles.

This option is the same as Option 4a, with an additional mass allowance provided for Euro VI compliant vehicles.

Under Option 4b an additional mass allowance is provided for Euro VI vehicles, which is added to the new GML mass allowances and therefore 'flows through' to an increased GVM.

This option means that there is no productivity loss due to the higher tare mass of Euro VI vehicles. In effect, this ensures that Euro VI vehicles can be as competitive as Euro V and earlier vehicles as they are afforded the same mass payload increase as other vehicles under the new GML.

An example of the practical application of this proposal for a 'standard' semi-trailer combination is given in Table 19 below. The semi-trailer, **including a Euro VI compliant vehicle**, would be able to benefit from an additional 1.5 tonne total combination increase in payload capacity. This provides a potential productivity gain of up to 1 tonne in payload per vehicle per trip for both Euro VI and non-Euro VI vehicles.

Table 19. Example of changes to GML under option 4b for a simple semi-trailer combination

	Base Case 4 GML (Status Quo) (t)	Option 4b – new GML (t)	
		Current GML to CML limits for all vehicles	Additional mass for Euro VI vehicles only
Single steer axle	6.5	6.5	7.0*
Tandem (drive) axle	16.5	17.0	17.5*
Tri axle	20.0	21.0	21.0
Total Combination must not exceed	**43.0**	**44.0**	**44.5**

*These numbers represent the maximum masses available for each individual axle group, however, the maximum total mass increase for the vehicle is 0.5t.

7.3 Increase general access vehicle mass limits – Impacts, costs and benefits

7.3.1 Approach and limitations

Proposed reforms to mass limits are subject to qualitative and quantitative analysis.

Assessing the impacts of changes in general mass limits requires consideration of the road freight task that is mass constrained i.e., freight which may use all mass allowable for the vehicle/trailer but not necessarily the volumetric capacity. While studies and surveys are periodically undertaken for specific supply chains, there is limited general data available on road freight movements and mass utilisation of vehicles.

The proposed mass limit increases are currently available to operators under the current regulatory settings. For example, mass concession schemes, and under exceptional circumstances permits, are available for access onto the network at the proposed new general mass limit. These options to access the higher mass are at a regulatory cost to operators, such as accreditation compliance costs. The complexity of these arrangements and lack of data on operations under mass concession schemes makes it difficult to quantify the number of operators who would directly benefit from the proposed mass limit increases.

There are challenges in estimating the costs of increased road pavement wear which can be specifically attributed to the delta increase in heavier vehicles, because there are vehicles currently operating at these higher masses under various regulatory arrangements including the CML. Road managers may be impacted by increased mass of heavy vehicles on the general access road network, but this may be offset to some degree by reduced numbers of heavy vehicle movements.

The C-RIS analysis does not include assessment of the environmental or safety benefits associated with Euro VI vehicles, which have been considered elsewhere.[54] There is an assumption that these vehicles will be purchased and operated irrespective of the options proposed for mass limits. An element of the C-RIS analysis is on assessing whether general mass limits should be adjusted to accommodate Euro VI vehicles. In principle, not introducing a mass increase to accommodate Euro VI vehicles could impact on rates of take up of Euro VI vehicles, therefore impacting on the realisation of benefits from these vehicles. In practice, the ability to defer purchase of a new Euro IV vehicle may be limited for many operators and is likely to vary by supply chain and operational circumstances. As a result, potential impacts on take up rates of Euro VI vehicles have not been considered in this analysis.

It is assumed that for Euro VI vehicles the mass impacts will vary by vehicle type and size. In this C-RIS analysis, the tare mass difference between Euro VI and other heavy vehicles meeting earlier emission standards is assumed at a generalised average of 0.5 tonne.

[54] Commonwealth of Australia (2021) Heavy Vehicle Emissions Standards for Cleaner Air. Regulation Impact Statement. Heavy Vehicle Emission Standards for Cleaner Air - Regulation Impact Statement (infrastructure.gov.au)

Furthermore, in the absence of robust data to inform a targeted appraisal of the reforms, the theoretical nature of the impact analysis should be noted. While the assumptions employed might not exactly reflect the conditions observed in practice, the use of simplified parameters helps in providing an indicative monetised value of the costs incurred in the base case, and the potential for improvement through the reform.

7.3.2 Qualitative analysis

Summary of qualitative assessment of impacts (compared to the base case) of general mass limits increases for the two options are considered in Table 20 below.

Table 20. Summary of qualitative assessment of the impacts of changes to GML against base case

Overall Impact	Public Safety	Efficiency and Productivity	Regulatory burden to industry	Regulatory Costs to government	Asset Management	Flexibility and responsiveness
Option 4a New GML effectively replaces CML. No additional mass allowance is provided for Euro VI vehicles.						
Improvement. General freight vehicles overall benefits. Benefits would be greater for Euro VI vehicles.	**Improvement**. Increased mass may have negligible impacts in most cases and in some cases may contribute to greater risk (e.g. loads with a higher centre of gravity), but it is assumed that this would be offset by reductions in vehicle movements.	**Improvement**. Proposed options are assumed to increase take-up of higher general mass limits (i.e. equivalent to the current CML). There may be lower administrative costs which improves efficiencies.	**Improvement**. Reduced regulatory requirements for operators currently accessing concessional mass limits.	**Improvement**. Reduced number of operators in the (mass) accreditation scheme.	**Negative Impact**. Increased costs of road wear from assumed greater uptake of concessional mass limits. However, if there are fewer trips then this may reduce the impacts. If operators leave the accreditation scheme, there is a potential for greater variability in loading.	**Improvement**. Removal of accreditation requirements simplifies and improves flexibility for CML operators.
Option 4b New GML effectively replaces CML. The new GML allows for Euro VI increased tare mass.						

Improvement. General freight vehicles overall benefits. Benefits would be greater for Euro VI vehicles.	**Improvement**. Increased mass may have negligible impacts in most cases and in some cases may contribute to greater risk (e.g. loads with a higher centre of gravity), but it is assumed that this would be offset by reductions in vehicle movements.	**Improvement**. Proposed options are assumed to increase take-up of higher general mass limits (i.e. equivalent to the current CML). There may be lower administrative costs which improves efficiencies.	**Improvement**. Reduced regulatory requirements for operators currently accessing concessional mass limits.	**Improvement**. Reduced number of operators in the (mass) accreditation scheme.	**Negative Impact**. Increased costs of road wear from assumed greater uptake of concessional mass limits. However, if there are fewer trips then this may reduce the impacts. If operators leave the accreditation scheme, there is a potential for greater variability in loading.	**Improvement**. Removal of accreditation requirements simplifies and improves flexibility for CML operators.

Under Options 4a and 4b, general freight that is mass constrained would benefit from up to a five per cent increase in mass limits which does not necessitate completing administrative requirements such as applications for NHVAS mass management accreditation. Operators not currently accessing CML would receive a direct productivity benefit of moving more freight per trip.

For operators already accessing CML, the impacts of Options 4a and 4b are more complex. This proposal may benefit those operators currently in the NHVAS for the main purpose of accessing CML who would no longer need NHVAS accreditation to access CML and so there would be a red tape reduction for this group. Of all operators in the current NHVAS, around 40% have accreditation for the mass management module only (around 3,500 in March 2023[55]) but it is not possible to extract from the data the exact number of operators accessing CML out of this total number of accredited operators from those operators who have accreditation in order to access HML. For many operators, NHVAS accreditation may be helpful for other purposes such as customer preferences, and/or they may be accredited for other modules including mass (for example, around 18% are accredited for mass and maintenance and around 17% are accredited for mass, maintenance, and BFM) so the benefits may be less. However, there is also potentially a decrease in future uptake of the accreditation scheme because of the increased general mass limit. If there is an overall reduction in mass management accreditation, this may lead to greater variability in loading practices and an increased incidence of overloading, which may increase pavement wear. Note also that the potential impact of changes to the NHVAS, recommended in the DRIS (2023) and approved by ministers, on operators who have opted to be in the current Mass Management module for CML is not known.

Furthermore, increasing GML to current CML levels could incur cost savings for operators who are currently participating in the NHVAS Mass Management module for the purpose of operating at CML. These operators may no longer need to be accredited. Cost savings associated with maintaining accreditation could be achieved in the following areas:

[55]NHVR supplied figures reported in the NTC D-RIS (2023), page 138.

- **Statutory fees payable to the NHVR:** These would be fees for maintaining accreditation ($101) and per heavy vehicle ($37).[56]
- **The cost of periodically procuring the services of an NHVR-registered NHVAS auditor:** Operators must engage a NHVAS auditor, nominally once each accreditation period (two years). This cost is at prices set by the market and vary with an operator's accreditation scope. For a single vehicle operator, an audit fee may be as low as $600.[57] This amount would increase by multiples for businesses with more expansive operations and large vehicle fleets.
- **The cost of complying with the accreditation standards themselves:** There are the practical measures taken by an operator to ensure their heavy vehicles are operating within mass limits – such as weighing them. Aside from just meeting accreditation standards, complying with mass limits remains an obligation under HVNL primary duties and mass requirements – so it is assumed that this cost would be substantially unchanged for an operator who discontinued their accreditation.

For an operator of a single heavy vehicle, the annual cost savings of discontinuing mass management accreditation could be (at a low range estimate) $350.[58] It is difficult to estimate the cost savings for larger operators – this would vary with factors such as their operational complexity, the number of vehicles in their fleet and economies of scale.

There would be potential benefits to customers and the community for Options 4a and 4b as improvements to productivity in road freight may lead to lower costs to move goods. There may also be benefits associated with reductions in the environmental impact of reduced tonne kilometres travelled due to increased mass limits.

Public safety may potentially be impacted by Options 4a and 4b, due to potential increases in risks associated with heavier vehicles, though these would be expected to be marginal. In some instances, the safety impact would be negligible and in others there may be some impact, for example loads with a higher centre of gravity may have increased dynamic stability crash risk. The magnitude of the uptake of higher payload in the total heavy vehicle fleet is unclear. Further, increased mass per trip may reduce the overall number of heavy vehicle trips which offset safety risk by, for example, reducing exposure.

Road managers (governments) may incur the costs of increased mass of the general fleet on all roads in terms of increased pavement wear over time as the fleet may generally get heavier, however this could be offset by reduced trips as a result of increased mass limits. There may also be some impacts on government costs to maintain roads. However, greater mass per trip may be offset by fewer number of trips required. It is difficult to estimate how many vehicles would take advantage of increased mass allowance to work out the impact on numbers of trips if the proposal was put in place.

There may be reduced regulatory costs to government (road managers and the NHVR) if fewer vehicles require accreditation under both options.

[56] Fees, National Heavy Vehicle Accreditation Scheme, NHVR, https://www.nhvr.gov.au/safety-accreditation-compliance/national-heavy-vehicle-accreditation-scheme/fees

[57] Anecdotal information as supplied by operator

[58] Anecdotal information as supplied by operator

Both Option 4a and 4b would benefit operators with Euro VI vehicles as the new GML would enable general access without the administrative burden needed to access CML under NHVAS Option 4b would provide further benefit to operators with Euro VI vehicles as they would have access to the same extra payload as non-Euro VI vehicles.

7.3.3 Quantitative analysis

The primary benefits calculated for the general mass limit increase options relate to the potential increase in productivity for operators that currently operate under GML, and who are not accessing CML or mass management schemes. It is noted that regulatory requirements currently associated with CML may be restricting take up of these increased mass limits.

Key to understanding the impact on mass limit changes is the share of vehicles which are mass constrained. This is challenging due to the intricacies of freight movements across the country. For example, some journeys would be expected to be mass constrained based on their content but may travel between locations which have lower demand. This means assumptions are required to estimate the share of VKT that are constrained due to mass.

To estimate the impacted VKT, select commodities were identified as those that were mass-constrained and therefore would benefit from the reform. Tonnage figures for these commodities were then obtained to identify the proportion of the freight task that would benefit from the additional mass limit on the general access network. The proportions (an average of around 60% of the freight task) were then applied to the annual VKT of relevant heavy vehicles to estimate the reduction in kilometres travelled. Further allowance was made for operators and vehicles that already operate at:

- CML
- HML, and;
- As part of mass management schemes (for e.g., the Grain Harvest Management Scheme)

It is assumed that increasing GML would not provide a productivity benefit for these vehicle movements given that they can already operate at increased mass limits. The remaining freight task was then used to calculate productivity benefits as a result of increased mass limits.

Analysis was then undertaken to assess the potential net economic impacts of the new GML (increasing GML to CML).

Data Sources

A number of data sources were used to inform the analysis:

- Motor Vehicle Census, 2020, Australian Bureau of Statistics
- Survey of Motor Vehicle Use, 2020, Australian Bureau of Statistics
- Road Freight Movements, 2014, Australian Bureau of Statistics
- Jurisdictional crash data from various sources.

Key assumptions

The following general assumptions underpin the analysis:

- Due to limitations in heavy vehicle trip and VKT data, the results are limited to an annual estimate for 2023. This avoids uncertainties involved in forecasting road wear costs and productivity benefits. It is noted that all costs and benefits are expected to occur on an annual basis.
- Given the complexity of freight movements with respect to mass on an origin-destination basis, determining the uptake of mass concessions is challenging. For the purposes of this analysis, it assumed that 100% of the fleet (adjusted by the allowances for participation in mass modules and management schemes as described above) takes advantage of the increased mass limit. As such, this impact effectively represents a maximum or cap on the expected benefits, which might not be achieved in practice.
- The rate of uptake of Euro VI technology is unknown, and this analysis estimates the annual impact of the reforms. The analysis therefore assumes that a 100% of the fleet complies with Euro VI standards in the analysis year. In practice, it would be expected that there would be a ramp-up or turn over period where Euro VI compliant vehicles replace older vehicles across the fleet which would delay benefit realisation and cost impacts. This assumption is of particular relevance to Option 4a, where annual productivity benefits are reduced due to the lack of provision for Euro VI. Productivity benefits will likely reduce over a number of years as Euro VI standards are slowly incorporated into the fleet, and flat line when a 100% of the fleet is compliant. Given that this analysis aims to provide an indicative magnitude of the extent of potential impacts of the reform, assuming a 100% uptake allows us to estimate a theoretical maximum annual impact of the reform.
- This analysis does not consider the environmental or safety impacts of Euro VI because these benefits relate to the implementation of the ADR, and these considerations for the introduction of Euro VI have been covered as separate reforms. Rather, it investigates the impact Euro VI technology has on vehicle mass, and how that can lead to changes in general access vehicle kilometres travelled. The analysis does not consider the potential for changes in mass limits themselves to impact on rates of take up of Euro VI vehicles.
- Prices and cost parameters have been escalated to 2023 using CPI.
- Fleet data from 2020 has been escalated at a growth rate of 1.5% per annum[59] to estimate the freight task for 2023.

[59] Mean compound annual growth rate derived using growth rates of various commodities.

Specific cost assumptions have been made for the analysis of options to increase mass. These are outlined in Table 21 below.

Table 21. Cost assumptions used in the impact assessment of options to increase mass

Crash Injury Cost Assumptions			
Injury parameters	**Core analysis value**	**Share of non-fatal injuries**	**Source**
Value of statistical life (VSL) – value of a fatal injury	$5,619,429	n/a	Value of Statistical Life Guidance Note. Office of Impact Assessment.
Value of serious injury (VSI)	$526,606	36%	ATAP, PV2 Road Transport, Crash costs
Value of hospitalized injuries (VHI)	$100,431	51%	
Value of minor injuries (VMI)	$31,739	14%	

Other Costs		
Key parameter	**Core analysis value**	**Source**
Work-related labour costs	$79.63/hr[60]	Regulatory Burden Measurement Framework, Office of Impact Assessment

Specific assumptions have been made in calculating the impact of increased productivity on a range of benefits. These parameters are given in Table 22.

[60] Work-related labour cost is used as recommended by the OIA where appropriate/accurate labour rates are unknown or would add undue complexity to the costing process. Note that this is an economy-wide value for employees that is adjusted to include income tax. This value is also scaled up to account for non-wage labour on-costs (for example, payroll tax and superannuation) and overhead costs.

Table 22. Key parameters used for the impact assessment of GML replacing CML

Key parameters	Core analysis value	Source
Average speed	80km/hr	Assumed parameter, to be tested in consultation.
Travel Time Value	$37.53 /veh/hr	Estimated value based on vehicle types and other variables, sourced from various sources.
Externality Cost	12.39 c/vkt	PV5 Environmental parameter values, 2021, ATAP Guidelines. Escalated using CPI for 2023.
Emissions Cost	6.20 c/vkt	PV5 Environmental parameter values, 2021, ATAP Guidelines. Escalated using CPI for 2023.
Road Wear Cost – Base Case	17.05 c/vkt	Estimated by Economic Advisory, TfNSW. Values are indexed from December 2011 prices to January 2023 prices (ABS Series ID A2325806K)
Weighted increase in road wear for every additional tonne	0.74 c/tonne	Estimated to account for the impact of additional mass on infrastructure.[61]
Percentage increase in mass limits as a result of GML replacing CML	5%	Established study parameter.[62]
Percentage increase in mass limits as a result of GML replacing CML, excluding Euro VI provision.	2.5%	Established study parameter.

[61] Weighted increase in road wear for additional tonnes is an estimated parameter derived to test the monetised impact of an additional tonne on road infrastructure. This was estimated by using unit costs of road maintenance for rigid and articulated trucks as specified in Table 8.1 in the Transport for NSW Economic Parameters Guidelines and the average GCM figures for the same truck types to calculate the cost of road maintenance per average tonne for rigid and articulated trucks. This was then weighted using the number of rigid and articulated trucks to estimate the average increase in road wear, which equates to approximately 0.74 cents for every additional tonne.

[62] It is noted that this is a high-level assumption on mass increase as a result of the reform, and in practice the increase in mass will have a more nuanced impact depending on axle group and gross combination mass limits. This has been tested as part of the sensitivities for this analysis.

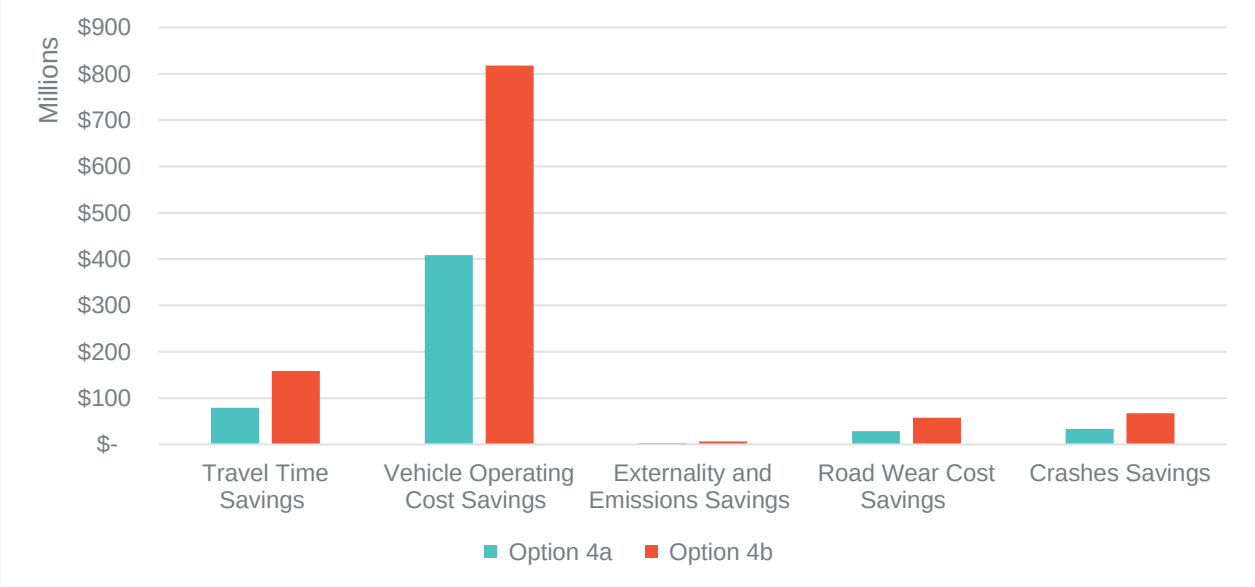
Benefits

This analysis quantifies benefits realised as a result of increased productivity and fewer kilometres travelled due to higher general mass limits. The main benefit streams include:

- Travel time savings – benefits provided by reductions in the amount of time spent on travel.
- Vehicle operating cost savings – benefits provided by reductions in the cost of operating heavy vehicles.
- Externality and emissions savings – benefits associated with reductions in the environmental impact of reduced vehicle kilometres travelled.
- Road wear cost savings due to reduced vehicle kilometres travelled. Note that these cost savings are a different impact from the road wear costs that will be incurred due to heavier loads as a result of higher mass limits.
- Crash cost savings – benefits associated with reduced estimated crashes as a result of reduced vehicle kilometres travelled.

Figure 2 presents an overview of the estimated potential for the magnitude of the savings associated with the two mass limit options.

Figure 2. Benefits profile associated with options to change mass limits[63]



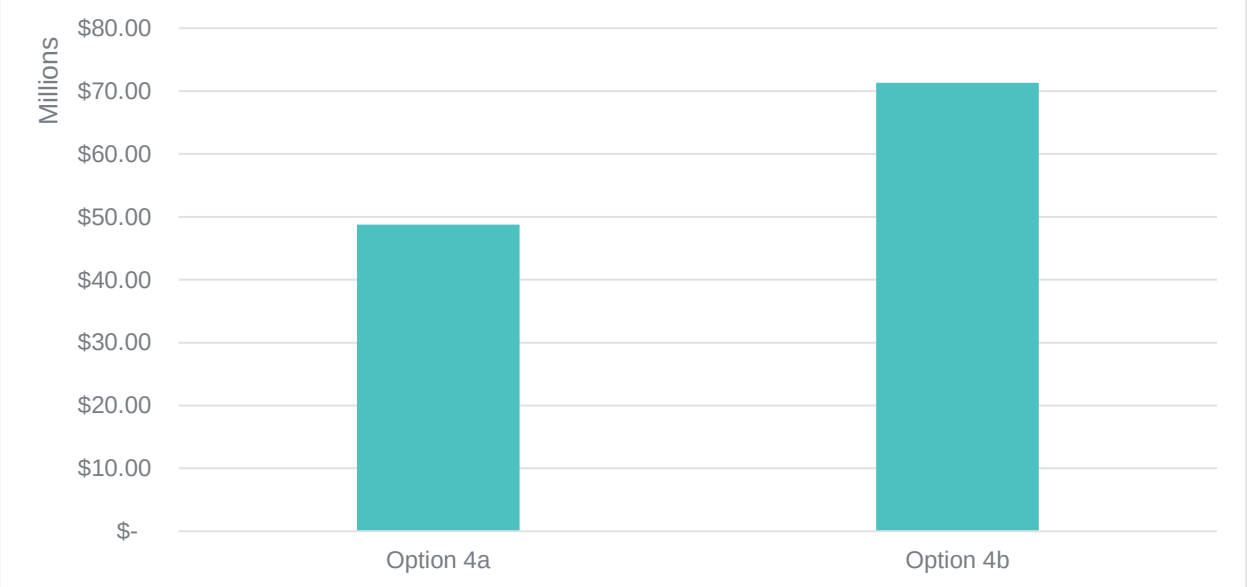
[63] Externality and Emissions Savings are small in magnitude in comparison to the other benefit streams, and therefore are not registering on the chart. This can be attributed to using conservative unit cost values in the absence of better fleet data. Externality and Emissions Savings amount to around $2.8 million for Option 4a and $5.5 million for Option 4b.

VOC[64] savings comprise of the largest share of potential economic benefits associated with changes to the mass limits, followed by travel time savings. This can be attributed to the assumptions that a majority of heavy vehicles in the HVNL states will be impacted by changes to mass limits, along with the long distances travelled by heavy vehicles. Furthermore, the fact that freight vehicles tend to be lower occupancy vehicles influences the relatively lower travel time savings as compared to the VOC savings. It is acknowledged that VOC savings could be offset by an increase in road maintenance costs as a result of increased mass, however this offsetting impact has not been captured in the estimate of benefits.

Costs

Road wear caused by the increased mass limits is identified as the main cost impact of GML replacing CML. Although there is a road wear savings associated with fewer vehicle kilometres travelled (as highlighted in the list of benefit streams), heavier freight could offset this by having a negative impact on road pavement. A high-level inference has been made to assume that an increase in mass limits will increase road wear by 0.74 cents per additional tonne. Figure 1 presents an overview of the estimated road wear costs associated with the increase general mass limits.

Figure 1: Road wear costs as a result of heavier vehicles



Road wear costs associated with Option 4b are approximately 46% higher than those associated with Option 4a. This can be attributed to Option 4b including an allowance for Euro VI in addition to the 5% increase in mass limits, which translates into an overall higher theoretical tare weight as compared to under Option 4a. As noted in the assumptions, analysis of Option 4b is based on an

[64] These costs include vehicle-based components such as fuel, tyres, oil, maintenance, etc. and take road-based factors into consideration as well, such as gradient, speed, curvature, or pavement quality.

'end state' of all heavy vehicles being Euro VI compliant. It is also acknowledged that these costs do not account for the sensitivities associated with increasing mass over different types of axles.

Summary of quantitative analysis

The results of the quantitative analysis are presented using two key metrics:

- Estimated road wear increase – this is the estimated cost impact of running heavier trucks on the freight network as a result of the new GML (replacing CML).
- Estimated benefits – these are benefits realised as a result of increased productivity and fewer kilometres travelled due to higher GML. As detailed in the list of general assumptions, these benefits assume that 100% of the mass constrained freight task take up the increased capacity due to mass limits. In other words, for the scope of this study, this metric presents the maximum potential benefit that could be achieved for the identified benefits streams.

Table 23. Summary of results (2023 dollars)

Option	Estimated road wear increase ($M)	Estimated benefits ($M)
Base Case 4	-	-
Option 4a	$ 48.7	$ 553.7
Option 4b	$ 71.3	$ 1,107.4

The results in Table 23 show that there is significant potential for productivity benefits to be achieved from a new GML replacing CML, with both options resulting in estimated benefits that are significantly larger than the increase in road wear. This indicates that the reforms are likely to deliver economic benefits that are greater than the costs associated with damage to infrastructure due to heavier vehicles.

It is important to note that a majority of the benefits relate to vehicle operating cost savings associated with fewer kilometres travelled as a result of higher mass limits. While it is clear that there is significant potential for benefits to be achieved through the proposal, the impact of higher mass limits on road wear is challenging to estimate. For this reason, headline NPV and BCR figures are not calculated as part of this appraisal to avoid overstating the potential impact.

Caution should be taken while interpreting these results. The results do not necessarily mean that these options are the most efficient way of addressing mass-related efficiencies in the freight supply chain. As mentioned above, this analysis is subjected to limitations regarding data availability, with high-level assumptions made regarding the proportion of fleet impacted by the reform, vehicle type, uptake of additional available mass, and compliance with Euro VI. If uptake of the increased mass limits is lower than expected, this would lower both the benefits and costs. Assuming that the ratio of costs and benefits does not change significantly, it is likely that benefits would exceed costs even if the uptake is lower. Further, competitive pressure between operators is likely to drive an optimal level of uptake over time.

These assumptions may be refined subject to industry feedback on the C-RIS.

Sensitivity Testing

It is noted that the 5% increase in GML limits is a generalised assumption for the extra mass that could be achieved through the reform. In reality, going from GML to CML will result in variable payload improvements based on trailer configurations, axle groupings, and vehicle types. This variability has been tested through a sensitivity analysis that adjusts the percentage increase in mass limits based on an increase to the average payload weight of key impacted truck configurations - semi-trailers and B-doubles.

An additional one tonne (as a result of increased GML) to, for example, an average thirty tonne payload semi-trailer equates to a 3.3% increase. Similarly, an additional two tonnes (as a result of increased GML) to, for example, an average 38 tonne payload B-double equates to a 5.26% increase. Taking a weighted average of the two percentages based on the number of semi-trailers and B-doubles[65] gives an estimated increase in mass limits of 4.4%. This increase in mass limits adjusts the estimated road wear costs and benefits as shown in Table 24 below.

Table 24. Summary of sensitivity results (2023 dollars)

Option	Estimated road wear increase	% change from core analysis	Estimated benefits	% change from core analysis
Base Case 4	-		-	
Option 4a	$ 48.9	0%	$ 486.1	-12%
Option 4b	$ 71.8	1%	$ 972.3	-12%

The sensitivity results show the costs and benefits associated with GML replacing CML are sensitive to accounting for vehicle type and trailer configuration. Decreasing the increase in mass to 4.4% leads to more kilometres being travelled compared to the established study parameter of 5% (i.e., fewer productivity benefits). This results in marginally higher road wear costs, and a 12% decrease in the estimated benefits.

7.4 Consultation questions

Consultation Question 15: Which option (either Option 4a or 4b) would deliver the greatest benefit? Which would have the simpler implementation pathway? Please give reasons in your response.

Consultation Question 16: What are the main benefits for industry in simplifying mass limits to GML and HML?

[65] Estimated using data from the Motor Vehicle Census, 2020

Consultation Question 17: Alternatively, would there be value in creating a 'new CML', as an incentive for mass accreditation, between the proposed "new GML" and current HML?

Consultation Question 18: Could reforms that make it easier for operators to operate at CML without the need for accreditation lead to any adverse outcomes to road safety or road infrastructure?

7.5 Increase general access vehicle height limits – options

Base Case 5: Status quo

Currently, the general access height limit for heavy vehicles under the HVNL is 4.3m.[66]

Most vehicles operate within the current height limit, but there are significant exceptions to this, including livestock vehicles and car transporters (both allowed to operate at 4.6m), buses (allowed to operate at 4.4m)[67], and certain other trailer types (e.g., 'curtain siders' and pantechnicons). Some of these exempt vehicles, for example curtain siders, are only allowed to operate at 90% of GVM to manage rollover risks.

Option 5a: Height increase for general access vehicles to 4.6m

Under this option, the general access height limit for heavy vehicles is increased by 0.3m to 4.6m. Many heavy vehicles are already authorised to operate with a height of 4.6m at general access.

7.6 Increase general access vehicle height limits – Impacts, costs and benefits

7.6.1 Approach and limitations

Not all sectors of the road freight industry can benefit from pure volumetric increases. The benefits of increases in volume will depend on the type of freight and dimensions.

Low density freight types that may benefit from increases to vehicle volumetric load by height increases include:

- Retail and agricultural goods
- Lightweight packing materials e.g., foam packaging
- Furniture
- Refrigerated product

[66] 'Specified semitrailers' (s153A(2)) can operate up to 4.6m (MDL Reg, Sch 6, s8(1)(ba).

[67] https://www.nhvr.gov.au/road-access/mass-dimension-and-loading/general-mass-and-dimension-limits

- Empty or lightly laden containers. There is unlikely to be a benefit of increasing volume when the freight type being transported reaches maximum mass limits well before payload space. For example, dry bulk freight haulage of sand. For unitised or palletised freight, if a volume or dimension increase does not allow an additional unit to fit on the truck there is no gain.

To assess the impacts proposed changes in vehicle height for general access vehicles, allowance needs to be made for operators that already use 4.6m high vehicles under permit or notice, including the following National Notices:

- 4.6m livestock carrier
- 4.6m high construction semitrailers
- 4.6m high and/or 25m long vehicle carrier
- 4.6m high loaded semi-trailer dimension exemption

Initial stakeholder feedback suggests that these notices support a large percentage of loads that have height constraints, and that a primary benefit of the proposed reform will be in reducing red tape for operators. While these national notices define networks for over-height heavy vehicles, permits may still be required to complete the end-to-end freight task.

While there are established processes and parameters for assessing the economic impacts of changes in vehicle mass on road infrastructure (pavement wear), no specific guidance is available for analysing generalised infrastructure cost impacts of increases in vehicle height. Increases in height may impose costs if heavy vehicles collide with infrastructure (e.g., bridge strikes or damage at intersections that cannot accommodate larger vehicles). There may also be costs for collision avoidance measures such as vegetation clearance.

Analysis of proposed changes to general access limits to increase vehicle height has therefore focused on changes in regulatory costs to industry and burden to government, which are expected to be key outcomes of the reform. While it is anticipated that these reforms will also impact on safety and productivity, limited information was available to assess these impacts.

There is limited information to assess the impacts of potential height increases across the road network on road infrastructure and assets, such as overhead bridges and power lines and vegetation clearance (particularly for some local roads).

Existing height limits for buses (4.4m for double decker buses and 4.3m for other (single deck) buses) are understood to be adequate and are not included in the option to increase height limits.

7.6.2 Qualitative analysis

A summary of potential impacts for Option 5a are presented in Table 25 below, compared against the base case.

Table 25. Summary of the impacts of Option 5a against the base case

Overall Impact	Public Safety	Efficiency and Productivity	Regulatory burden to industry	Regulatory Costs to government	Asset Management	Flexibility and responsiveness
Improvement.	**Negative Impact**. Increased risk of crashes common to higher vehicles (e.g. increased rollover risk) due to more overheight vehicles.	**Improvement.** Proposed option is assumed to increase take-up of up to 4.6m high vehicles which increases volumetric load capacity.	**Improvement.** Reduced regulatory requirements for 4.3-4.6m height vehicles.	**Improvement**. Reduced number of permits. Potentially less administration associated with current Notices.	**Negative Impact**. Increased risk of damage to roadside infrastructure from assumed greater uptake of 4.3-4.6m vehicles and associated costs.	**Improvement**. Removal of requirements simplifies and improves flexibility for operators.

Option 5a would increase vehicle height for general access vehicles from 4.3m to 4.6m, with the potential to improve productivity by increasing volumetric loads for some freight tasks without the associated regulatory burden of applying for individual permits. It is also possible that permits may not currently be made available for some loads. For example, to meet current height limits, over height containers may need to be moved on low profile equipment at an additional cost to industry. Option 5a also simplifies the HVNL requirements. This option would be a reduced regulatory burden for those operators who currently need to apply for permits for moving freight on vehicles over 4.3m high but no more than 4.6m high.

However, there are some safety concerns associated with this option, including:

- Lateral (rollover) stability and dynamic effects of increasing a vehicle's centre of gravity
- The risk of striking overhead hazards (bridges, tunnels etc.) due to an increase in height

Increasing vehicle height is also likely to increase the risk of damage to some existing road infrastructure on the general road network, particularly on local roads. For example, overhead wires, overpasses, tunnels, railway bridges may be more likely to be damaged.

Road managers may have concerns about protecting assets and additional costs to assess their road network to determine high risk infrastructure for 4.6m high vehicles and exclude those areas by signposting. However, under the HVNL and the Australian Road Rules drivers have obligations to safely navigate the road network, and a responsibility around dynamic handling of the vehicle for it to remain safe on the road network in terms of stability and manoeuvres.

The current allowances for vehicles at 4.6m general access usually include vehicle conditions to minimise safety risks of rollovers. For example, operating at 90% of the GVM allowance. There

have previously been suggestions that the increased height could apply only for fully enclosed vehicles. The NTC is seeking feedback on conditions that could be applied to introduce Option 5a.

7.6.3 Quantitative analysis

As outlined in Section 7.6.1, there is limited information to assess the impact of increasing the height limit on productivity or safety impacts. Furthermore, the data collection process associated with this analysis has revealed limited details on the demand for an increased height limit.

The data available to give some indication of demand for greater height allowance is access permits. Aggregate figures on the number of permits requested for 4.3m to 4.6m vehicles have been obtained, as seen in Table 26.

Table 26. Number of permits requested for 4.6m vehicles[68]

Number of permits requested for 4.6m vehicles	FY21	FY22	FY23
	1,512	1,177	1,143

It is assumed that under Option 5a, 4.6m length permits would no longer be required as 4.6m high vehicles would have general access. This could result in savings in regulatory burden that is associated with permit applications.

Option 5a could result in administrative savings for the operators who have applied for these permits for moving freight on vehicles over 4.3m but no more than 4.6m high. Based on the cost of access permits ($83), these savings could amount to an estimated **$95,000** in the financial year ending 2023.

Similarly, a reduction in operator compliance burden associated with permit applications could also be achieved. With a conservative assumption that it takes an hour to complete a height permit application, and an assumed value of time of $79.63[69], forgoing the need to apply for height permits could result in time savings valued at an estimated **$91,000** in the financial year ending 2023. It is noted that in practise, the time taken to apply for a height permit would vary significantly between operators, however in the absence of robust data on compliance burden, an hour[70] has been assumed to provide an indication towards the size of burden. This estimate is naturally very

[68] This data has been provided by the NHVR, and includes the following vehicle types: A-double, A-Triple, AAB-Quad, AB-Triple, ABB-Quad, B-Triple, BAB-Quad, B-Double, Semitrailer, Road Train, Super B-Double, and Truck and Dog

[69] Regulatory Burden Measurement Framework, Office of Impact Assessment. Work-related labour cost is used as recommended by the OIA where appropriate/accurate labour rates are unknown or would add undue complexity to the costing process. Note that this is an economy-wide value for employees that is adjusted to include income tax. This value is also scaled up to account for non-wage labour on-costs (for example, payroll tax and superannuation) and overhead costs.

[70] In the absence of data to inform time taken to complete an application, this is an assumed parameter used for providing an estimated burden and is not based on evidence.

sensitive to the time burden assumed – for example, if it is assumed that it takes a work day (eight hours)[71] to complete an application, the estimated time savings increase to $728,000.

It is understood that certain operators experience significant inefficiencies related to processing time associated with permits. It is understood that the average overall end-to-end time associated with permit applications and turnaround times is 12.9 days.[72] For some operators, this processing time could result in inefficiencies and delays in their movements that could be quantified through calculating savings in freight travel time. This has not been quantified due to lack of information on the number of operators impacted by this or the extent and detailed nature of inefficiencies experienced.

While it is acknowledged that there is likely to be a higher risk of damage to infrastructure due to increased height of vehicles on the general access network, it has not been possible to quantify these costs. As such, there may be costs for road managers to assess the network associated with this option that are not quantified here. Furthermore, it should be noted that there are likely costs associated with reduced safety outcomes due to higher trucks (e.g., higher centre of gravity may increase crash risk due to rollover).

Further data would be required to quantify the potential for productivity benefits for these volume-constrained commodities.

Over height truck taskforce to reduce tunnel breaches[73] (23 June 2023 NSW Government Media Release)

The NSW Government has established a taskforce responsible for reducing the number of over height truck incidents in Sydney's road tunnel network.

Led by Transport for NSW, the taskforce brings together representatives from NSW Police, the NHVR, Road Freight NSW and the Transport Workers' Union to drive strategies to reduce overheight breaches, educate truck drivers on load and route management, and improve operational responses to get traffic moving when incidents do occur.

Areas of focus are improving operational responses and enforcement when breaches occur and traffic is affected, as well as improving industry education and communication to get the government's zero tolerance message through to more drivers.

[71] Assumed parameter used for providing an estimated burden and is not based on evidence.

[72] Appendix B, NHVR Annual Report 2021-22

[73] NSW Minister for Roads (2023), online at nsw.gov.au/media-releases/overheight-truck-taskforce.

The taskforce has been established as the NSW Government moves to cancel the registrations of more trucks that breach height restrictions and repeatedly interrupt traffic, particularly around the Sydney Harbour Tunnel.

Under an agreement with the NHVR, all overheight breaches are being automatically referred to Transport for assessment of sanctions that include removal of a heavy vehicle's registration for up to 6 months.

The NHVR has referred four overheight cases to Transport since the agreement was struck:

- An incident on 2 June in which an articulated flatbed truck closed traffic on 2 southbound lanes of the Warringah Freeway near the entrance to the Sydney Harbour Tunnel for 19 minutes. The truck was measured as 4.42 metres which is above the allowable height of 4.3 metres. Transport is assessing the matter.

- A 13 June incident at the Sydney Harbour Tunnel, which was a detection but not determined as an incident.

- An incident on 13 June at the Cooks River Tunnel in which an eastbound truck was stopped at the airport tunnel on 13 June. The driver pulled into the breakdown bay and did not affect traffic or damage infrastructure. This incident has been assessed as not meeting the criteria as "aggravated" and will not lead to a loss of registration.

- An incident on 16 June in which a truck became stuck in the northbound entrance to the Cooks River (Sydney Airport) Tunnel. The vehicle hit sprinklers, activating a deluge system, and was later measured as 4.7 metres which is above the maximum 4.4 metre clearance of the tunnel. Transport is assessing the matter.

The NSW Government recently approved the deployment of $5 million in infrastructure upgrades, which will include moving sensors further back along the Warringah Freeway to ensure heavy vehicle drivers can take earlier evasive action to avoid blocking traffic at the Harbour Tunnel portal.

The overheight truck Taskforce will consider surveillance and other technologies that could be further deployed to detect heavy vehicles from getting close to tunnel portals before being stopped.

7.7 Consultation questions

Consultation Question 19: Given increased vehicle height limits already available to operators through existing laws and notices targeted at specific supply chains, would a general increase in vehicle height allowances provide material productivity benefits (i.e., reductions in heavy vehicle trips)?

Consultation Question 20: Could reforms that make it easier for operators to operate at increased vehicle height limits lead to any adverse outcomes to road safety or road infrastructure? Are there options (e.g., vehicle or load type limitations) to mitigate any increased risk of adverse outcomes?

7.8 Increasing volumetric load by vehicle length increase – options

Base Case 6: Status quo

Under the current HVNL Mass, Dimension and Loading National Regulation Schedule 6 Dimension requirements Part 2(3) Length – combination or single vehicle:

> (1) A heavy vehicle consisting of a combination or single vehicle must not be longer than
>
> (2) For a combination other than a B-double, road train or a combination with two decks for carrying vehicles – 19m

The common heavy vehicle configurations that operate at or close to the current length limit of 19m include semitrailer combinations and rigid truck and trailer combinations.

Under the HVNL heavy vehicles approved at PBS Level 1 may operate at General Mass Limits and with general access at up to 20m length for the total combination.

There are also National Notices available to certain vehicle types and combinations given below:

- National Class 2 PBS Level 1 & 2a Truck and Dog Trailer Authorisation Notice 2022 (No.1)
- National Class 3 20m Long 3-axle Truck and 4-axle Dog Trailer Mass and Dimension Exemption Notice 2022 (No.2)

Otherwise, individual permits are required for vehicles to operate at 20m.

Option 6a: General access limit increase to 20m

Under this option, for general access the length limit for prescriptive heavy vehicles currently limited to 19m length is increased by one metre to 20m.

This option does not cover any potential conditions to be included for a length increase.

Compared to the base case, this means:

- Vehicles operating with a greater length
- The potential for safety concerns with longer vehicles operating on the general road network, due to swept path and stacking distance risks.

7.9 Increasing volumetric load by vehicle length increase – Impacts, costs and benefits

7.9.1 Approach and limitations

Not all sectors of the road freight industry can benefit from pure volumetric increases, and as pointed out in Section 7.6.1, the benefits of increases in volume will depend on the type of freight and dimensions, and low-density freight vehicles may benefit from increased vehicle length.

Some vehicles and operators are already using longer vehicles on the general access network. A number of existing schemes already allow longer vehicles including:

- The National Notice for 20m long truck and dog trailer mass and dimension exemption
- Recent reforms allowing longer vehicles enrolled in the PBS, specifically Truck and Dog (PBS 1 and 2a) which can now operate on the general access network.

C-RIS (2020) stated that industry reports that many road managers already allow 20m combinations general access. Given the access to 20m length for some vehicles under notice, a primary benefit of the proposed reform will likely be in reducing red tape for operators. While these national notices define networks for 20m heavy vehicles, permits may still be required to complete the end-to-end freight task.

Analysis of proposed changes to the vehicle length limit has focused on changes in regulatory costs to industry and burden to government, which are expected to be an important outcome of the reform.

While it is anticipated that these reforms will also impact on safety and productivity, limited information was available to assess these impacts. For example, there may be benefits to standard semi-trailers, as overlength permits are not generally available to such vehicles and so few (other than PBS vehicles) are constructed to 20m. The possible future impact on vehicle lengths and potential subsequent productivity benefit is unclear.

There is limited information to assess the impacts of potential length increases across the road network on road infrastructure and assets.

Buses are excluded from the C-RIS options to increase length limits for general access. Bus length limits (e.g., 12.5m for rigid buses) were established to accommodate characteristics of bus design and operation. The focus of the length increases proposed in the C-RIS is on general freight vehicles; separate assessment and analysis of factors specific to buses would be needed for a review of length, which is outside the scope of this C-RIS.

7.9.2 Qualitative analysis

A summary of potential impacts for Option 6a are presented in Table 27 below, compared against the base case.

Table 27. Summary of the impacts of Option 6a against the base case

Overall Impact	Public Safety	Efficiency and Productivity	Regulatory burden to industry	Regulatory Costs to government	Asset Management	Flexibility and responsiveness
Improvement.	**Negative Impact**. Increased risk of crashes for 20m vehicles due to expanding access to road network and more vehicles at 20m. This is partially offset by a reduction in vehicle trips.	**Improvement**. Proposed option is assumed to increase take-up of 20m long vehicles which increases volumetric load capacity.	**Improvement**. Reduced regulatory requirements for 20m long vehicles that are currently permitted.	**Improvement**. Reduced number of permits and Notices.	**Negative Impact**. Increased risk of damage to road infrastructure from assumed greater uptake of 20m vehicles.	**Improvement**. Simplifies and improves flexibility for operators.

The proposal to increase vehicle length to 20m in Option 6a may lead to improved productivity by increasing volumetric loads for some freight tasks. There also may be avoided costs from no longer requiring PBS certified vehicles to access 20m length limits. Some stakeholders have previously raised concerns that the proposed changes in maximum vehicle length for general access vehicles could disincentivise the use of safer vehicles which meet PBS standards under the PBS scheme. For some operators this may also lead to access for a trip without the associated regulatory burden of applying for individual permits. This would be a reduced regulatory burden for those operators who need to apply for permits for moving freight on vehicles over 19m but no more than 20m in length.

There are some potential safety concerns and potential risk of damage to roadside infrastructure, with proposal Option 6a. Increasing length or geometrically larger vehicle combinations may potentially create difficulties manoeuvring within the geometric constraints of a road, impacting on-road performance. For example, at intersections there may be increased risks associated with a tight swept path damaging poles and traffic lights, and increased stacking distances at railway crossings may increase safety risks.[74] The length of heavy vehicles affects the distance and time required for faster vehicles to overtake heavy vehicles, which may adversely affect road safety

[74] A range of factors may be assessed to determine performance impacts of increased vehicle length, for example see Austroads (2012) Performance Based Standards Level 1 Length Limit Review.

outcomes, particularly on undivided roads. Regulatory controls or conditions may be applied to help to mitigate risks and improve on-road performance for prescriptive vehicles, for example controlling swept path, axle spacings, underrun protection. This paper is seeking input from stakeholders on possible regulatory controls that could be applied.

Road managers may have additional costs to assess their networks to determine high risk parts of the road network and signpost restrictions for longer vehicles, at intersections, stacking distances at rail crossings and other areas of the road network which have not been assessed to be included under notices. However, under the Australian Road Rules drivers have obligations to safely navigate the road network; operators have a responsibility to assess that their vehicle would fit in the road environment and dynamic handling of the vehicle remains safe.

7.9.3 Quantitative analysis

As outlined in Section 7.9.1 there is limited information to assess the impact of increasing length limits for general access vehicles on productivity or safety. Furthermore, the data collection process associated with this analysis has revealed limited details on the demand for greater length allowance.

Data on access permits provides an indication of demand for increased length allowances. Aggregate figures on the number of permits requested for 20m long vehicles have been obtained, as seen in Table 28.

Table 28. Number of permits requested for 20m long vehicles[75]

	FY21	FY22	FY23
Number of permits requested for 20m long vehicles	77	119	160

It is assumed that under Option 6a, 20m length permits would no longer be required as 20m long vehicles would have general access. This could result in savings in regulatory burden that is associated with permit applications.

Option 6a could result in administrative savings for the operators who have applied for these permits for moving freight on vehicles over 19m but no more than 20m long. Based on the cost of access permits ($83), these savings could amount to **$15,000** in the financial year ending 2023.

Similarly, a reduction in operator compliance burden associated with permit applications could also be achieved. With a conservative assumption that it takes an hour to complete a height permit application, and an assumed value of time of $79.63[76], forgoing the need to apply for length

[75] This data has been provided by the NHVR, and includes the following vehicle types: Semitrailer, Road Train, and Truck and Dog

[76] Regulatory Burden Measurement Framework, Office of Impact Assessment. Work-related labour cost is used as recommended by the OIA where appropriate/accurate labour rates are unknown or would add undue complexity to the costing process. Note that this is an economy-wide value for employees that is adjusted to include income tax. This value is also scaled up to account for non-wage labour on-costs (for example, payroll tax and superannuation) and overhead costs.

permits could result in time savings valued at an estimated **$14,000** in the financial year ending 2023. It is noted that in practise, the time taken to apply for a length permit would vary significantly between operators, however in the absence of robust data on compliance burden, an hour[77] has been assumed to provide an indication towards the size of burden. This estimate is naturally very sensitive to the time burden assumed – for example, if it is assumed that it takes a workday (8 hours[78]) to complete an application, the estimated time savings increase to $115,000.

It is understood that certain operators experience significant inefficiencies related to processing time associated with permits. It is understood that the average overall end-to-end time associated with permit applications and turnaround times is 12.9 days.[79] For some operators, this processing time could result in inefficiencies and delays in their movements that could be quantified through calculating savings in freight travel time. This has not been quantified due to lack of information on the number of operators impacted by this or the extent and detailed nature of inefficiencies experienced.

While it acknowledged that there is likely to be a higher risk of damage to infrastructure due to increased length of vehicles on the general access network, it has not been possible to quantify these costs. As such, there may be significant costs for road managers to assess the network associated with this option that are not quantified here. Furthermore, it should be noted that there are likely costs associated with reduced safety outcomes due to longer trucks.

Further work and data are required to quantify the potential for productivity benefits for these volume-constrained commodities.

7.10 Consultation questions

Consultation Question 21: Given increased vehicle length limits already available to operators through existing PBS scheme and notices, would a general increase in vehicle length limits provide material productivity benefits (i.e., reductions in heavy vehicle trips)?

Consultation Question 22: Could an increase in vehicle length limits enable newer, more innovative vehicle/trailer designs? What types of supply chains could benefit?

Consultation Question 23: Could reforms that make it easier for operators to operate at increased vehicle length from 19 to 20m lead to any adverse outcomes to road safety or road infrastructure? Which risks would any regulatory conditions mitigate and what controls could be put in place?

[77] In the absence of data to inform time taken to complete an application, this is an assumed parameter used for providing an estimated burden and is not based on evidence.

[78] This is an assumed parameter used for providing an estimated burden and is not based on evidence.

[79] Appendix B, NHVR Annual Report 2021-22

7.11 Cumulative impacts of proposed changes to mass and dimension limits

Each of the proposals in Chapter 7 have been considered as separate proposals to increase prescribed mass and dimension limits. It is noted that increasing GML, height and length prescribed limits will benefit general access vehicles, though strictly speaking these prescribed limits also apply to some vehicles with restricted access. For simplicity, this report is focused on the benefits to general access vehicles.

Importantly, it is acknowledged that if more than one option is introduced concurrently, there may be compounding impacts which need to be considered.

There have been challenges with quantifying the costs, benefits, and overall impacts of proposals relating to vehicle mass, height, and length general limits. The widespread impact of the reforms on the fleet, varying application of the regulatory changes based on freight task and vehicle configurations, and a lack of robust data to account for these complexities makes it challenging to apply regulatory tests to the various combinations of changes. Furthermore, this complexity introduces a risk for over or understating the impact of the reforms.

A brief consideration of cumulative impacts at a high level is given below and stakeholders are encouraged to provide comments to inform future analysis.

The proposals outlined (Options 4a, 4b, 5a and 6a) in Chapter 7 and the recent ADR change to the maximum vehicle width limit, may be contemplated as a suite of proposals that may have combined impacts on transport. If adopted, this suite of increased mass and dimension limits to general access may contribute to changes to freight operations and the network, for example:

- Lead to fewer heavy vehicle trips
- Lead to fewer vehicles on the network for an equivalent transport task
- Increase in the rate of fleet turnover such that newer vehicles with improved safety, technology and emission features are introduced to the network.
- Increase in operator choice regarding the range of vehicles available to purchase.
- Increase in network efficiency as higher limits support optimal utilisation of the capacity of the road network.

Notwithstanding the difficulties in assessing productivity given the complexity of vehicle types, mass allowances, road access networks and usage[80], productivity improvements arise by allowing heavy vehicles to carry more. Improving freight carrying capacity reduces the average cost of freight transport. The current options allow improvements to load capacity for mass constrained and for volume constrained loads. There may be some freight tasks/ vehicle types able to take advantage of more than one or all of the proposed increases to dimension and mass limits (e.g., lighter loads that are close to current regulated mass and dimension limits).

Safety outcomes from cumulative impacts of the proposed increases to limits may need to be considered further. For example, proposed changes to vehicle height limits for general access in

[80] Productivity Commission (2020) National Transport Regulatory Reform, Report no.94, Canberra.

conjunction with mass limit increases (and without accreditation) may need to be assessed (e.g., changes to rollover risks) and conditions may need to be applied to mitigate risks. In general terms vehicles would still be operating within their design specifications and the reduced number of trips may lower the crash risk. As the heavy vehicle fleet turnover accelerates, this will bring safety technologies to vehicles[81], minimising risks associated with compounding increased dimensions and mass limits.

Asset management impacts such as the costs to maintain the road network may be influenced the most by increases to general access mass limits. Road managers (governments) may incur the costs of increased mass of the general fleet on all roads in terms of increased pavement wear over time as the fleet becomes heavier, though this is likely to be offset by reduced number of trips. The cumulative cost impacts of adding increases to height and length dimension limits will also have impacts for road managers, though these may be less significant than mass-only impacts. For example, overhead wires, overpasses, tunnels, railway bridges may be more likely to be damaged by higher vehicles regardless of increased payloads. Longer vehicle combinations may potentially create difficulties manoeuvring within the geometric constraints of a road, impacting on-road performance; increased mass limits for 20m vehicles may have negligible increased impacts.

Regulatory cost savings to operators no longer requiring permits may depend on the current proportion of operators that would be able to take advantage of more than one limit increase. An understanding of the need would also help to understand the savings to governments for permit administration.

7.12 Consultation questions

Consultation Question 24: Do you have any comments on the cumulative impact of increasing general access limits for vehicle mass, length and height? Please give reasons and evidence where possible.

[81] See the NHVR's Vehicle Safety and Environmental Technologies Uptake Plan (2020) for further details: Vehicle Safety and Environmental Technology Uptake Plan | NHVR

8 Enhanced operator assurance

Key points

- This section of the C-RIS sets out policy options designed to improve confidence across industry in the robustness of the current NHVAS and enable mutual alignment between accreditation schemes.
- One option is considered in this reform area, compared against the base case. The option proposes the inclusion of NAS requirements in regulations.
- The option is described, followed by analysis of its potential impacts.
- Consultation questions are provided throughout this section. Stakeholders are encouraged to provide responses to these questions to inform the development of a D-RIS.

8.1 Section overview

This section of the C-RIS sets out policy options designed to improve confidence across industry in the robustness of the NHVAS and provide consistency between accreditation schemes.

8.1.1 Enhancements to the NHVAS agreed by ministers in June 2023

The D-RIS (2023) made recommendations adopted by ministers, to enhance the NHVAS based upon a safety management system approach, and to introduce a new NAS to support a more robust scheme.

The DRIS recommended changes to the way NHVAS operators can access alternative compliance options. The current NHVAS is based on separate risk-based fatigue, mass and maintenance management modules and associated alternative compliance options, most of which are hardwired into the law and regulations. The enhanced NHVAS will enable the NHVR to offer industry access to a broader range of accreditation options that will, in turn, allow access to alternative compliance options that may include regulatory concessions.

The current NHVAS business rules incorporate several SMS principles, but operators are not required to demonstrate an effective SMS. However, the future law will require operators to demonstrate that operators demonstrate implementation of an effective SMS before being accredited under the NHVAS. The definition of SMS will be broad and in line with international literature and regulatory approaches in the rail, maritime, bus, and aviation industries in Australia. It will include a systematic approach to safety management, incorporating organisational structures, accountabilities, policies, and procedures. A comprehensive SMS should address all relevant risks in any given heavy vehicle operation. If an operator applies to access certain ACOs as part of the risk area module, the module standards and relevant conditions must be integrated into the operator's overall SMS.

To support the enhanced NHVAS and SMS gateway requirement, a new auditing standard, the NAS, was also agreed by ministers to support the updated accreditation scheme, designed to

improve audit outcomes and shift auditing from compliance-based to outcomes-based for continuous improvement of operators' SMS and accreditation over time. The NAS and options to introduce the NAS in the HVNL regulatory framework are considered below.

8.1.2 NHVAS Audits under the current HVNL and agreed changes to auditing under the D-RIS

Under the current HVNL regulatory framework, NHVAS auditing requirements are only referenced in the Standards and Business Rules, with the regulator also providing oversight through the relevant NHVAS Audit Framework and Auditor Code of Conduct. Ministers currently approve the NHVAS Standards and Business Rules.

The DRIS, Recommendation (8) was approved by ministers in June 2023:

That, to support mutual alignment pathways and scheme robustness, a national audit standard be developed by the regulator and approved by ministers.

8.2 National Audit Standard requirements – Options

This C-RIS considers two options to address key problems as raised in Chapter 3, namely:

- Audits can be improved to increase reliability and confidence.
- Auditor competency requirements may not be fit-for-purpose for the new NHVAS SMS requirements.
- There is a lack of consistency or mutual alignment of accreditation schemes across Australia.

Policy options are described below.

Base Case 7: NAS is prescribed in primary law only, no requirements in regulations

This option is akin to the current arrangements to set requirements for NHVAS audits. The NHVR is enabled to develop the requirements and details for the NAS.

The NAS is prescribed in the primary law only. There are no standards or requirements set out in the regulations about what the NAS should address.

This means that the NHVR maintains the flexibility to develop the NAS and any guidance documents that set out operational detail.

In addition, like the current arrangements where ministers approve the NHVAS Business Rules and Standards, ministers must approve the NAS developed by the NHVR.

Option 7a: NAS is prescribed in primary law, NAS requirements are included in regulations

This option is a different approach from the current arrangements to set requirements for NHVAS audits. Under this option, NAS requirements as set out above would be included in regulations, and the NHVR would be required to develop the NAS in line with these requirements.

The HVNL will define a NAS approved by ministers. It is recommended that regulations outline the general requirements for developing the NAS.

The regulator will create detailed workflows and instructions for NHVAS auditing in compliance with NAS regulations, including complementary guidance material.

The NAS requirements to be set out in regulation address:

- Audits that are undertaken for the purposes of accreditation within a regulatory framework
- The purpose of audits
- How audits should be undertaken
- By whom audits should be undertaken
- Outline specific requirements relating to oversight of the audit standard.

Six Core Requirements for the NAS

The proposal is to set out six high level best practice NAS requirements for audits and auditors in regulations. These may be applicable to any SMS-based scheme. The following six requirements are proposed for the regulation:

A. Audits can be undertaken to confirm that accredited heavy vehicle operators, or heavy vehicle operators applying for accreditation:

B. Have an appropriate SMS in place that meets the requirements of the regulator and relevant business rules
   - Comply with the requirements of their SMS and any alternative compliance.
   - Audits of accredited heavy vehicle operators can be undertaken to determine the effectiveness of their SMS in achieving the outcomes sought by the accreditation scheme.

C. Audits can be undertaken:
   - Prior to an operator being granted accreditation
   - Prior to an operator extending or maintaining accreditation
   - On a random basis as part of the oversight body's assurance program
   - On a triggered basis as part of the oversight body's assurance program

D. Audits can be performed in alignment with the relevant principles and processes established in ISO-19011- Guidelines for auditing management systems.

E. Audits can be undertaken at the accredited operator's place of business, where operational activities can be observed and the records relating to accreditation are available. Where an accredited operator has multiple places of business and record storage locations, the audit can include examination of relevant practices and records across a sample of these locations.

F. Procedures to ensure that auditors:
   - Have the skills and knowledge to undertake audits; and

- Are independent from the area being audited to the maximum extent that is practicable.

The NAS will also capture the Auditor Framework and Code of Conduct, which are already managed by the regulator.

Out of scope

The NAS will not include detailed instructions or workflows regarding which elements of an accredited operator's system should be assessed, such as:

- the sharing of audit information between the auditor, accredited operator and oversight body
- auditor training requirements
- operator requirements
- fee-paying arrangements any potential regulator reporting requirements.

8.3 Discussion of options

As discussed previously, options to improve confidence across industry in the robustness of the NHVAS and consistency between accreditation schemes build upon the recommendation approved by ministers based on recommendations in the recent D-RIS (2023). As such, Option 7a has been considered via a discussion of potential impacts, compared to the base case.

Option 7a sets out NAS requirements in regulations, guiding the NHVR to develop the NAS in alignment with certain conditions, compared to the base case where NAS requirements would not be set in regulations. Prescribing NAS requirements in regulations has potential impacts which include:

- Ministers can set clear expectations for the NAS by approving the NAS requirements to be prescribed in regulations. This will ensure that there is consistency across different jurisdictions in terms of what the NAS should include.
- Regulations will provide a framework in which the regulator can develop the NAS. Clear and concise regulations for NAS requirements that provide a level of certainty and transparency in the auditing standards. This transparency allows for a more streamlined and efficient process for implementing NAS and supports mutual alignment with other SMS based schemes. By outlining the key elements of auditing standards, these regulations ensure that all auditing practices adhere to best practices and maintain a high level of quality and consistency. This, in turn, promotes greater trust and confidence in the auditing process, benefiting both auditors and those being audited. Regulations are broad enough to support scalability and high variability of operator types, sizes, and complexities.

It is imperative that the NHVR conducts further research to fully comprehend the potential impact on auditors resulting from changes to audit procedures due to the development of NAS. The implications of incorporating NAS requirements into regulations are yet to be fully realised and could significantly affect operators and auditors. Therefore, the NHVR must prioritise the development of NAS and conduct thorough planning to ensure a smooth transition for all involved parties.

8.4 Consultation questions

Consultation Question 25: Do you agree with the potential impacts described regarding the potential inclusion of NAS requirements in regulations? Are there additional impacts you think should be considered?

9 Stakeholder consultation and next steps

Key points

- This C-RIS canvases options to change the HVNL and presents an overview of potential impacts to elicit information from stakeholders to understand their level of support for options, to help develop and refine options and to inform further analyse the relative costs and benefits of options for the D-RIS.
- A key challenge for this C-RIS is sourcing data and evidence regarding the proposals to inform robust quantitative impact analysis.
- Stakeholders are encouraged to respond to the consultation questions provided in this C-RIS. Submissions received by the closing date will be considered by the NTC in preparing a D-RIS to assist Infrastructure and Transport Ministers to determine what is the most efficient and effective regulatory approach.
- Consultation on this C-RIS is open from 9 October 2023 to 24 November 2023. Submissions should be made to enquiries@ntc.gov.au.

9.1 Consultation period

The purpose of this document, the C-RIS, is to canvas options to change the HVNL and to understand the level of support for the options from stakeholders. The CRIS also aims to present an overview of potential impacts of proposals in order to elicit information from stakeholders to help further develop and refine options including analysis of the relative costs and benefits of these options.

A request for data and evidence

The analysis of the proposed options in this C-RIS highlights the challenges of incomplete, inconsistent and otherwise unknown information that could provide evidence for quantitative analysis of the problems and the options to address these.

Key data parameters in this C-RIS analysis that could be further refined for the D-RIS include:

- Scope of fatigue regulated vehicles – fatigue-related crashes which involved the heavy vehicle driver for short and long-distance freight tasks, for different scenarios presented, time taken to complete work diaries (written and electronic),
- Increased mass limit – mass-constrained fleet size or likelihood of business taking up increased mass allowances and productivity benefits, asset management impacts for road managers,
- Increased height limit – commodities/freight operations that would benefit from proposed height increases, productivity benefit, asset management impacts for road managers,
- Increased length limit – commodities/freight operations that would benefit from proposed length increases, productivity benefit, asset management impacts for road managers.

Stakeholders are encouraged to provide evidence and information which could assist with further analysis of the proposed reforms, by providing responses to the consultation questions detailed in this C-RIS. This will assist in the development of the D-RIS.

Consultation on this C-RIS is open from 9 October 2023 to 24 November 2023. Submissions should be made to enquiries@ntc.gov.au.

9.2 Next steps

Submissions received by the closing date will be considered in preparing a D-RIS.

Additional data and information provided by stakeholders in response to this C-RIS will enable more sophisticated analysis to be undertaken in the D-RIS. The D-RIS will inform ITMM in determining what is the most efficient and effective regulatory approach.

Consultation questions provided through this document are collated in the following section. Stakeholders may respond to all questions or may respond to selected questions that relate to key issues of interest.

9.3 Summary of consultation questions

Consultation Question 1: To what extent has the C-RIS fully and accurately described the problem to be addressed within the scope of identified issues? What other factors should be considered in the problem statement? Please provide detailed reasoning for your answer.

Consultation Question 2: Has the C-RIS provided sufficient evidence to support the case for government intervention? What else should be considered and why?

Consultation Question 3: In addition to the barriers and constraints identified, what other impediments could impact on the success of implementing options presented in the C-RIS?

Consultation Question 4: Are there any potential changes to the impact analysis methodology that you would suggest? Please provide reasons and evidence.

Consultation Question 5: Do you agree with the potential impacts of Options 1a and 1b as described above? Are there any additional impacts you think should be considered?

Consultation Question 6: Do you support one or more options to change the scope of fatigue regulated vehicles? Please give reasons for your preference(s).

Consultation Question 7: Do you have any information to support analysis of these options? Do you have any feedback on the key parameter estimates as presented in Section 6.6.3? Provision of anecdotal evidence would be welcomed.

Consultation Question 8: Are there any additional impacts you think should be considered? If so, why?

Consultation Question 9: Do you agree with the key impacts that changes to the scope of FRHVs may have on buses, as described above? Do you foresee any additional impacts?

Consultation Question 10: Do you support one or more options to change enforcement of fatigue-related breaches? Please give reasons for your preference(s).

Consultation Question 11: Are there any implications of options to change enforcement of fatigue-related breaches you think should be considered? What issues would need to be considered as part of implementation of these reforms?

Consultation Question 12: If some of the proposed changes to enforcement of fatigue-related breaches were adopted, would this give you confidence to transition your business to EWDs?

Consultation Question 13: Taken as a package, would these reforms to fatigue management create a fairer regulatory approach overall?

Consultation Question 14: Regarding Option 3A, would a timeframe of 14 days or 28 days be more appropriate? Please provide reasons for your answer.

Consultation Question 15: Which option (either Option 4a or 4b) would deliver the greatest benefit? Which would have the simpler implementation pathway? Please give reasons in your response.

Consultation Question 16: What are the main benefits for industry in simplifying mass limits to GML and HML?

Consultation Question 17: Alternatively, would there be value in creating a 'new CML', as an incentive for mass accreditation, between the proposed "new GML" and current HML?

Consultation Question 18: Could reforms that make it easier for operators to operate at CML without the need for accreditation lead to any adverse outcomes to road safety or road infrastructure?

Consultation Question 19: Given increased vehicle height limits already available to operators through existing laws and notices targeted at specific supply chains, would a general increase in vehicle height allowances provide material productivity benefits (i.e., reductions in heavy vehicle trips)?

Consultation Question 20: Could reforms that make it easier for operators to operate at increased vehicle height limits lead to any adverse outcomes to road safety or road infrastructure? Are there options (e.g., vehicle or load type limitations) to mitigate any increased risk of adverse outcomes?

Consultation Question 21: Given increased vehicle length limits already available to operators through existing PBS scheme and notices, would a general increase in

vehicle length limits provide material productivity benefits (i.e., reductions in heavy vehicle trips)?

Consultation Question 22: Could an increase in vehicle length limits enable newer, more innovative vehicle/trailer designs? What types of supply chains could benefit?

Consultation Question 23: Could reforms that make it easier for operators to operate at increased vehicle length from 19 to 20m lead to any adverse outcomes to road safety or road infrastructure? Which risks would any regulatory conditions mitigate and what controls could be put in place?

Consultation Question 24: Do you have any comments on the cumulative impact of increasing general access limits for vehicle mass, length and height? Please give reasons and evidence where possible.

Consultation Question 25: Do you agree with the potential impacts described regarding the potential inclusion of NAS requirements in regulations? Are there additional impacts you think should be considered?

Appendix A. **Ken Kanofski Package**

Report to Infrastructure and Transport Ministers Meeting (ITMM) – Ken Kanofski

This version of the report is for public release. It remains consistent with the version considered by Ministers on Friday 5 August 2022. The views of stakeholders have been made less attributable and more general to respect the basis on which those views were shared.

In February 2022 I was asked by Infrastructure and Transport Ministers to undertake stakeholder consultation on the Heavy Vehicle National Law (HVNL) Safety and Productivity Program and to report back on:

- Policy settings for a new Heavy Vehicle National Law demonstrating how safety and productivity improvements can be achieved
- Highlight areas where policy positions are unresolved and recommend ways forward
- Outline the forward work required to deliver a new HVNL, including timeframes, process and cost benefit analysis
- Any systemic barriers to national heavy vehicle reform.

The process also involved testing a range of National Transport Commission (NTC) policy proposals with industry. It became clear that many of the issues of most concern for industry did not relate to the law itself but were issues of implementation of systems and processes, and broader road reform.

During the consultation, a range of proposals were explored and discussed with representatives from industry, jurisdictions, the regulator and law enforcement. This included:

- 11 multi-lateral meetings
- 2 all day workshops
- 37 individual stakeholder meetings.

In total 80 people representing industry organisations and jurisdictions were consulted and I thank them for being generous with their time and positive contributions. The details of the consultation undertaken is outlined at Attachment C.

Attachment A provides a package of recommended propositions that have broad support. The document distinguishes between matters pertaining to the law that can be taken forward as part of the NTC law review process and items that should be taken forward via additional work streams.

These propositions, if adopted will lead to improvements in safety and productivity, reduction in red tape and streamlined governance and administration. The following sections provides a high-level summary.

Policy Propositions to be taken forward as part of the NTC Law reform

The package of policy propositions has been developed after considering work previously developed by the NTC, proposals put forward by the Australian Trucking Association (ATA) and proposals raised during the consultation for this report. The NTC had already developed proposals to improve the

structure, purpose and focus of the new HVNL, which were thoroughly tested with industry as part of this process.

Overall, a strong consensus was reached on a package of legislative reforms, which if taken forward by the NTC and implemented will:

- Improve both flexibility for industry and safety through a two-tiered fatigue management system, with a mandatory safety management system a key feature of the second tier, where the NHVR will be able to provide greater flexibility to operators who show greater systemic focus on safety.
- Ensure that safety obligations for drivers, operators and third parties in the chain of responsibility are more clearly articulated and encourage all parties to manage risks so far as is reasonably practical, by prescribing specific obligations on off-road parties and developing specific penalties in the new HVNL.
- Improve safety by examining mandatory risk-based medical screening of drivers via the Assessing Fitness to Drive Guidelines (note that Ministers have already asked the NTC to examine this)
- Re-focus roadside enforcement to be more safety risk-based on deliberate and systemic failures rather than administrative processes.
- Overhaul the Performance Based Standards (PBS) approval process to maximise the opportunities for use of these safer and more productive vehicles
- Consider how to end the multiple and duplicative assurance audits which operators are currently required to do
- Make modest improvements to general access mass and dimension (subject to a cost benefit analysis and regulatory impact assessment)
- Take an outcome-based approach to regulation which encourages and enables innovative practices, while also allowing for prescriptive measures for HV businesses that prefer to follow the rules-based system.
- Provide a more flexible legislative framework that moves many rules down from primary legislation to regulation and other subordinate instruments such as Codes of Practice. This will allow the Regulator to deliver real time safety and productivity improvements and easily adapt to future industry developments.
- Optimise the use of technology and data for both regulatory and road manager purposes by enabling the development of technology and data standards, protections for privacy and security and a certification system, via a new technology and data framework.

This package has broad support, even though individual aspects may not be everyone's first preference. Substantial compromise and reconciliation of views has been reached through the consultation process between historically entrenched and often competing views of stakeholders. Consideration of matters as a package will allow the reform to move forward maximising the goodwill and momentum that has been built through consultation.

The proposed flexible operator certification scheme based on Safety Management Systems will provide greater flexibility for the NHVR to approve alternative compliance and encourage and reward operators that are more proactive in their risk management and invest in safety and productivity technology. Supported by a technology and data framework that protects privacy and controls on the use of data for compliance purposes, the expanded operator certification scheme will support continuous improvement in the heavy vehicle industry.

Applying the operator certification model to fatigue will allow for a two-tier system with a base tier, that provides simple, easy to follow rules for operators that want simplicity; and a certified tier that

provides flexibility for those operators who can demonstrate better risk management. The general schedule, which has been modestly simplified, should be tested in the field with operators and by independent safety experts. This schedule, combined with a more risk-based approach to fatigue enforcement and penalties will provide a fairer, more balanced system that maintains community safety.

Fatigue record keeping (logbooks) should be retained but should be as light-weight and simple as possible. Electronic record-keeping should be encouraged (but not mandated) and many of the proposed enforcement changes would allay industry's concerns with electronic work diaries. Importantly, there was broad agreement that the use of fatigue detection technology should be encouraged, and that this technology should be adopted when it is proven.

The new law will mean that a one size fits all approach to compliance and enforcement and operator certification will not be appropriate and the regulator will have the opportunity to provide a more tailored approach to performing its duties. To ensure the expectations of ministers are met, certain governance controls, such as the ability to issue ministerial directions and a more robust Statement of Expectations, should be implemented.

Additional Policy Matters to be taken forward as separate workstreams

It became clear throughout the consultation that industry's concerns with how heavy vehicle access is regulated are a matter of operational and system deficiencies as opposed to problems inherent in the law. Industry's productivity concerns also relate to broader road reform issues outside of the scope of the HVNL.

Taking these 'out of scope' issues forward as part of an overall policy package is critical to maintaining industry support for the policy propositions that do relate the HVNL. It is recommended that the non-HVNL propositions are taken forward as additional work streams by an appropriate body.

It was universally agreed that moving towards an online access system based on pre-agreed network access similar in concept to the Tasmanian HVAMS is the preferred way forward for improving access. Such a system will require financial investment by jurisdictions, however, will deliver future cost savings for government and substantial benefits for operators. Work should proceed to cost this project as a priority. Such a system would improve decision making and in time negate the need for most access permits as better asset management practices are embedded for road managers.

Other non-HNVL propositions include:

- Measures to encourage more transparency on heavy vehicle productivity issues by road managers
- Overhauling the PBS approval process, and making some changes to the law in this area
- Measures relating to driver health.

Barriers to Reform

The Productivity Commission Report National Transport Regulatory Reform from October 2020 notes that the HVNL has not achieved the productivity improvements that were envisaged. My observation is that there is a mismatch between the productivity objective and therefore the

ambition of the law, and the levers that are contained within the law to impact productivity. The largest drivers for heavy vehicle productivity are likely to be prioritisation of infrastructure spending and efficient road pricing, both of which are matters that are outside the scope of the current or any future Heavy Vehicle National Law.

The law can and should ensure that access decisions are made in an efficient, transparent and accountable way and several recommendations are directed at red tape reduction and more accountability in this area.

A separate but related issue is a tension between the role of the NHVR and the role of road managers in the granting of access to the road network. I recommend that governments make clear their expectations in this regard.

My work also noted that in some cases the philosophical approach to access decision making was one of asset protection in a constrained budget environment. While the budget constraints are real and acknowledged, the interests of the community are maximised if access is seen through the philosophical prism of roads fulfilling a significant economic purpose of moving people and freight. The goal in granting heavy vehicle access should be to maximise the safe use of roads and infrastructure to efficiently move freight rather than protect the asset. The success of the Tasmanian HVAMS system owe as much to this philosophical change as it does to the systems that support the decision making.

The NHVR is now mature in its operation and a new law based on the policy positions put forward in this report will enable them to be more effective. However, the new law on its own this will not address productivity in the heavy vehicle sector and it needs to be coupled with an ambitious micro economic reform policy agenda. Industry sees these issues as highly interrelated.

Areas of disagreement and a way forward

The consultation showed that the level of agreement on the future direction of the HVNL at principles level was very high; and discussions focussed primarily on policy refinement. However, there are some areas where there are divergent views.

The policy positions included in Appendix A recommend that the new law enable ministers to appoint a technology and data framework administrator, define the role of the administrator for regulatory and non-regulatory purposes and make a range of other related decisions. This proposition has broad support.

Some stakeholders want to go further and have ministers name the Transport Certification Australia (TCA) as the Framework Administrator. Other stakeholders do not support this position. It is outside the scope of this report to nominate roles for particular government bodies.

There is unanimous support for the implementation of an on-line access approval process using a pre-approved network (similar to the Tasmanian Heavy Vehicle Access Management System (HVAMS)). Some jurisdictions and Austroads have commenced projects in this regard and the NHVR has also done considerable work on an on-line access system. There is unanimous support for the NHVR portal being the entry point for customers to access any on-line approval process.

It is likely that the ultimate solution requires improvements to both NHVR and jurisdictional systems working in concert. This report recommends that an implementation plan is developed and costed over the next 6 months to address this issue.

A small minority of stakeholders raised some concerns of ease of enforcement of the more complex two tiered system, however, increasingly technology and a shift to risk based enforcement will inevitably drive change in this area. While prescriptive rules must and should remain in the near term, the focus on these should lessen over time.

Some concerns were expressed about the technology and data framework, however, these concerns can be addressed in the design of schemes that are approved under the technology and data framework.

Road managers generally are concerned about the balance of heavy vehicle access and degradation and funding of roads. An access matter that is within the scope of the legislation and is not agreed is the issue of deemed refusal of access applications when the time limit has expired, combined with a merit-based appeal. Most decisions of government of this type are subject to merit-based appeal and my observation is that heavy vehicle access decisions should be no different. A merit-based appeal combined with a time-based deemed refusal would provide a remedy for operators who at present can simply be left in limbo by a road manager's failure to decide.

I have not recommended a merits-based appeals process because there are highly divergent views on this issue and because industry regarded implementing an on-line, pre-agreed network approach to access decisions as a more important reform to be pursued. Deemed refusals without a merit-based appeal do not help anyone and are therefore also not recommended.

In summary, the package of law changes discussed and presented to stakeholders is broadly supported, noting the exceptions above and, on that basis, the NTC's work program (which is consistent with this report's position on legislative reform issues) should be progressed. Propositions which are outside the scope of the NTC law review should be progressed as additional work streams

A survey of stakeholders concluded that there is broad support for the package. The full report detailing the support for individual propositions has been distributed to jurisdictions, the summary results are provided in Attachment B.

The survey highlights:

Overall Support

- Overall, 78% of stakeholders either support or strongly support the overall package, 13% oppose and 9% are neutral

Improving Productivity

- 83% of stakeholders agree or strongly agree that the overall package will improve productivity compared to the current system. 4 % disagreed that the package will improve productivity and 13% were neutral.

Improving Safety

- 57% of stakeholders agree or strongly agree that the package will improve safety compared to the current system, 13% disagree and 30% were neutral

ATA Proposal

While my work was underway the ATA publicly put forward a set of policy proposals for the new law. This was very helpful for my process and the ATA engaged in a very positive manner with my work.

My analysis shows that 13 of 17 ATA proposals are fully or substantially aligned with proposals in this report. Two ATA proposals are out of scope and two are not supported by this report.

Next steps

The law reform proposals discussed during this process, outlined above and included in full in Attachment A have broad agreement, noting the exceptions above. All stakeholders have participated in discussions in good faith and their contributions have been productive and assisted in refining the policy proposals.

The package needs to be considered as whole, while allowing for multiple implementation pathways. Individual components rely on others and removing an element will undermine support for the package as a whole.

Propositions in appendix A that relate to the law should be progressed.

Propositions in Appendix A which are categorised as outside the NTC law reform project should be progressed by an appropriate body as additional work streams.

In addition, other matters, such as the scope of fatigue regulated heavy vehicles, a new general schedule for fatigue (the basic rules) and potential changes to general mass and dimension (ie increases to height and width) will need to be tested through a regulatory impact process before final positions can be confirmed. Once the analysis is complete Ministers will be able to decide whether they should proceed. Issues requiring a benefit cost assessment as part of the regulatory impact process are also identified in Attachment A.

The need for ongoing engagement

As previously stated, the stakeholder engagement process over the last few months has been undertaken in a very positive and cooperative spirit. However, there is much detail to still work through and finalise.

As such, most of the arrangements put in place should be maintained over the next 12 to 18 months to deal with both NTC law reform process issues and issues that are identified for additional work streams. More specifically, the enhanced Reform Advisory Committee (a committee of industry, jurisdictions and regulators), which was central to developing broad agreement around the proposed package should continue to play a strong role.

This forum will act as an opportunity to test and refine the practical and implementation impacts of proposals. From an industry perspective these arrangements will also respond to a strong view that there needs to be more transparency in the process. Forums where stakeholders from both industry and jurisdictions and the NHVR share perspectives and develop ideas in tandem will continue to deliver the best results.

Summary of Recommendations:

1. The propositions outlined in Attachment A should be progressed as a package of reforms.
2. Items identified in the Attachment NTC Law reform should be progressed by the NTC.
3. Items identified in the attachment as non-law reform related should be progressed by an appropriate body.

Attachment A: Reform Propositions

Table 1 Overall Reform Propositions

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[1]
1.1. Retain current objects of the law. *Comment*: The suitability of productivity improvement as an object of the law has been tested with RAC+ and while some stakeholders would like to see the objective removed with the law becoming a safety focused law like the National Maritime and Rail laws and others would like to see the objective strengthened, the pragmatic position is to leave it as it is.	No Policy Change	-	-
1.2. Participating jurisdictions should be required to report every three years on improvements made to heavy vehicle productivity, including infrastructure and regulatory settings, based on metrics and templates set by Ministers. Participating jurisdictions should also produce a three-year forward program for future access improvements; and these plans are to include information for local government bodies within their jurisdiction. *Comment*: The 2020 Productivity Commission report acknowledged that road managers hold the most government levers in terms of heavy vehicle productivity. If Road Managers have the levers to improve road access, then they should also be accountable and subject to reporting obligations, including details and evidence of improvements to access. The Productivity Commission report acknowledges that road managers have the most government levers in terms of heavy vehicle productivity.	-	-	✓
1.3. The law and/or other relevant supporting documents should make clear the roles of the respective government parties with respect to heavy vehicle productivity. *Comment*: A description of the roles of the various parties will be developed (other than NHVR which is described in 1.4 below).	-	-	✓
1.4. The NHVR's role in productivity is specific to: **a. Facilitating productivity improvements without compromising safety** **b. Creating and maintaining a national integrated access decision making process and system, including the production of statistics** **c. Support and encourage the uptake of safer and higher productivity vehicles**	No Policy Change	-	✓

[1] Additional Work Streams are initiatives that are outside the NTC Review program of work.

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[1]
d. Collaborating with road managers and industry to proactively drive national harmonisation of vehicle access and operating conditions to enable safe and seamless movement of goods and passengers by heavy vehicles across state and territory borders.			
1.5. To the maximum extent possible the new law be outcome based while also allowing for a prescriptive approach.	✓	-	-
1.6. To the maximum extent possible, the new law should place detail into regulations and subordinate instruments as set out in several better regulation guidance documents	✓	-	-

Table 2 Access

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[2]

Key points
• **The message for improving heavy vehicle network access is clear – we need a positive game changer to improve the efficiency and transparency of the decision-making system and improve network access.**
• **To progress, parties need to treat roads as an economic asset, recognising that road mangers are the asset owner and ultimately responsible for access decision-making and performance of the road asset.**
• **A step change to improve productivity and safety can be achieved by investing in a new system to automate access decision-making (to the maximum extent possible) akin to the Tasmanian model, which appears to be well regarded by all parties.**
• **It is acknowledged that this is an ambitious national reform that will require strong partnership with and significant support for local councils.**
• **The key proposals include:**
  ○ **Establishing a Steering Committee of road managers, Australian Local Government Association and the Regulator to advance the new system:**
  ▪ **Advise on what system can be implemented and how it should be delivered for a successful national rollout**
  ▪ **Assess the benefits, costs and risks of the new IT system**
  ▪ **Detailed Implementation plan developed within 6 months for consideration by Ministers**
  ○ **Set a target that a new automated access system will be in place within 3 years and the number of access permits required is reduced by 50% within 3 years and 90% within 5 years for all classes of heavy vehicles.**
  ○ **Conduct a cost benefit and safety risk analysis (as part of the HVNL impact assessment) of expanding general access from GML to CML and vehicle length from 19m to 20m.**
• **It is recommended that a proposal put forward by the ATA to open up as-of-right-access along specific routes on a National Road Transport Network (connecting major cities) be subject to a rapid economic assessment.**
• **A major barrier to the growth of new safer and more efficient PBS vehicles in the fleet is the lack of certainty on access, which could be addressed with the automated access system.**			

[2] Additional Work Streams are initiatives that are outside the NTC Review program of work.

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[2]
2.1. Re-affirm that road managers are the ultimate access decision makers in their role as road asset owners and managers but need to make those decisions in an efficient, transparent, and accountable way.	No Policy Change	-	-
2.2. Retain the existing decision-making criteria for access, however, update ministerial guidelines on access decisions to consider the productivity benefits of the application and require decision makers when considering rejecting an access application to consider the impact of alternative means of moving the freight which is the subject of the application.	-	-	✓
2.3. That a target be set for all jurisdictions to implement upgraded access arrangements within 3-5 years including: **a. Automated real time decision making within 3 years** **b. Implementation of automated access assessment supported by access under notice such that the number of access permits required is reduced by 50% within 3 years and 90% within 5 years for all classes of heavy vehicles (including PBS).** *Comment*: While the specific numbers may be debated (e.g. at RAC+ industry suggested 95% within 5 years target), setting targets will help to focus efforts to achieve reform.	-	-	✓
2.4. That within the next 6 months a national implementation plan for upgraded access arrangements be prepared for ITMM endorsement by independent consultants and overseen by a small independently chaired jurisdictional/regulator Steering committee which should include all jurisdictions and must include Local Government representation (e.g. ALGA). The implementation plan includes: **a. The most effective operating model and systems arrangements to address access requirements and jurisdictional asset data requirements. Options may include one national system incorporating all relevant assessment tools and data or a federated system with a seamless front end.** **b. Ensuring that whatever systems architecture is chosen it is accessible via the NHVR portal.** **c. Appropriate mechanisms for incorporating risk appetite for road managers (consistent with asset management plans into the system.** **d. The costs, benefits, and risks of the full implementation.** **e. Methodology for data gathering and asset assessments in a time and cost and time efficient manner.** **f. Leveraging existing investments in initiatives, platforms, databases and data collection processes.** **g. Any required legislative or regulatory change to support the implementation** *Comment*: A small oversight group, supported by independent experts, is needed to drive this reform agenda. The implementation plan will enable clarity on what system can be implemented and how, and the costs, benefits, and risks. The outcome will be to expedite a proposed detailed implementation plan to Ministers on the reform needed to achieve a step change in access.	-	✓	✓

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[2]
2.5. The National Heavy Vehicle Access Policy Framework (being led by NSW), be expedited, and be brought to the next ITMM for approval. The Framework should: • **Include the proposal approved by ministers in 2020 that comprises strategic policy principles to improve access and deliver national harmonised arrangements** • **Include identifiable and tangible policies and principles as solutions** • **Include a working group comprised of industry and jurisdictions to oversee implementation of the policies.**	-	-	✓
2.6. As part of the final RIS economic analysis for the HVNL (and/or supporting regulations) that a cost benefit analysis and safety risk analysis be prepared on the merits of making any or all the following changes to mass and dimension: **a. GML increase to CML** **b. Overall Length increase from 19 to 20 metres (note: thus, removing many approvals required)** **c. Overall height to increase from 4.3m to 4.6m.** **d. Ensure general access width automatically reflects relevant changes in Australian Design Rules** *Comment*: CML is available to all operators now if they are part of the mass module of NHVAS, there is no logic that says being in the accreditation scheme means the truck does less damage to the road. Vehicles up to 20 metres are commonplace now on the network, what is proposed here is that they should not need a special permit (i.e. this is red tape reduction).	-	✓	-
2.7. That a rapid economic appraisal be conducted on the costs and benefits of an ambitious reform agenda of opening up as-of-right access to specific routes along the National Road Transport Network and that subsequent business cases be prepared where benefits outweigh costs. The routes proposed for appraisal are the Hume Highway productivity upgrade (NSW, VIC & ACT), Queensland Inland Freight Route, Port Wakefield-Adelaide Duplication (SA), Great Northern Highway upgrade (WA), Northern Tasmanian Road Freight upgrade, Stuart Highway Flood Immunity.	-	✓	✓
2.8. That Performance Based Standards (PBS) approvals be better linked with access to networks: **a. Provide certainty of access for PBS Design Approvals.**	-	✓	✓

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[2]
b. Provide transparent and certain access for PBS vehicles (real and/or design concepts) by providing a similar approach to the Tasmanian HVAMS approach which has been successfully applied to SPV's and OSOM. **c. Recognise common and proven PBS combinations under gazette or in regulations and provide certainty of access through designated networks (i.e., take them out of the PBS process).** **d. Improve effectiveness and efficiency of the PBS design review process by requiring applicants to submit PBS approvals in digital form (not PDF) to the Regulator (to share with road managers).**			
2.9. Provide corresponding access networks for PBS vehicles to a standard vehicle, general access (up to 50.5t GCM) for PBS Level 1 vehicles, and B-double access for PBS Level 2 vehicles. *Comment*: An original intention of the PBS scheme was for certain types of PBS vehicles to have corresponding access to a standard vehicle. In practice, the way access has evolved, the B-double network is different to the PBS Level 2 network. This issue would be addressed under an automated access system.	-	-	✓
2.10. Proposed improvements to the PBS Scheme: **a. Enable manufacturers of PBS vehicles to self-certify that the build is as per the design. *Comment*: Technically, there are different interpretations involved in certifying that the design is the same as the build (e.g. actual masses) which create challenges for access approvals. Acceptance of\agreed tolerances should be considered.** **b. Type approval of component vehicles for the PBS Scheme.** *Comment*: The purpose of this proposition is to enable approval of individual PBS vehicle units and encourage fleet interchangeability in some circumstances. **c. Update PBS standards to reflect learnings over the last 20 years and recognise technologies where appropriate (NHVR has started this work – it should accelerate if possible).** **d. Streamline governance of PBS scheme (Nearer term) and continue to gazette networks for PBS vehicles, until online notices are developed** **e. Allow transfer of approvals with sale of a PBS combination.** *Comment*: Approval is associated with access to a network which is a potential constraint as the new owner may have different access needs. NHVR is examining certification of individual units and fleet interchangeability.	-	-	✓
2.11. Enable businesses to rely on official network maps and automated approvals, instead of needing to refer to gazette notices for legal certainty.	✓	-	-

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[2]
2.12. Empower the Regulator to amend gazette notices to reflect changes to the ADRs or vehicle standards HVSOs/Regulations, without needing the consent of road managers.	✓		-
2.13. Regulatory instruments and decisions on access issues e.g., mass, dimension and PBS requirements should always be tested for the impact on buses. *Comment:* The specialised characteristics and requirements of buses would be addressed under an automated access system.	-	✓	-

Table 3 Fatigue Management

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[3]

Key points
• **All vehicles over 4.5 tonne are by default considered fatigue regulated heavy vehicles, however, regulations would allow for categories/classes/types of vehicles to be excluded from certain provisions (e.g., record-keeping). This proposal should be tested by a consultation regulatory impact assessment. The default exclusions should mirror the present exclusion, with any changes to be validated through the regulatory impact assessment process.**
• **There is recognition that until technology allows for roadside detection of fatigue, work and rest rules will need to be applied as a proxy for managing fatigue. Continue to pursue technology as a mechanism for managing fatigue and distraction.**
• **While there is industry support to move to EWDs (digital record keeping), the views on mandating EWDs currently are mixed. Industry is of the view that the current fatigue regulatory framework is a barrier to voluntary uptake of digital record keeping, which can be overcome by removing prescriptive rest breaks and administrative work diary offences and penalties.**
• **A two-tiered regulatory regime for fatigue is proposed:**
  ○ **General schedule of prescriptive rules is maintained with the option of some flexibility on rest breaks for all operators and some further flexibility for those with EWDs.**
  ○ **A second tier Fatigue Certification Scheme with greater flexibility, alternative compliance options and regulatory concessions for certified operators, starting with SMS as a minimum, will be further developed by the NHVR.**
• **Fatigue enforcement and compliance should focus on patterns of behaviour, risk profiles, systemic issues, and serious deliberate breaches.**
• **That the number and type of penalty offences and the level of penalty that attaches to them be streamlined and reviewed to ensure that they are risk based and proportionate. Administrative offences should be minimised in the design of the law and a formal warning system be developed and adopted for administrative offences.**
The new fatigue regime should be tested through pilots in real world conditions.			

3.1. That fatigue detection and distraction technology should be pursued as a mechanism for actively managing fatigue.	-	-	✓
3.2. Enable the scope of Fatigue-regulated heavy vehicle (FRHV) to be expanded in the law, such that all vehicles over 4.5 tonne are by default considered fatigue-related heavy vehicles. Conduct a Regulatory Impact Assessment which would include testing exemption options for classes of	✓	✓	-

[3] Additional Work Streams are initiatives that are outside the NTC Review program of work.

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[3]
vehicles or areas of operation from being covered by fatigue regulations (e.g., removing the exemption for vehicles between 4.5 and 12 tonnes and/or removing the 100km exclusion). *Comment*: This proposition would make a law change so that administratively the expanded scope of FRHV could be implemented. This proposal is likely to impact on new industry sectors and other impacts e.g., enforcement, so detailed consideration through a consultation regulatory impact assessment process is required. This includes developing and testing exclusions to FRHV to be placed in regulation e.g., present 100-kilometre exclusion; recreational vehicles; vehicles below 12 tonne GVM. The benefit of placing exclusions in regulation, rather than incorporated into the FRHV definition in primary law, is that they can be changed more easily over time, with those changes being subject to consultation requirements. Issues with implementation will require detailed consideration of the process of consultation and a transition pathway to support industry. Exemptions would need to be prescribed by regulation, so they would require Ministerial endorsement.			
3.3. Introduce a two-tiered Fatigue management regime consisting of: **Tier 1 Fatigue General Schedule.** • **Outer driver hour limits per 24 hours, per week and per fortnight will remain as per the existing General Schedule.** • **Work and rest rules for fatigue management for drivers, which are an improvement to the current General Schedule with a simpler set of rules.** • **More flexible rest break requirements. Drivers should take a one-hour break (may consist of multiple short rest breaks) over a 12-hour period and should not work for more than 5 ¼ hours without a break.** • **The 15 minute "blocks" of rest time be replaced by minute-by-minute counting rest time for those using EWDs, with no 15-minute minimum.** • **The issue of overlapping 24-hour periods is addressed by initial testing and, if suitable, progressing the permitting the 24-hour period to reset after 10 hours of continuous break.** **Tier 2 Fatigue Certification Scheme.** • **That additional flexibility be provided to drivers working through operators who can demonstrate active safety management in their business (have a certified SMS) and, where appropriate, to use EWDs to record driver work and rest hours digitally. [It is noted that document**	✓	✓	-

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[3]
management for business operations may vary (e.g., paper-based systems, a mix of digital/paper-based systems) and there are no requirements for these systems to be electronic.] • **The NHVR will work with operators to set up flexible scalable certification options/levels within the scheme and corresponding business rules. Operators will present the tools and technology solutions to manage fatigue based on risk.** • **Outer legislated limits should be prescribed, aligned with the current AFM outer limits.** *Comment*: Most of the flexibility required by operators (e.g., an additional one hours' work in exceptional circumstances, split shifts etc) will be able to be accommodated in the graduated second tier that will ensure that flexibility is achieved in a safe way. Long transition arrangements will be made available to current BFM and AFM certified operators.			
3.4. Record Keeping **a. Adequate records are needed to ensure the HVNL is enforceable and provides safety and fairness for the heavy vehicle industry. However, record keeping requirements should not exceed what is necessary to ensure the law is enforceable.** **b. The new HVNL should allow for (but not require) record keeping requirements to be prescribed by regulation. This would allow for the form and format of fatigue records to be changed over time, or for the regulations to prescribe different record keeping formats to suit different operations.** **c. The regulatory system should where possible incentivise the uptake of electronic fatigue records e.g., Electronic Work Diaries (EWDs).**	✓	✓	-
3.5. Fatigue Enforcement **A review of offences and fines should be undertaken in consultation with jurisdictions, the NHVR, Police and industry. The review should consider the following:** **a. Roadside enforcement and issuing of infringement notices for fatigue should focus on the immediacy of fatigue risks, rather than historical breaches; historical breaches should be considered through the lens of other regulatory tools (e.g., improvement notices).** **b. The time frame for issuing infringements for fatigue breaches should be amended to 14 days (except where the timeframe for the fatigue measure exceeds 14 days).** c. **Infringements for work/rest breaches should shift from focusing on specific incidents to focussing on overall breach risk profiles. A fatigue breach risk profile would consider both the number and severity of individual work/rest breaches.** **d. The fines for administrative offences should be proportionate with the risk.** **e. Administrative offences should focus on deceptive conduct e.g., providing false, misleading, or omitting information where that**	✓	-	-

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[3]
omission is misleading. It should not be an offence to omit information if it does not result in ambiguity. **The rectification of administrative oversight at the roadside should be the primary mechanism for addressing administrative errors. If a driver does not rectify administrative errors at the roadside this should lead to issuing a penalty infringement notice.**			
3.6. The new Fatigue Regime proposed in 3.2, 3.3., 3.4, and 3.5 should be tested against existing industry operations and piloted under real world conditions, and subject to expert safety advice as required, to ensure it delivers reduced complexity without affecting safety.	✓	-	-
3.7. Duties and Driver Health. **a. The commercial standards in Australian Fitness to Drive (AFTD) Guidelines should be upgraded to include risk-based screening tests for diabetes, sleep apnoea and cardiovascular issues.** *Comment*: Note that this project should be pursued outside the HVNL process as part of the new AFTD. Expect that a benefit cost analysis will be conducted on the impacts of mandatory health screening prior to implementation. There are some concerns about waiting times for access to health services for rural and remote operators that would need to be considered. It should be noted that this proposition is presently being actioned by the NTC at the request of ITMM. **b. All heavy vehicle drivers should be required to have regular medicals against the standards as part of the driver licensing process,** *Comment*: Expect that a benefit cost analysis will be conducted on the impacts of mandatory medicals if the requirement will apply to all drivers (assume a similar approach to current commercial passenger vehicle licensing/accreditation requirements). **c. Extend the duty to avoid driving while fatigued (s 228) to include a duty not to drive a HV if not fit to do so for other reasons. Amend the primary duty to clarify requirements relating to driver competency and fitness to work.**	✓ (For c.)	✓ (For a. & b.)	✓ (For a. & b.)

Table 4 Enforcement, Penalties and Offences

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[4]
4.1. That the shift to risk-based safety-focused law (while maintaining some prescription), needs to be supported by requisite skills and resourcing for effective and appropriate enforcement and compliance. On road enforcement action requires training and resources. NHVR risk-based profiling and chain of responsibility investigations and prosecutions should also be supported as appropriate.	-	-	✓
4.2. That Road Managers in participating jurisdictions need assurance that there is adequate enforcement and compliance for restricted access vehicles across the national network. As part of the Implementation Plan for the new access arrangements outlined in recommendation 2.3 and 2.4, a review of compliance and the enforcement of access permission should be conducted.	-	-	✓
4.3. That record keeping systems be overhauled so that the number and type of penalties being issued by each enforcement body can be readily ascertained and collated at a national level.	-	-	✓
4.4. A national regulatory forum be convened once per year by the NHVR to for all enforcement agencies to discuss with industry strategies for ensuring enforcement is more consistent.	-	-	✓

[4] Additional Work Streams are initiatives that are outside the NTC Review program of work.

Table 5 Accreditation

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[5]
Key Points: • **A single voluntary certification scheme will give operators flexibility to meet compliance obligations, administered by the NHVR.** • **The new certification scheme will be an improvement on the current NHVAS:** ○ **create a base level which includes a Safety Management System (SMS) requirement** ○ **allow development of a more diverse range of alternative compliance options to better support operator diversity** ○ **introduce a better compliance regime including a National Auditing Standard to help to reduce the need for multiple audits requested by customers to meet their chain of responsibility obligations.**			
5.1. That improvements are made to the existing NHVAS for a single, modular, opt-in (voluntary) certification scheme, administered by the NHVR.[6]	✓	-	-
5.2. The overall aim of this reform is to improve safety and productivity outcomes for the NHVAS: **a. Align NHVAS accreditation with the primary safety duty in the law.** **b. Recognising operator diversity, increase the flexibility for operators to meet compliance obligations to run their businesses now and into the future.** **c. Reduce compliance costs for operators to achieve and demonstrate compliance, including reducing the need for multiple audits requested by customers to meet their chain of responsibility obligations.** **Suggest leave out these propositions as key focus is on the proposed scheme**	✓	✓	-
5.3. Key elements of the improved voluntary NHVAS are: **a. Safety Management System (SMS) Core Module. The compulsory module will be scalable and specifically designed to support compliance with the primary duty.**	✓	✓	-

[5] Additional Work Streams are initiatives that are outside the NTC Review program of work.

[6] As such, the scheme most closely resembles 7.3.3 *Enhanced opt-in regulatory certification scheme,* canvassed in the Consultation Regulation Impact Statement (C-RIS).

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[5]
b. More flexible and diverse alternative compliance. The regulatory framework supporting the improved NHVAS will also enable a greater range of alternative compliance options, underpinned by Ministerial Directions[7]. The framework should be scalable to support different levels of sophistication of operations. Operators with less sophisticated business operations who enter the scheme would be eligible for relatively small concessions and operators with more sophisticated operations would be eligible for highly flexible alternative compliance options. **c. Electronic documentation will replace NHVAS paper-based requirements, with operators retaining the option to carry paper copies of documents.** **d. Less administratively burdensome.** **e. Reduce the reliance on audits by customers to meet their chain of responsibility obligations.** **f. National Audit Standard. A National Auditing Standard will be recognised in law as part of the scheme. The standard will be outcomes-based, designed so that it can be adopted by other assurance schemes. The National Auditing Standard could also be used for non-certification audits intended to establish adherence/compliance with the primary duty. The law will also specify that a Court may consider an audit conducted under the Standard as part of determining whether the Primary Duty has been met.**			
5.4. Transitional arrangements for NHVAS participants will allow operators accredited under the current NHVAS to have their accreditation and associated regulatory concessions recognised until the operator's first scheduled audit three years from commencement of the new certification scheme.	✓	-	-

[7] Currently ministerial guidelines can be made. Ministerial Directions will be used as there is no ambiguity about the requirement to adhere to them. In general terms ministerial directions will be preferred wherever they relate to matters that ministers have authority to control.

Table 6 Technology and Data

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[8]
Key Points: • **Technology and data provisions are currently hard-wired into the law.** • **Heavy vehicle operators who invest in data-generating technology are not able to use those systems as a way of demonstrating compliance with prescriptive obligations.** • **Current compliance and enforcement provisions enable authorized officers to access heavy vehicle generated data (from operators or third parties) for enforcement purposes (e.g., data mining for offences). This is acting as an impediment to industry investing in technology to improve safety and productivity.** • **The new law could facilitate a flexible and responsive legal mechanism for adopting technology and data sharing.**			
6.1. The new law to have enabling provisions to provide for: **a. developing technology standards or adopting international standards** **b. the protection of on-board data** **c. ensuring that privacy is protected** **d. a process for certifying technologies as being compliant, including recognition of technologies approved internationally** **e. new specific provisions to clarify the legal status of data generated by certified technologies** **f. a specific provision to make it clear that a person can present to court with evidence of complying with the HVNL based on a non-certified technology system. It would be up to the court to decide what weight to place on that evidence.**	✓	-	-
6.2. The law should enable but not require that Ministers can by regulation establish a Technology and Data Framework/s and a Technology and Data Framework Administrator/s (one or more appointed by ITMM from time to time or for specific regulatory purposes). *Comment*: A legal mechanism that enables data sharing schemes does not in and of itself create a regulatory or cost burden for industry. The regulatory or cost burden is created by the individual data sharing schemes (e.g., technology acquisition and data transmission costs). Data sharing schemes that are mandatory for some or all heavy vehicles (i.**e.,** where costs will be incurred by industry) will be subject to a regulatory	✓	-	-

[8] Additional Work Streams are initiatives that are outside the NTC Review program of work.

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[8]
impact statement process so that a cost benefit analysis (CBA) for any proposed scheme is undertaken. Data sharing schemes that are voluntary in nature (e.g., a scheme being sought by an industry participant for more cost effective compliance with law) will not be subject to a RIS process or CBA. The decision to invest in a voluntary data sharing scheme are a business investment decision.			

Table 7 Safety Obligations and chain of responsibility

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[9]
Key Points: • **There are limited examples of cases where parties further up the chain have been investigated and prosecuted. It is still easier to go after the driver or operator. The future law will seek to address current accountability gaps for off-road parties that influence the safety of heavy vehicle transport activities by creating discrete offences for off-road parties.** **The future law will set out a non-exhaustive list of risk areas to which safety obligations will apply under the primary duty.**			
7.1. The future law should introduce a regulatory head of power for *Heavy Vehicle Safety Obligations,* which would be made as regulations and subject to parliamentary disallowance. The law will describe the risks a HVSO may regulate and the parties to which a HVSO may apply. HVSOs would be developed by the NTC subject to the Regulatory impact analysis process for ministerial councils and national standard setting bodies. *Comment:* this will have the effect of placing prescriptive obligations into regulations.	✓	✓	-
7.2. The law will set out a non-exhaustive list of risk areas to which an HVSO may apply. The non-exhaustive list will align with the agreed risks to be managed under the primary duty: • **Fatigue** • **Fitness to drive** • **Vehicle Standards and Roadworthiness** • **Mass and Dimension** • **Loading** • **Speed** • **Competence, and**	✓	-	-

[9] Additional Work Streams are initiatives that are outside the NTC Review program of work.

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[9]
• **Any other risk to public safety.** *Comment*: Note that for "fitness to drive", the law will focus on being unfit to drive, whether due to a short-term issue or a long-term medical assessment managed through state-based driver licensing system (included through the AFTD). Any mandated training or other requirements, e.g., if competency-based training was mandated, then it is a given that such an initiative would be subject to regulatory impact assessment.			
7.3. Existing prescriptive requirements in relation to fatigue, mass management and vehicle maintenance will be recast and simplified (where appropriate) as a HVSO.	✓	✓	-
7.4. The new law will allow for the establishment of prescriptive requirements, for off-road parties (HVSOs). Any off-road party to whom a HVSO applied will need to be defined (in primary law or regulations). The law should enable Ministers to prescribe parties from time to time in regulation, subject to regulatory impact assessments. It is proposed to retain the current list of specific parties in the law, and to conduct regulatory impact assessments for new proposed parties.	✓	✓	-
7.5. The law should have provisions to enable introducing specific offences for off-road chain of responsibility parties. More work needs to be done to develop specific offences. *Comment*: Creating discrete offences for specific off-road parties will assist in ensuring that parties turn their mind to the safety implications of their business model and activity. To assist off-road parties with voluntary compliance, the Regulator should be able to produce party-specific CoPs. Off-road parties breaching a HVSO would also be subject to other regulatory actions (e.g., an infringement notice) in addition to an infringement. The maximum penalty for a regulatory offence under the HVNL is $4,000 for an individual and $20,000 for a corporation, as indexed (s 730(3)(b)). These maximums are considered appropriate for consideration. Offences serious enough to warrant a higher penalty should be prosecuted under Chapter 1A.	✓	-	-

Table 8 Heavy Vehicle Registration

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[10]
Comment: Some consideration has been given to investigating a National HV Registration Scheme. Essentially, there is very little prospect that an economic appraisal would show net economic benefits, therefore this proposal has been dropped. **8.1. Those jurisdictions that don't currently allow businesses the option of paying heavy vehicle registration monthly by direct debit should consider implementing this customer service improvement**	-	-	✓

[10] Additional Work Streams are initiatives that are outside the NTC Review program of work.

Table 9 Delegation of authority in the Heavy Vehicle National Law

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[11]
9.1. Reform the delegation of authority in the HVNL so the NHVR Board has the power to sufficiently regulate and be held accountable for doing so. At present, many operational and technical matters are reserved to ITMM.	✓	-	✓
9.2. The new law is likely to give the NHVR Board greater discretion and flexibility. It seems appropriate to review the composition and skills mix of the Board and its governance (noting that the Board should remain skills-based). The review findings should be incorporated into the new regulatory framework.	-	-	✓
9.3. Detailed Proposals on ITMM/Non-ITMM Decision-making a. **Codes of Practice should be developed, approved, amended, and cancelled by the Regulator, subject to statutory consultation requirements. The Regulator can develop a Code of Practice at the request of industry, or at the direction of Ministers.** b. **Business Rules for certification should be developed and approved by the Regulator.** c. **Application forms should be developed and approved by the Regulator (without being subject to any statutory consultation requirements)** d. **Ministerial guidelines should be reviewed, and consideration given to adopting an approach that focuses on Ministerial Directions.** e. **The specific ministerial power in s 654(1)(a) to approve a standard for sleeper births should be removed. Any sleeper berth standard under the law should be made as part of the vehicle standards HVSO.** f. **The Regulator should be subject to statutory consultation requirements with industry, participating jurisdictions and affected parties (minimum consultation timelines etc). Minor amendments and non- substantive changes can be excluded from these requirements.** g. **Ministers should have the power to cancel a Code of Practice, or a Business Rule approved by the Regulator.** h. **Mechanisms should exist for the decision to approve a Code of Practice to be challenged (and therefore overturned) for circumstances where a party believes a Code of Practice was not developed in line with statutory consultation requirements (process review not merit-based review).**	✓	-	✓

[11] Additional Work Streams are initiatives that are outside the NTC Review program of work.

Table 10 Current law

Mechanism	Oversight
Industry codes of practice (s 706)	Industry develops NHVR registers
Guidelines (s 653)	NHVR develops Ministers approve

Table 11 Future Law

Mechanism	Oversight
Codes of practice	NHVR will develop in partnership with industry and in line with statutory consultation requirements. Industry will be able to propose a CoP NHVR Board to approve. CoP can be challenged on certain grounds
Guidelines	Developed by party nominated by Ministers eg. NTC Ministers approve, delegation for minor amendments

Table 12 Vehicle Classifications

Proposition	NTC Leg Reforms	Cost Benefit Analysis	Additional Work Streams[12]
10.1. That vehicle classes and classifications will be moved from primary legislation to regulations (or other statutory instruments) to better enable future vehicle types to be recognised in the law.	✓	-	-

[12] Additional Work Streams are initiatives that are outside the NTC Review program of work.

Fatigue Management General Schedule and Proposed.

Table 13 Current General Schedule (1 UP)

Total Period	Max Work Time	Min Rest Time
5.5 hrs	5.25 hrs	15 continuous minutes rest time
8 hrs	7.5 hrs	30 minutes rest time, in blocks of at least 15 continuous minutes
11 hrs	10 hrs work time	60 minutes rest time, in blocks of at least 15 continuous minutes
24 hrs	12 hours work time	7 continuous hours stationary rest time
7 days (168 hrs)	72 hours	24 hours continuous rest time
14 days	144 hours work time	2 night rest breaks; and 2 night rest breaks taken on consecutive days

Table 14 PROPOSED GENERAL SCHEDULE using WWD

Total Period	Max Work Time	Min Rest Time
5.5 hrs	5.25 hrs	15 continuous minutes rest time
12 hrs	11 hrs	60 minutes rest time in blocks of at least 15 continuous minutes.
24 hrs	12 hrs work time	7 continuous hours stationary rest time.
7 days (168 hours)	72 hours	24 hours continuous rest time
14 days	144 hours work time	2 night rest breaks; and 2 night rest breaks taken on consecutive days

Table 15 Proposed Schedule using EWD

Total Period	Max Work Time	Min Rest Time
5.5 hrs	5.25 hrs	15 minutes total short rest time **
12 hrs	11 hrs	60 minutes total short rest time
24 hrs	12 hrs work time	7 continuous hours stationary rest time.
7 days (168 hours)	72 hours	24 hours continuous rest time
14 days	144 hours work time	2 night rest breaks; and 2 night rest breaks taken on consecutive days

**** no prescribed minimum duration for a short rest break**

Appendix B. Alternative Compliance Options

Purpose

The purpose of these case studies is to demonstrate how the alternative compliance mechanism under the future law can be used to provide industry with the flexibility needed in work and rest hours for different transport tasks.

These are examples of how the **module-based approach** to an alternative compliance option (ACO) could work in practice. They aim to show:

- what the regulator must consider when issuing a module based alternative compliance option
- how an operator can access a module based ACO issued by the regulator
- different levels of flexibility that can be achieved through the ACO mechanism

It is noted that the specific content of any ministerial direction is yet to be developed. As a starting point, it will be based on the risk principles that underpin the NHVR's current AFM policy and risk classification system. These will be reviewed and updated in line with the latest fatigue research. Where suitable, they will be incorporated into a ministerial direction.

The final content of the ministerial direction, along with the requirement to consider the latest fatigue research, will form the basis of the safety assessment to be conducted by the regulator.

A ministerial direction will be developed ready for commencement of the future HVNL. This process may be led by the NTC, in consultation with jurisdictions, police, the regulator, and any other interested party.

Context

As part of the D-RIS (2023), ministers endorsed a recommendation that under the HVNL assurance environment, the future HVNL establish an alternative compliance tier for accredited operators, underpinned by a new power allowing the regulator to issue alternative compliance options, within prescribed limits and other specified constraints.

This proposal represents a marked change from the current HVNL, which effectively hardwires most ACOs into law. Current arrangements for AFM accreditation under the NHVAS offer more flexible arrangements in that the regulator is able to approve bespoke work and rest hours within prescribed limits. However, the process for gaining AFM accreditation is cumbersome and resource intensive, and generally not available to smaller operators or operators with simpler operations who may still be able to manage safety with the benefit of small adjustments to the standard hours schedule.

The new environment for alternative compliance is designed to widen the aperture of ACOs able to be offered to accredited operators, particularly in relation to fatigue.

The law will establish a range of legal constraints which place limits on the scope of the regulator power – namely:

1. The law will require that the proposed ACO relate to a list of heavy vehicle obligations, approved by ministers as appropriate for alternative compliance.
2. The law will require that the proposed ACO not breach any outer limits or other constraints prescribed in regulation.
3. The law will require that the relevant ACO meet a safety standard threshold, such that the ACO result in a standard of safety that is at least equivalent to the standard that would be achieved by compliance with the tier 1 heavy vehicle obligation.
4. The new law will allow ministers to make directions about ACOs, which the regulator must follow when developing and issuing an ACO.

As part of the Kanofski Review, which was agreed for progression by ministers, it was recommended that any fatigue related ACO be subject to the same outer limits established under the current HVNL (see the escalated risk conventions in Part 2 of Schedule 4 *Heavy Vehicle (Fatigue Management) National Regulations*)

The D-RIS outlined the process for developing and accessing module based ACOs. This is summarised in the Table below.

Table 29. Process for developing and accessing module based ACOs

Initiation	Development	Publish	ACO Access
The regulator may identify an opportunity to develop a module and linked ACO. Ministers may request the regulator to develop a module and linked ACO. An industry party may request the regulator to develop a module and linked ACO.	The regulator will develop the module and linked ACO, considering the three constraints. As part of assessing the safety standard threshold, the regulator will need to carry out and document a safety assessment. The regulator will be required to consult on the proposed module and linked ACO and consider any comments.	The regulator will be required to publish the module and linked ACO and the safety assessment accompanying the ACO, on its website.	The regulator can grant an operator access to the ACO once the operator has been accredited in the relevant module.

As outlined, legal constraints that will be placed on the regulator's power to issue an ACO. These are:

- Ministers have permitted an ACO to be issued for the prescribed requirements
- Outer limits for the ACO have been prescribed in regulations
- The ACO meets the safety threshold
- The ACO follows any written Ministerial direction

Under the future HVNL, the regulator will develop a fatigue module outlining the criteria and conditions that an operator must meet to be granted access to the ACO. The criteria and

conditions will be based on the safety assessment undertaken by the regulator to demonstrate the ACO meets the safety threshold.

To be eligible for accreditation in a fatigue module, an operator must meet the base level SMS requirements set by the regulator as well as the criteria and conditions outlined in the module. These will align with the following five SMS standards, which will be set in regulation.

1. leadership and commitment
2. risk management
3. people
4. monitoring and improvement, and
5. safety systems

Case study 1: Livestock – seasonal transport tasks

This case study utilises information from the previous AFM livestock templates to demonstrate the process for doing something similar under the future HVNL as an ACO. It makes no representation as to whether or not the ACO is required or optimal, and the 'thinking' and process in the case study are illustrative only.

Representatives from the livestock transport industry identify the need for more flexibility than available under the general schedule for seasonal transport tasks where operators have a limited number of weeks in which to transport their freight. In this situation, they need the flexibility to work more consecutive days. They request the regulator to develop a fatigue module with an alternative schedule to provide this flexibility.

The regulator, in consultation with the livestock transport industry, develops a draft alternative work and rest schedule that allows for more consecutive days of work opportunities (See Table 30). The regulator carries out a safety assessment to determine what conditions/countermeasures are required in the fatigue module to ensure the safety standard threshold is meet.

The safety assessment indicates that the draft schedule meets the safety standard threshold with certain countermeasures/risk controls in place (see Table 31 below). The assessment shows the additional fatigue risk associated with not having a 24-hour break after seven days can be managed with more frequent within work rest breaks, a longer sleep opportunity for a reset break and minimal night work.

The regulator can develop this as a fatigue module with linked ACO because:

- ministers have agreed the regulator can issue ACOs for prescribed work and rest hours
- outer limits have been set in regulations and the proposed schedule is within these limits
- the regulator has undertaken a safety assessment, based on the latest fatigue research and any additional criteria specified in a ministerial direction
- the safety assessment demonstrates the schedule and associated countermeasures meet the safety threshold

The regulator develops the details of the fatigue module to outline the criteria that operators must meet to be accredited and granted access to the linked alternative compliance option. The details of the fatigue module are built around the core SMS standards and cover both the criteria for base level NHVAS accreditation plus any additional criteria as identified in the safety assessment. Table

32 below provides an example of what this might look like using **SMS standard 2: risk management**. The regulator would do this across the five SMS standards as needed.

The regulator consults with stakeholders on the proposed fatigue module, including the alternative schedule, before finalising and publishing the module on their website. The safety assessment is also made available to stakeholders and published along with the module.

Livestock transport operators wanting the flexibility to operate on the fortnightly cycle apply to the regulator for accreditation. Accredited operators that demonstrate that they can meet the assessment criteria outlined in the fatigue module may apply for access to the linked ACO.

Once accredited and granted access to the ACO, an operator is regularly audited against the criteria to ensure they continue to meet the fatigue module requirements.

Table 30. Fortnightly cycle schedule

In any period of …	... a driver must not work for more than ...	... a driver must not rest for less than...
6 ¼ hours	6 hours	15 continuous minutes
9 hours	8 ½ hours	30 minutes rest time in blocks of 15 continuous minutes
12 hours	11 hours	60 minutes rest time in blocks of 15 continuous minutes
24 hours	14 hours	10 hours, including 7 continuous hours stationary rest [1]
14 days (336 hours)	156 hours	Two 24 continuous hour periods stationary rest [2]
28 days (672 hours)	312 hours	Four 24 continuous hour periods stationary rest

Conditions

[1] 7 continuous hours stationary rest must include the period from midnight to 4 am

[2] If the driver works between 4 am and 6 am, the two 24 hour breaks within 14 day period must be taken consecutively

Table 31. Counter measures from safety assessment

Risk principle	Counter measure
Reduce time spent continuously working in work opportunity	3 hours of 'within work' rest in a 17-hour work opportunity or, for shorter work opportunities, at least 15% of 'within work' rest.
The more frequent breaks from driving the better	A maximum of 4 hours of continuous driving and a maximum of 6 hours work between 'within work' rest.

Ensure an adequate sleep opportunity in order to obtain sufficient sleep	95% of trips to drivers who have reported at least 6 hours of sleep on the prior night.
Maximuse adequate night sleep	A policy not to schedule drivers to work at night.
Minimise shifts ending between 00:00 and 6:00	A policy not to schedule drivers to end their shift between midnight and 6 am.
Minimise extended shifts	No more than 14 hours of work in a 17-hour work opportunity.
Prevent accumulation of fatigue with reset rest breaks.	Have a reset rest break at least once every seven days. A driver may work up to 12 days if the increased risk associated with this is off-set by significant discretionary rest, frequent stopping from driving, no night work and shorter days.
Other	Safe trip plans for all trips, driver training in fatigue knowledge and awareness, zero drug and alcohol policy (randomised testing conducted).

Table 32. Example of fatigue module criteria (using SMS standard 2: risk management only)

<table>
<tr><td colspan="2">SMS STANDARD 2 – RISK MANAGEMENT

A proactive, outcomes-focused approach to managing the risks associated with transport activities. The adequacy of risk management should be continuously reviewed and revised to ensure that the risks of transport activities are effectively identified and controlled.</td></tr>
<tr><td colspan="2">Key transport risk to be managed – driver fatigue

Risk Control – Scheduling and rostering</td></tr>
<tr><td><u>BASE LEVEL NHVAS ASSESSMENT CRITERIA</u>

An operator must ensure that trips are planned and assigned to drivers ensuring:
• Schedules and rosters are documented.
• Schedules and rosters are monitored and regularly reviewed.
• Action is taken to minimise fatigue risks when altering schedules and rosters.
• Drivers are given the flexibility to alter trip schedules within legislative limits or normal and outer operating limits to maximise rest opportunities and minimise fatigue risk.
• Guidelines are in place for the use of relief/casual drivers where required.
• The increased fatigue risk for a driver returning from leave is considered in scheduling and rostering of the driver.</td><td><u>FORTNIGHTLY CYCLE ACO – ADDITIONAL ASSESSMENT CRITERIA</u>

In addition to the base level criteria, an operator must ensure that:
• All trips have an approved trip plan.
• The trip plans are
  • achievable within the approved operating limits
  • provide discretionary rest of 3 hours in a 17-hour work opportunity or 15% in other work opportunity lengths
  • include time for drivers to stop driving after 4 continuous hours to conduct welfare checks of animals
  • not schedule shifts to end between midnight and 6 am
  • avoid night work,</td></tr>
</table>

• Drivers have input into schedules where practicable, to ensure trip plans are reasonable • Schedulers provide sufficient advance pre-trip notification to ensure drivers can comply with legislation. • No schedules or rosters are to be planned to extend beyond any normal operating frequencies and legislative or approved operating limits	• Schedules and trips avoid work between midnight and 6am and drivers given the opportunity to sleep during this period wherever possible. • Where working during this period is required, this is limited to less than 50% of trips and drivers is given a 48-hour continuous stationary rest break within a 14-day period in line with the approved operating limits.

Case study 2: 1-hour transfer schedule (lower-level flexibility)

This case study is for demonstration purposes only. It makes no representation as to whether or not the ACO is required or optimal, and the 'thinking' and process in the case study are illustrative only.

Long haul transport operators identify the need for their drivers to have flexibility to work longer than their maximum 24-hour work time where unforeseen circumstances prevent them from reaching a suitable place to take their long rest break. For example, they reach their maximum work hours 30 mins from home due to a crash on the route. In this situation they need the flexibility to drive home where they can take their long rest break. These operators requested the regulator to develop a fatigue module that provides this flexibility.

The regulator, in consultation with long haul transport operators, develops a draft alternative work and rest schedule that allows for drivers to work up to 13 hours in a 24-hour period. The regulator carries out a safety assessment on the draft alternative schedule to determine what conditions/countermeasures are required in the fatigue module to ensure the safety standard threshold is meet.

The safety assessment indicates that the draft schedule meets the safety standard threshold with certain countermeasures/risk controls in place, including:

- The driver is not scheduled to work more than the maximum work time
- The driver only exceeds the maximum work time once in a 7-day period
- The driver does not work more than 72 hours in a 7-day period

The regulator can develop this fatigue module and linked ACO because:

- ministers have agreed the regulator can issue ACOs for prescribed work and rest hours
- outer limits have been set in regulations and the proposed schedule is within these limits
- the regulator has undertaken a safety assessment based on the latest fatigue research and any additional criteria specified in a ministerial direction
- the safety assessment demonstrates the schedule and associated countermeasures meet the safety threshold

The regulator develops the details of the fatigue module to outline the criteria that operators must meet to be accredited and granted access to the linked alternative compliance option (see Table 33).

The regulator consults with stakeholders on the proposed fatigue module before finalising and publishing the module on their website. The safety assessment is also be made available to stakeholders and published along with the module.

Operators wanting the 1-hour transport flexibility for their drivers apply to the regulator for accreditation. Accredited operators that demonstrate that they can meet the assessment criteria outlined in the fatigue module may apply for access to the linked ACO.

Once accredited and granted access to the ACO, an operator is regularly audited against the criteria to ensure they continue to meet the fatigue module requirements.

Table 33. Example of fatigue module criteria (using SMS standard 2: risk management only)

<table>
<tr><td colspan="2">SMS STANDARD 2 – RISK MANAGEMENT

A proactive, outcomes-focused approach to managing the risks associated with transport activities. The adequacy of risk management should be continuously reviewed and revised to ensure that the risks of transport activities are effectively identified and controlled</td></tr>
<tr><td colspan="2">Key transport risk to be managed – driver fatigue

Risk Control – Scheduling and rostering</td></tr>
<tr><td><u>BASE LEVEL NHVAS ASSESSMENT CRITERIA</u>

An operator must ensure that trips are planned and assigned to drivers ensuring:
Schedules and rosters are documented.
Schedules and rosters are monitored and regularly reviewed.
Action is taken to minimise fatigue risks when altering schedules and rosters.
Drivers are given the flexibility to alter trip schedules within legislative limits or normal and outer operating limits to maximise rest opportunities and minimise fatigue risk.
Guidelines are in place for the use of relief/casual drivers where required.
The increased fatigue risk for a driver returning from leave is considered in scheduling and rostering of the driver.
Drivers have input into schedules where practicable, to ensure trip plans are reasonable
Schedulers provide sufficient advance pre-trip notification to ensure drivers can comply with legislation.
No schedules or rosters are to be planned to extend beyond any normal operating frequencies and legislative or approved operating limits</td><td><u>1-hour transfer ACO – ADDITIONAL ASSESSMENT CRITERIA</u>

In addition to the base level criteria, an operator must ensure that where a driver has worked up to 13 hours in a 24-hour period;
their 7-day schedule is adjusted to ensure they are within their 7-day maximum work limit (72 hours)
they do not work more than 12 hours in a 24-hour period for the next 7-day period</td></tr>
</table>

Appendix C. Fatigue and Safety Assessment of Proposed Changes to Heavy Vehicle National Law (2023)

Fatigue and Safety Assessment of Proposed Changes to Heavy Vehicle National Law

Final Report

Sleep Health Foundation
Improving people's lives through better sleep

National Transport Commission
Leading change

July 2023

This report was commissioned by the National Transport Commission

Authors: Dr Jennifer Cori, Dr Hannah Scott, Dr Alexander Wolkow, Associate Professor Andrew Vakulin, Professor Shantha Rajaratnam, Dr Tracey Sletten, Associate Professor Mark Howard.

www.sleephealthfoundation.org.au

Executive Summary

This report evaluated the fatigue and safety implications of proposed changes to standard hour schedules in the Heavy Vehicle National Law. An expert working group from the Sleep Health Foundation conducted an extensive literature review into the impact of work and rest schedules of heavy vehicle drivers and considered prior findings of the Heavy Vehicle Driver Fatigue Project, conducted by the Alertness CRC for the National Transport Commission.

The key proposals evaluated were:

A1 Removing the 8-hour control
A2 Removing the 11-hour control
A3 Removing the continuous 15-minute rest blocks
B1 Resetting the 24-hour period with a 10-hour continous rest break

Key Findings

A1 and A2: Removing the 8- and 11-hour controls

The key factors associated with sleepiness risk related to the removal of these controls were changes to drive hours, break timing, break duration, and break numbers. The literature review findings were:

Drive hours	• The longer the continuous driving, the greater the deficit. • Sleepiness and driving deficits may occur as early as 30- to 45-minutes into driving when working shift work. • Based on surveys, commercial drivers feel they can drive 4-hours before requiring a break. • There is a substantial increase in crash risk at 4- to 5-hours of driving. • Night-time or highway/country driving can inflate the drive hours risk.
Break timing	• Breaks are most effective when taken between 2- to 4-hours of driving. • Breaks taken too early or too late are less effective. • Flexibility in break timing reduces sleepiness and crash risk.
Break duration	• 30-minutes is sufficient to recover skill deficits after 3- to 4-hours of driving. • 30-minutes is sufficient to reduce crash risk. • The crash risk after a 10- to 20-minute break is double compared to a 20-to 30-minute break. • Longer total break duration across the shift positively impacts safety. • Break durations should enable napping and time to recover from sleep inertia.

Break numbers	• Two rest breaks are effective to reduce crash risk in a shift of up to 11-hours. • A third break may be beneficial if timed correctly and is not too early in the shift.

Removing the 8-hour control – If the 8-hour controls is removed, under the minimum standards in an 8-hour period, drivers have the potential to:

- 1 - Drive continuously for 4- to 5-hours
- 2 -Take only a single break of 15-minutes

Additionally, the 15-minute break is not sufficient for long drive times (>2-hours) and does not allow adequate opportunity for effective sleepiness countermeasures such as napping. Therefore, based on the literature, removal of the 8-hour control will likely increase sleepiness performance deficits and crash risk.

Removing the 11-hour control – If the 11-hour controls is removed, under the minimum standards in an 11-hour period, drivers have the potential to:

- 1 - Drive continuously for 4- to 5-hours (once if 8-hour control is in place, twice if it is removed)
- 2 - Take only two 15-minute breaks in 11-hours (60-minutes in 12-hours, with 12-hour control)

As stated, 15-minute breaks are not sufficient for long drive times (>2-hours) and do not allow adequate opportunity for effective sleepiness countermeasures. Removal of the 11-hour control means that break timings are influenced by the 5.5-hour and 8-hour controls, hence reducing driver flexibility. Furthermore, total break time across the shift would reduce from 60-minutes to 30-minutes. While it is unclear whether this is a meaningful difference in a driving context, there are positive effects observed with increased cumulative break times of this duration outside of driving. Therefore, based on the literature, removal of the 11-hour control will likely increase sleepiness performance deficits and crash risk.

A3: Removing continuous 15-minute rest blocks

The relevant literature to this proposed change considers the benefits of rest breaks 15-minutes or less, within and outside a driving context.

Driving studies	• Few driving studies evaluated short rest breaks of 15-minutes or less. • 15-minute breaks provided sufficient recovery for 2-hour drive durations. • 30-minute breaks were required for drive durations that were 3- or 4-hours. • Multiple breaks of a few minutes do not prevent sleepiness and drive deficits. • Crash risk for a 10- to 20-minute break is double compared to a 20-to 30-minute break. • Optimal break duration appears to be at least 20-minutes.
Non-driving studies	• Breaks <15-minutes may provide some benefit to sleepiness and safety. • Benefits of breaks <15-minutes are very short lived. • Short breaks were quite frequent, which may not be possible in the heavy vehicle industry. • Because of risks unique to driving, only limited inference can be made.

There is not sufficient evidence to support that breaks of less than 15-minutes would provide drivers with adequate recovery from sleepiness. Initial findings indicate that even a continuous break of 15-minutes is not sufficient to enable use of countermeasures and reduce sleepiness after longer drives or when more severe sleepiness is present. Further research is required to evaluate this.

B1: Resetting the 24-hour period with a 10-hour continuous rest break

The relevant literature considers the effect of the 10-hour proposed break and nose-to-tail shifts (two work shifts, separated by a major rest break) on the acute (subsequent shift) and short-term (shifts on subsequent days) consequences for driving performance.

Major break durations	• Between 7 and 9 hours of sleep is required per day to maintain alertness. • A 10-hour major rest break would result in a sleep duration of between 6.1-to 6.5-hours, reducing subsequent driving performance and increasing crash risk by up to 1.3-fold.
Nose-to-tail shifts	• The proposed minimum standard would allow 12-hour work shifts either side of a 10-hour major rest break, by restarting their counting hours in a 24-hour period. Hence, where drivers could previously work a maximum of 12-hours in a 24-hour period, they can now work 14-hours. • There is not enough evidence to conclude whether this work shift schedule impairs driving compared to two work shifts on two consecutive days. However, given this change would allow for more work hours within a 24-hour period, worse driving performance would be anticipated compared to the current law.

Time of day and body-clock effects	• Body clocks (known as circadian rhythms) profoundly affect driving performance, both directly and indirectly by impacting sleep and alertness. • If the major rest break occurs during the daytime, it is likely that drivers will sleep less than 6.1- to 6.5-hours and driving performance impacted.
Consecutive nose-to-tail shifts	• Consecutive nose-to-tail shifts would result in backward shift rotation, where the timing of the work shift and rest break advances (becomes earlier) each day. • Backward shift rotation substantially increases drowsiness events in heavy vehicle drivers compared to forward shift rotation. • Sleepiness impairments will likely accumulate over multiple consecutive days due to chronic sleep restriction and circadian misalignment, further increasing crash risk.

While there is no direct evidence available regarding the sleepiness implications of back-to-back noise-to-tail shifts, it is anticipated that this work schedule would result in repeated short sleep durations and misaligned circadian rhythms. This would both negatively impair attention and driving ability, and increase crash risk. More research is needed to directly test the sleepiness and driving safety implications of back-to-back nose-to-tail shifts, but worse driving performance would be anticipated under these conditions.

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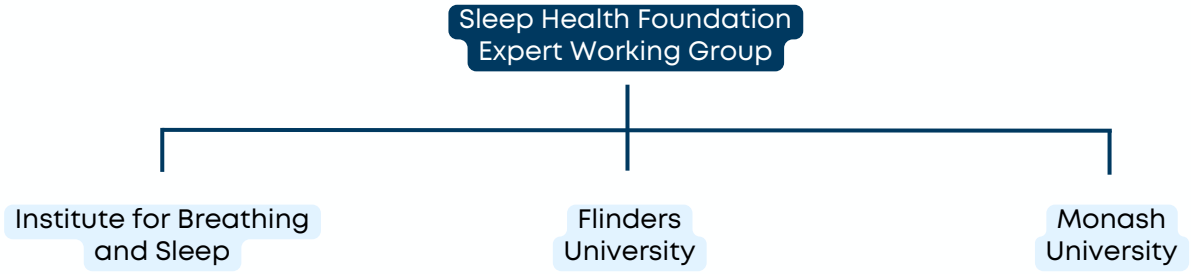
Introduction

During a meeting with the Infrastructure and Transport Ministers in August 2022, it was proposed to progress changes to standard hour schedules in the Heavy Vehicle National Law (HVNL). These proposed changes sought to provide more flexibility to drivers regarding the timing of rest breaks, remove disincentives for using electronic recording devices, and provide the option to reset the 24-hour period for counting driving hours.

In May 2023, the National Transport Commission tasked the Sleep Health Foundation with providing a report on the fatigue management and safety implications of the proposed changes. The Sleep Health Foundation assembled an expert working group including members who previously contributed to the Cooperative Research Centre for Alertness, Safety and Productivity (the Alertness CRC, 2013-2020) and have substantial expertise across sleep, work performance, and road safety. The structure of the group and relevant experience is outlined in Figure 1.

Figure 1. Overview of Sleep Health Foundation Expert Working Group with relevant recent projects and published works.



Relevant Projects	Heavy Vehicle Driver Fatigue Project (Via the alertness CRC) WorkSafe Alertness Project AAA Fatigue monitoring project Legal opinion for Transport Safety Victoria
Published Works	Harris et al. (2023). The impact of break duration, time of break onset, and prior shift duration on the amount of sleep between shifts in heavy vehicle drivers. *Journal of Sleep* Soleimanloo et al. (2022) The association of schedule characteristics of heavy vehicle drivers with continuous eye-blink parameters of drowsiness. *Transportation Research Part F: Traffic Psychology and Behaviour* Cori et al. (2021). The impact of 7-hour and 11-hour rest breaks between shifts on heavy vehicle truck drivers' sleep, alertness and naturalistic driving performance. *Accident Analysis and Prevention* Howard et al. (2019). Vehicle and Highway Adaptations to Compensate for Sleepy Drivers. *Sleep Medicine Clinics*

Throughout the report we will focus on “sleepiness” as it is the key component of fatigue that contributes to increased crash risk in heavy vehicle drivers. “Sleepiness” refers to a state of reduced alertness that can cause impairment to the cognitive facets necessary for driving such as: attention, reaction time, motor and sensory coordination, and decision making. “Sleepiness” when extreme, can result in falling asleep at the wheel. Driver sleepiness can arise from extended periods of wakefulness; insufficient or poor-quality sleep; driving at times when the internal body clock is promoting sleep; driving for extended periods of time without a break (particularly on monotonous roads); and having a sleep disorder.

The literature on sleepiness risks that was used to inform the opinions in Section A1-A3, does not make comparisons between solo drivers of fatigue regulated heavy vehicles, solo drivers of fatigue regulated buses, or two-up drivers of a fatigue regulated heavy vehicle. Hence, the opinions outlined by the expert working group are considered to apply to all the above driver types for lack of definitive evidence suggesting otherwise. This was deemed appropriate because the current and proposed regulations are the same for each driver type. Additionally, the impacts of the regulations evaluated in this report are considered to have the same effect on driver physiology irrespective of whether a driver takes a rest break within a stationary vehicle or within a moving vehicle. While sleep periods within a moving vehicle are more disrupted than within a stationary vehicle due to noise and vibration, (1) this report only focuses on short nap periods taken within breaks as a sleepiness countermeasure. There was no available literature that suggests short nap quality varies when in a stationary or moving vehicle.

Section A

Short rest break flexibility and incentives for users of electronic recording devices

Current HVNL for standard hours mandates minimum within shift rest times relative to time in shift (Table 1).

Table 1. Current minimum rest times within a shift according to hours worked for a solo driver of a fatigue regulated heavy vehicle, a solo driver of a fatigue regulated bus and a two-up driver of a fatigue regulated heavy vehicle.

Time Period *In any period of ...*	**Hours worked** *... a driver must not work for more than ...*	**Minimum rest** *... a driver must not rest for less than ...*
5.5-hours	5.25-hours	15-minutes*
8-hours	7.5-hours	30-minutes*
11-hours	10-hours	60-minutes*

*Rest breaks must be in continuous blocks of at least 15 minutes

There has been a proposal to remove the 8-hour and 11-hour controls and replace these with a single 12-hour control. The 12-hour control specifies that the drivers need to take 60-minutes of rest in a 12-hour period (Table 2). The 5.5-hour control will remain in place.

Table 2. Proposed minimum rest time within shift according to hours worked for a solo driver of a fatigue regulated heavy vehicle, a solo driver of a fatigue regulated bus and a two-up driver of a fatigue regulated heavy vehicle.

Time Period *In any period of ...*	**Hours worked** *... a driver must not work for more than ...*	**Minimum rest** *... a driver must not rest for less than ...*
5.5-hours	5.25-hours	15-minutes*
12-hours	11-hours	60-minutes*

*Rest breaks must be in continuous blocks of at least 15 minutes

The Sleep Health Foundation Working Group have compared the current HVNL to the proposed minimum rest break changes and have evaluated the associated sleepiness risk of the current and proposed regulations. The key differences are the removal of the 8- and 11-hour controls which are to be replaced with a single 12-hour control.

Changes to the controls will likely impact the drivers':

- Drive hours
- Number of rest breaks taken
- Duration of rest breaks taken
- Timing of the breaks taken

Each of the above factors are known to influence sleepiness levels and subsequently impact crash risk. This report will provide a broad literature review on each of the above topics and consider this information to present opinion on the impact of the current and proposed regulations on drivers' sleepiness levels and safety.

Literature review on work and break factors affected by 8-hour, 11-hour and 12-hour controls

Drive Hours

Time spent continuously working/driving

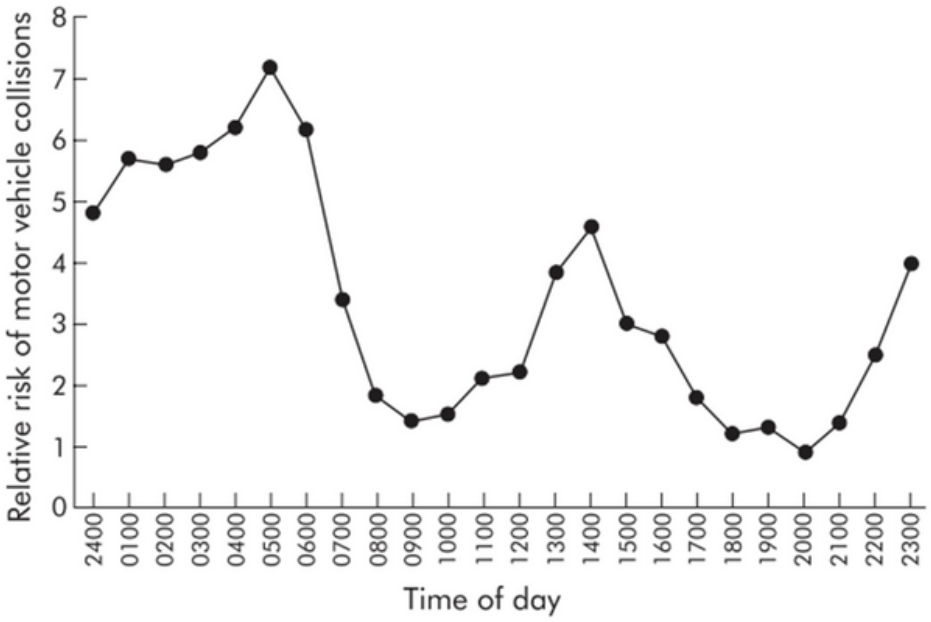
Time on task, which refers to time spent doing the same activity without a break, is a known contributor to driver sleepiness and performance decrement. Simulated (2, 3), track (4, 5), and naturalistic driving studies (6) have shown that sleepiness (measured by EEG, ocular measures and self-report) and driving performance (measured by lane drift/departures) are adversely impacted by time on task. Sleepiness and driving performance impairment during shift work occurs as early as 30- to 45-minutes into driving. One naturalistic study compared continuous 2-hour, 3-hour and 4-hour simulated drives. (7) At the end of the 4-hour drive, all measured driving-related skills were impaired (attention, reaction time, perception, and operational ability). The 3-hour and 2-hour drives had proportionally fewer driving skills affected. Self-reported sleepiness was also proportionally affected by drive hours. Self-report sleepiness was at levels that were 62%, 98% and 125% higher at the end of the drive compared to the start of the drive for the 2-hour, 3-hour and 4-hour conditions, respectively. (6)

Commercial goods drivers have self-reported that the maximum they could drive before needing a break is 4.2 hours on average. (8)

Note that the sleepiness impairment associated with drive hours, varies according to time of day. The body has a strong internal drive to sleep during night-time hours. Sleepiness is also elevated but to a relatively smaller extent, during the afternoon hours of ~13:00 to 15:00. This is known as the circadian dip. During these high sleepiness times, crash risk is also increased (Figure 2). (9) For instance, between 02:00 to 05:00 hours crash risk is elevated 5-fold when compared to all other times of the day. (10) An experimental laboratory study found that driving continuously at night

for 2-hours, causes a driving impairment (as measured by lane position deviation) that is comparable to a BAC of 0.05. Whereas, driving at night continuously for 3-hours and 4.5-hours is associated with driving impairment that is comparable to a BAC of 0.08 and 0.1. (11)

Figure 2: Risk of a motor vehicle collision in association with time of day. From Gorge 2004. (9)



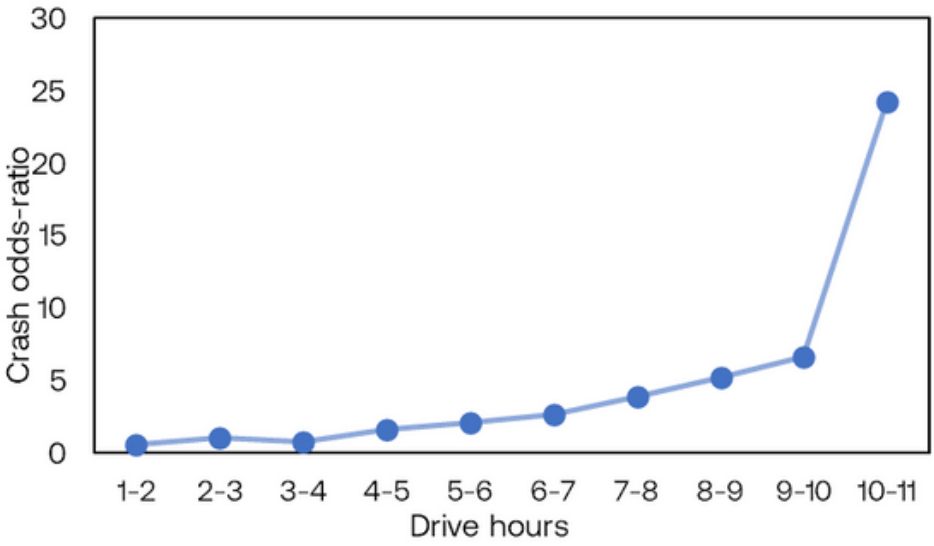
Distance travelled may also have an impact on the sleepiness impairment associated with driving hours. In highway commuters who mostly drove regular cars, for trips of equal duration, crash risk increased exponentially with distance travelled. (12) This is likely related to driving environment. On rural roads or highways where longer distances are covered, and the environment is relatively monotonous (less obstacles, changing scenery, etc.) driver engagement is relatively low, compared to urban environments such as driving in the suburbs or city and this tends to make drivers sleepier and perform worse. (13, 14)

Total drive hours within a shift

Crash data provides insight into the adverse effects of total drive hours within a shift. In general, the risk of a crash within a single shift increases in association with driving hours. A review of transport crash studies found that irrespective of shift start times, the risk of a crash peaks at approximately 2- to 4-hours into driving. (15) Crash studies of heavy vehicle truck drivers, find a substantial increase in crash risk around the 4th to 5th hour of driving. (16-19) Lin demonstrated that crash risk within a single shift was low and indistinguishable within the first four hours of driving. Between the 4th and 7th hour, crash risk increased by ~65% or more, and by the 8th and 9th hour, crash risk increased by 80% and 150%, respectively. (17) Kaneko similarly demonstrated that crash risk within a single shift was lowest in the first four hours, but then gradually

rose until it peaked at 9- or more hours of driving. (16) Using the first hour as a reference, Jovanis found that the odds-ratio of crash risk within a single shift began to increase after the 4th hour of driving, such that by the 6th hour it was double, by the 8th hour approximately quadruple and by the 10th hour, 7 times as high (Figure 3). (19)

Figure 3: Crash odds-ratio increasing in association with hours driving. The odds-ratio represents the odds of crash relative to the reference value (1st hour of driving). Adapted from Jovanis 2012 (19).



Drive hours - Summary

Sleepiness and driving performance deficits occur as early as 30 to 45-minutes into driving during shift work. The longer the continuous driving, the greater the sleepiness and driving performance deficit. Heavy vehicle crash data shows a substantial increase in the risk of a crash beyond 4-hours, with longer hours associated with greater risk. Commercial drivers feel capable of driving 4-hours continuously before requiring a break. Driving during night-time hours or driving on highway/country roads can inflate the drive hours risk even further.

Rest Break Timing

Rest breaks are important for managing sleepiness, maintaining driving performance, and minimising risk to safety. (20) A few studies evaluated the impact of break timing on heavy vehicle truck crashes. A study of 1000 Australian heavy vehicle truck drivers assessed time since the last break as a crash risk factor. Using less than 2-hours as a reference, a modest and non-significant 29% increase in crash

risk was observed when 2- to 4-hours had elapsed since the last break. If 4- or more hours had elapsed since the last break, then crash risk doubled. (21) This finding is in line with the above literature regarding continuous drive time, which found 4- or more hours to be hazardous. Chen also evaluated break timing in truck crashes and showed that breaks taken too soon were less effective. (22) For the first break in a driving trip, both breaks taken at <1.25-hours and >1.25-hours into driving improved safety, but the latter was more effective. Similarly, for the second break, breaks that were <2.5-hours and >2.5-hours into the continuous driving period were beneficial, with the latter was more effective. For the third break, only breaks taken >3.25-hours into driving were associated with a safety benefit. Lin also evaluated rest breaks and showed that having a rest break <2-hours or >6-hours into driving had no safety benefit with respect to crash avoidance. (17) In contrast, breaks taken between 2- to 4-hours into driving and 4- to 6-hours into driving were most effective in reducing crash risk, with the former most effective.

Allowing drivers to select the timing of their breaks also appears to be beneficial. Bus, truck and van drivers who had not previously had a crash, were able to select their own break timings more frequently than drivers who had been in a crash. (23) A similar study found that for drivers who could never select their own rest breaks the likelihood of experiencing sleepiness while driving was seven times greater and for drivers that could sometimes choose their rest breaks 2.4 times greater than drivers that could always choose their own rest breaks. (24)

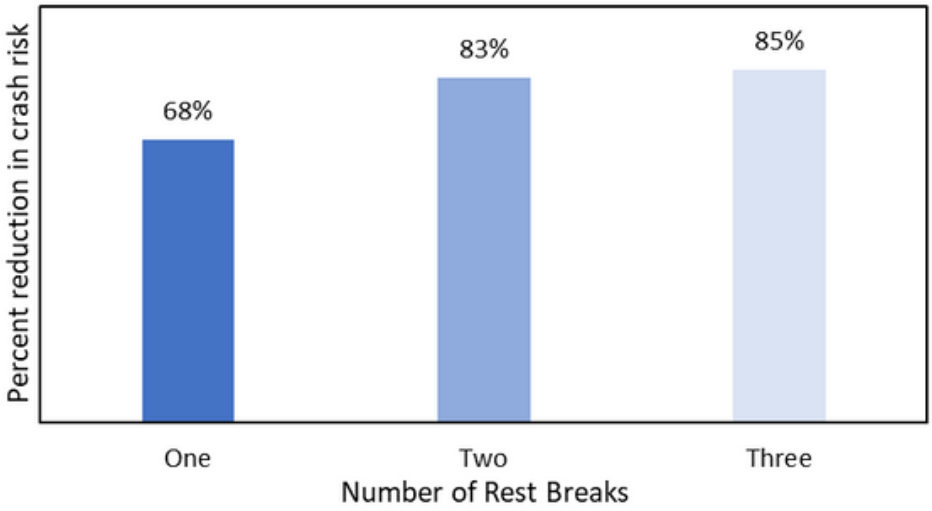
Rest Break Timing - Summary

Breaks appear to be most effective when taken between 2- to 4-hours of continuous driving. Breaks taken too early or too late are less effective. Providing drivers with flexibility to select their own break times is associated with reduced crash risk.

Rest Break Numbers

Heavy vehicle truck crash data that observed total shift durations of up to 11-hours, found that having one rest break lowered crash risk by 68% and having two rest breaks lowered crash risk by 83% (Figure 4). A third rest break did not substantially reduce crash risk more than the second rest break (85% reduction). (25) However, within this study, the break lengths and timing of the breaks were not considered. As mentioned earlier, another study found the third rest break was only beneficial if it occurred later into the shift (after 3.25-hours). (22) A naturalistic study of bus drivers that measured sleepiness and driving errors found that a rest break after 3-hours provided recovery. (26) While a second rest break at 6-hours also had benefit, it was less effective. A third rest break at 9-hours was considered to have an insignificant impact on sleepiness and driving (note the authors did not have access to the original article and rely on reports from other publications).

Figure 4: Percentage reduction in crash occurrence within a single shift for one, two and three rest breaks taken. Adapted from Chen 2014. (25)



Rest Break Numbers - Summary

In general, two rest breaks in a single shift of up to 11-hours appear to be most effective in reducing crash risk. A third may be beneficial if timed correctly and is not too early in the shift.

Rest Break Duration

A naturalistic study collected safety critical event data (crashes, near crashes and lane deviations) from approximately 100 commercial drivers across 1.2 million kilometres travelled during their regular work hours. It was found that a break from driving of up to 30-minutes reduced safety critical events (which included crashes, near crashes and lane deviations) by up to 30% when comparing the hour prior to and the hour following the break. (27) A heavy vehicle study examined break duration in the first, second and third rest breaks within shifts of up to 11-hours. Rest breaks of less than 30-minutes and greater than 30-minutes both significantly reduced crash risk for the first and second rest breaks, with no major difference in crash risk reduction between them. This suggests that a rest break duration of up to 30 minutes is usually sufficient. For the third rest break, crash risk was only reduced if the break was greater than 30-minutes in duration. These findings are somewhat supported by an experimental driving study that found for well-rested healthy individuals, naturalistic driving performance and self-reported alertness levels are relatively well-maintained, with only a minor performance deficit, if rest breaks of between 15- to 30-minutes are taken every 2-hours. (28) This study was limited, as there was no control condition without breaks. However, if the driver is not rested, driving

performance and sleepiness deteriorate regardless of the breaks. A on-road driving study found that efficacy of rest break durations was somewhat dependent on the proceeding amount of driving. (7) A 15-minute rest break was sufficient to recover deficits after 2-hours of continuous driving. However, after 3- and 4-hours of continuous driving, a 30-minute rest was required for full recovery. A survey study evaluated heavy vehicle drivers by the roadside and collected information on either their last trip, or, if they had a crash in the last 3 years, the trip of the crash. (29) They collected information on breaks and divided them into durations of <10-minutes, 10- to 20-minutes, 21- to 30-minutes, 31- to 40-minutes, 41- to 50-minutes and greater than 50-minutes. Breaks between 21- to 30- minutes was used as a reference. Breaks of 31- to 40-minutes were no different from the reference category. All other break categories had elevated risk relative to the reference, but only the 10- to -20-minute break was associated with a significant increase in risk, with the odds of a crash 2.6 times greater than in the reference category.

There also appears to be a positive effect of cumulative total rest break duration across a shift. A study of taxi drivers found a correlation between the number of crashes and the total duration of breaks, whereby a longer total break duration was associated with fewer crashes. (30) A heavy vehicle truck crash study evaluated total rest break duration across a shift comparing no rest breaks to breaks of 15- to 30-minutes, 30-minutes to 1-hour, 1- to 2-hours or more than 2 hours. (22) Any rest break was significantly better than none at reducing risk. Additionally, there appeared to be a monotonically increasing benefit on safety as rest break duration increased. A non-driving workplace accident study found that the greater the cumulative rest duration across a shift, the longer the time to ladder fall injury, with 1- to 15-minute breaks associated with a 40% hazard reduction, 16- to 30-minute breaks associated with a 50% hazard reduction and the greater than 30-minute breaks associated with a 66% hazard reduction. (31)

Rest Break Duration - Summary

In summary a rest break duration of 30-minutes appears to be ideal to reduce crash risk and maintain driving performance. Increased cumulative break duration appears to have a positive impact upon safety.

Rest Break Activities

Several studies have evaluated what type of break is most effective. A study of crash risk in highway commuters, most of whom used regular cars and some of whom used pickup vehicles or large trucks, found that using a highway rest stop reduced trip crash risk by half compared to not using a rest stop. (12) Interestingly having any break from driving versus not having a break from driving did not make a difference to crash risk. This suggests that the type of rest break or activity engaged in during the rest break may make a difference to safety. Taking a short nap of less than 15- to

20-minutes and consuming caffeine are the most effective strategies to combat driver sleepiness. (32) Combined, these strategies have the greatest safety benefit. Using each strategy alone, napping has greater advantages than caffeine. In the study of highway commuters, naps were uncommon, so their effects on crash occurrence could not be evaluated. However, caffeine in the form of tea or coffee consumed in the last 2-hours had a protective effect, reducing crash risk by approximately half. (12) A study of truck drivers found that breaks of 15- to 30-minutes without a nap were protective against both crashes and near misses, but breaks that contained short naps had more protective effects. (33) A laboratory study evaluated 2-hour blocks of simulated night drives separated by 1-hour blocks of rest without naps. The rest breaks improved driving performance and subjective fatigue (feeling exhausted, worn out, sluggish etc), but physiological and self-reported sleepiness did not improve. Hence, when a driver is sleepy, breaks without napping may do little to reduce the sleepiness effects. (34)

Rest Break Activities - Summary

Both consuming caffeine and having a short nap appear to be effective break activities, with the latter appearing to offer more beneficial recuperation effects. Hence, breaks should be of sufficient duration to enable these effective sleepiness countermeasures.

Rest Break Nap Durations

Generally, it is recommended that naps in operational settings, such as driving, do not exceed 15- to 20-minutes to avoid severe effects of sleep inertia. Sleep inertia occurs immediately upon awakening and can be described as a state of grogginess that is associated with cognitive performance impairments that dissipate with increasing time awake. (35) Sleep inertia typically resolves following 15- to 30-minutes of being awake. However, performance during sleep inertia can be as severe as the effects of sleep deprivation. (35) Given the severity of sleep inertia, it is recommended that it is managed in operational environments. A laboratory study has shown that 10- to 20-minute naps can result in immediate improvement to self-reported sleepiness and cognitive performance for up to an hour post-nap. (36) In contrast, a 30-minute nap had initial decrements to alertness and cognition attributable to sleep inertia, with some recovery by the end of the first hour post-nap. Nap benefits may vary according to time of day and depending on the degree of prior sleep deprivation. For instance, short naps may not enable recovery from severe sleep restriction or the prominent circadian effects on sleepiness at night (between 02:00- to 06:00-hours).

Rest Break Nap Durations - Summary

A nap of 10- to 20-minutes appears to be beneficial for reducing the effects of mild to moderate sleepiness, but there should also be some time (at least 15-minutes) to recover from sleep inertia effects. Naps may be less effective or cause strong sleep inertia effects when sleep impairment is severe.

Effects of removing current HVNL controls

A1. The impact of removing the 30-minute control in the 8-hour period.

The 8-hour control ensures that the maximum a driver can work in an 8-hour period is 7.5 hours. With respect to breaks, the driver must have at minimum either: Two separate 15-minute short rest breaks (Schedule shown in Figure 5 – Pane A) or one 30-minute short rest break (Schedule shown in Figure 5 – Pane B). Removal of the 8-hour control means that the maximum a driver can work in an 8-hour period is 7.75 hours, and at minimum have a single 15-minute break (Schedule shown in Figure 5 – Pane C).

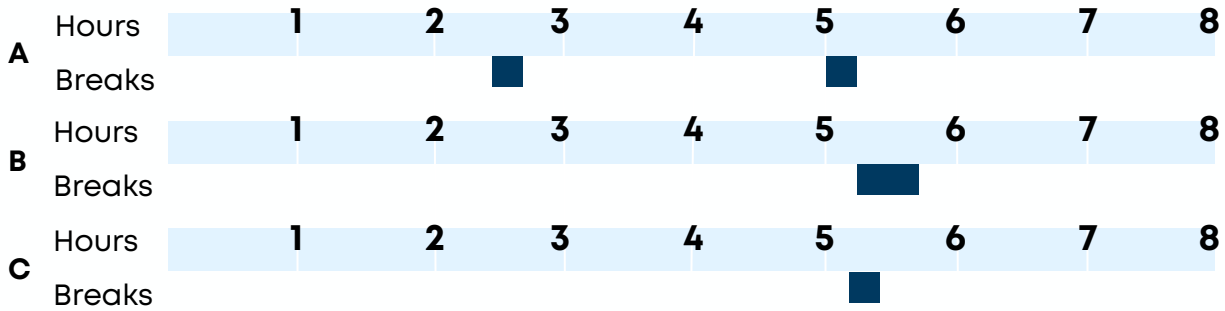


Figure 5: Current HVNL 8-hour control rule minimum break requirements: Pane A – Two separate 15-minute breaks, Pane B – One 30-minute break. Minimum break requirements if 8-hour control is removed is shown in Pane C – One 15-minute break.

The impact of removal of the 8-hour control – Removal of the 8-hour control reduces the minimum total break time in an 8-hour period from 30-minutes to 15-minutes, and allows the possibility of having two prolonged driving periods of 4.5 to 5.5 hours in duration one after the other (depending on whether an 11-hour or 12-hour control is in place). Reducing the minimum total break time, may impact upon continuous drive time. The risk of a crash increases substantially at 4- to 5-hours of continuous driving. At 4- to 5-hours the risk of having a crash is 1.5 to 1.7 times higher than the first hour or two of driving. (17, 19) For comparison purposes, the risk of having a crash at a BAC of 0.05 to 0.06 is 1.8 times higher than at a BAC of 0.00. (37) With the 8-hour control, under the minimum standards, a driver can split their mandatory 30-minute rest break into two evenly spaced 15-minute periods. In this scenario, continuous drive times are estimated to be within a relatively safe range of 3- to 4-hours (Figure 5 - Pane A). At 3- to 4-hours crash risk is not substantially different to the first 1- to 2-hours of driving. Note, however, that the 8-hour control does not fully protect against a long continuous drive time because, even under minimum requirements, a driver could still have a single rest break at 5.25-hours, satisfying the 30-minutes of minimum mandatory rest (Figure 5 - Pane B). Hence, under the extremes of both the 8-hour control and removal of the 8-hour control, continuous driving presents a significant crash risk, that is similar to the crash risk associated with a BAC of 0.05 to 0.06. Removing the 8-hour control though allows the potential for two continuous prolonged driving periods one after the other of more than 4.5 hours. Removal of the 8-hour control, means that at minimum drivers are only required to have

a single 15-minute break (Figure 5- Pane C). A 15-minute break is only sufficient to recover driving deficits after 2-hours of continuous driving. After 3- and 4- hours of continuous driving, a 30-minute break is required. It is unknown what length of break is necessary to recover from continuous drive times beyond 4-hours. Additionally, crash data suggests that crash risk is lowest after breaks of 20- to -40-minutes, while a break of 10- to 20-minutes has a crash risk that is twice as high as breaks of 21- to 30- minutes. Again, the doubling of risk is similar to the crash risk observed at a BAC of 0.05 to 0.06. A short 15-minute break duration is also problematic as it does not provide drivers with a sufficient opportunity to engage in beneficial sleepiness countermeasures such as napping and recovery from sleep inertia. With respect to total break numbers, removal of the 8-hour control means that at minimum a driver will only have a single break. Whereas with the 8-hour control, the drivers can choose to split their total minimum rest time into two breaks, which is optimal for protection against crashes, sleepiness and driving performance deficits in shifts of between 10- to 11-hours. We are not aware of an optimal number of breaks for up to 8-hours and therefore cannot make comment on this.

Impact of removing 8-hour control on longer periods of 24-hours, 52-hours (for two-up drivers), 7-days, 14-days, and 28-days

The literature suggests that increasing cumulative rest break duration has a positive impact. Hence, removal of the 8-hour control may increase crash risk because cumulative break duration within the shift is reduced. We have highlighted the change in cumulative break time across a 24-hour, 52-hour, 14-day and 28-day period in Table 3. We have used the example of someone who works an 8-hour shift, 6-days per week. It is difficult to infer the impact that changes to work hours and cumulative break hours will have on extended time periods beyond 24-hours. However, it is reasonable to assume that there may be negative effects over time. Future studies should evaluate the cumulative impact of reduced rest break hours in the driving context.

Table 3: Minimum rest breaks with and without the 8-hour control across 24-hours, 52-hours, 7-days, 14-days, and 28-days for a driver who works six 8-hour shifts per a 7-day period.

Time period	Shift hours	With 8-hour control		Without 8-hour control	
		Work hours	Cumulative breaks	Work hours	Cumulative breaks
24-hours	8-hours	7.5-hours	0.5-hours	7.75-hours	0.25-hours
52-hours	16-hours	15-hours	1-hour	15.5-hours	0.5-hours
7-days	48-hours	45-hours	3-hours	46.5-hours	1.5-hours
14-days	96-hours	90-hours	6-hours	93-hours	3-hours
28-days	192-hours	180-hours	12-hours	186-hours	6-hours

Removal of 8-hour control – Summary

If the 8-hour control is removed, under the minimum standards drivers have the potential to: 1.) Drive continuously for up to 4- to 5- hours for two driving periods one after another in a single shift and 2.) Take only a single break of 15-minutes in a 10-hour period. Both scenarios have a crash risk that is of similar magnitude to driving at 0.05 BAC. In addition, the 15-minute break does not allow sufficient time for drivers to engage in effective sleepiness mitigation strategies such as napping. Furthermore, over a period of consecutive shifts removing the 8-hour control could reduce the cumulative amount of break time, which may have an adverse effect on sleepiness and driver safety. However, it is noted that drivers do have an overarching responsibility for management of their own sleepiness and that drivers can stop at any time if they feel affected by sleepiness.

A2. The impact of removing the 60-minute control in the 11-hour period.

The 11-hour control ensures that the maximum period a driver can work in an 11-hour period is 10-hours with a minimum rest break duration of 60-minutes in blocks of at least 15-continuous minutes. The drivers must also abide by existing controls which include a 15-minute break for every 5.5-hours of work and a 30-minute break for every 8-hours of work. Examples of potential rest breaks combinations within 11-hour shifts are illustrated in Figure 6 (Panes A-D), but are not exhaustive. If the 11-hour control is removed, drivers are only obligated to abide by the 5.5-hour control (which mandates 15-minutes of rest) and the 8-hour control (which mandates 30-minutes of rest) in an 11-hour period. Because of these controls, the rest time in a 11-hour shift would at minimum have to consist of 2 x 15-minute breaks split across the shift to not allow more than 5.25-hours of continuous work in between and so that the minimum break duration of 30-minutes in 8-hours is satisfied (see example Figure 6 – Pane E).

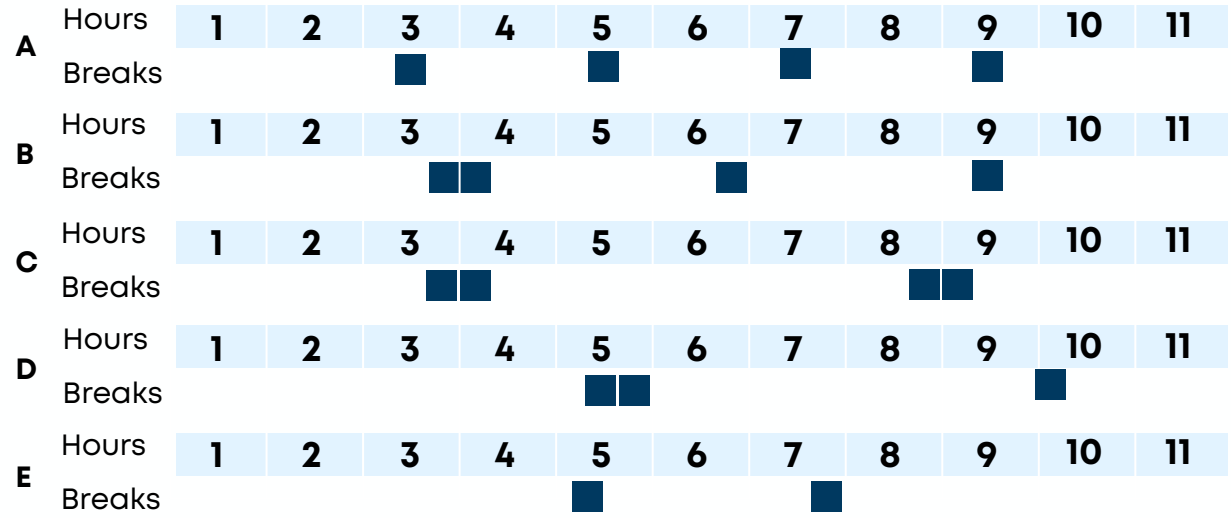


Figure 6. Current HVNL 11-hour control rule minimum break requirements examples (Pane A-D): Pane A – 4 x 15-minute breaks, Pane B – 1 x 30-minute break and 2 x 15-minute breaks, Pane C – 2 x 30-minute breaks, Pane D – 1 x 45-minute break and 1 x 15-minute break. The minimum break requirements if the 11-control is removed is shown in Pane E – 2 x 15-minute breaks with no more than 5.25 hours of driving continuously and 30 minutes of breaks within 8 hours.

The impact of removal of the 11-hour control – The 11-hour control ensures drivers take a total break duration of 60-minutes in 11-hours. If it is removed the driver only needs to take a 30-minute break in total across in 11-hours. The 11-hour control allows drivers to split their mandatory rest break time of 60-minutes across their shift, such that they have short continuous drive times (of 2-to 3-hours) combined with short but frequent breaks (See Figure 6 – Pane A and B). However, even with the 11-hour control, drivers can stack their breaks such that there is still 5.25 hours of continuous driving between them (Figure 6- Pane C and D) resulting in elevated sleepiness risk. However, when stacking this way, the drivers will be obtaining longer rest break durations of 30-minutes to 45-minutes. Breaks of 30-minutes have been shown to recover continuous driving of 4-hours, therefore there is some protective effect offered by break stacking with the 11-hour control, even if continuous drive time is increased. Removal of the 11-hour control means that a driver at minimum must have a total rest break of 30-minutes across an 11-hour period. The breaks must be split in two to satisfy the 5.5-hour control and the 8-hour control (Figure 6 – Pane E). These short break durations are not ideal, as the literature suggests that 30-minute rest breaks are most appropriate to reduce crash risk, particularly when continuous drive duration is in the 3- to 4-hour range. In this scenario, continuous drive periods are likely to exceed 5-hours, which as highlighted earlier has a crash risk that is 1.5 to 1.8 times higher than the first hour or two of driving. (17, 19) Hence, crash risk is similar to that of driving at a BAC of 0.05 to 0.06 (1.8 higher than a BAC of 0.0). (37) Furthermore, breaks of only 10-20 minutes are associated with a crash risk that is approximately double that of longer 21- to 30-minute breaks. The short breaks are also problematic as 15-minutes is not sufficient for drivers to be able to engage in beneficial sleepiness

countermeasures such as napping and recover of sleep inertia. With removal of the 11-hour control drivers, under minimum standards drivers will still take two breaks, which is optimal for protection against crashes, sleepiness and driving performance deficits in shifts of between 10- to 11-hours. However, those studies were evaluating breaks of up to 30-minutes. It is not yet clear, if two breaks of 15-minutes within a 10- to 11-hour shift offer a similar level of protection.

Impact of removing the 11-hour control on longer periods of 24-hours, 52-hours (for two-up drivers), 7-days, 14-days and 28-days

The literature suggests that increasing cumulative rest break duration has a positive impact upon safety. Hence, removal of the 11-hour control may increase crash risk because cumulative break duration within the shift will be reduced. We have highlighted the potential change in cumulative break time across a 24-hour, 52-hour, 7-day, 14-day and 28-day period in Table 4. We have used the example of a driver who works a 11-hour shift, 6-days per week. In a single shift (in a 24-hour period) cumulative break time reduces from 60-minutes to 30-minutes. There is evidence from a non-driving context that this reduction would be associated with poorer safety outcomes. However, in a driving context, the difference between a cumulative 60-minute break and 30-minute break across a shift is not clear. As mentioned earlier, future studies should evaluate the cumulative impact of reduced rest break hours in the driving context.

Table 4: Minimum rest breaks with and without the 11-hour control across 7-, 14- and 28-day periods for a driver who works six 11-hour shifts per a 7-day period

Time period	Shift hours	With 11-hour control		Without 11-hour control	
		Work hours	Cumulative break hours	Work hours	Cumulative breaks
24-hours	11-hours	10-hours	1-hour	10.5-hours	0.5-hours
52-hours	22-hours	22-hours	2-hours	21-hours	1-hour
7-days	66-hours	60-hours	6-hours	63-hours	3-hours
14-days	132-hours	120-hours	12-hours	126-hours	6-hours
28-days	264-hours	240-hours	24-hours	252-hours	12-hours

Removal of 11-hour control - Summary

If the 11-hour control is removed, under minimum standards the drivers have the potential to have 1) Long continuous drive times of up to 4- to 5- hours (two long

drives if the 8-hour control is removed) and 2). Two 15-minute breaks in an 11-hour period. Both scenarios have a crash risk that is similar magnitude to driving at a BAC of 0.05. A shorter duration rest of 15-minutes is not sufficient for recovery and does not provide the driver with ample opportunity to engage in beneficial sleepiness countermeasures, such as napping and recovery from sleep inertia. Furthermore, timing of the breaks is somewhat dependent on the 5.5-hour control and 8-hour control. Reduced choice around break time has been shown to be associated with increased crash and sleepiness risk. As mentioned earlier, driver choice with respect to break taking is a key protective factor against sleepiness and crash risk. Additionally, removal of the 11-hour control results in cumulative total break time across the shift reducing from 60-minutes to 30-minutes in an 11-hour period. There are positive effects observed with increased cumulative break times of this amount outside of driving.

The impact of the removal of both the 8- and 11-hour controls

As discussed above, when the 8- and 11-hour controls are removed under minimum standards there is the potential for 1.) Increases to continuous drive time of 4- to 5-hours, with potential for two long continuous drives one after another and 2) Decreases to required break duration to 15-minutes. By removing both the 8- and 11-hour control, only the 5.5-hour control remains which stipulates a 15-minute rest break every 5.5hrs, and the 12-hour control of 60-minutes of total rest in 12-hours. Thus, the minimum rest in an 8-hour period would go from 30-minutes to 15-minutes. As highlighted above, 15-minutes is not sufficient to recover driving performance after 2-hours of continuous driving; is associated with twice the crash risk of a 30-minute break; and does not offer ample opportunity for a driver to engage in effective sleepiness countermeasures such as napping and the passing of sleep inertia. In an 11-hour period, minimum rest would go from 60-minutes to 30-minutes, hence cumulative break duration benefits would be reduced. Furthermore, at the minimum standards drivers would have less flexibility in how they take their breaks, which is known to increase both crash and sleepiness risk. Hence, it is anticipated that removal of both the 8- and 11-hour controls, will result in adverse effects on driver sleepiness, performance, and safety.

Impact of removal of the 8-hour and 11-hour control on 24 hours, 7 days, 14 days and 28 days – See above sections for 8-hour and 11-hour control removals.

A3. The impact of removing minimum duration for short rest breaks for users of electronic recording devices.

Under current HVNL, drivers must take short rest breaks in continuous 15-minute blocks. It is proposed that the minimum duration is removed such that, drivers can take their required 15-minute rest in multiple blocks of any duration they desire, if they have electronic work diaries. Below we provide a review as to whether breaks of 15-minutes or less improve safety.

Break duration of 15 minutes or less during driving

Few studies have examined the efficacy of a driver rest break that is 15-minute or less. An aforementioned experimental study that assessed the impact of 15- and 30-minute breaks on driving skills at the end of 2-, 3- and 4-hours of continuous driving, found that a 15-minute break was sufficient for full recovery after a 2-hour drive, but not a 3- or 4-hour drive, which required the 30-minute break for full recovery. (7)
Another experimental study evaluated a 15-minute or 60-minute break at 4-hours during an 8-hour drive. (38) Reaction time was measured continuously throughout the drive by having drivers respond to a random in-vehicle auditory stimulus. No recovery in auditory stimulus reaction times occurred with either the 15- or 60-minute breaks. However, it was speculated that may have been because time on task effects were too strong.

A simulated driving study compared a 15-minute nap to 15-minutes of active rest, which comprised 10-minutes of walking. (39) The breaks were offered after 2-hours of driving. Nap breaks resulted in reduced subjective sleepiness and EEG sleepiness for the following 60-minutes of simulated driving. Active rest was associated with a reduction in subjective sleepiness but no reduction in EEG sleepiness in the first 30-minutes after the rest, with some improvement in the last 30-minutes. This suggests that while an active rest break may make drivers feel less sleepy, they may not have recovered from sleepiness at a physiological level, which can be a potentially dangerous combination.

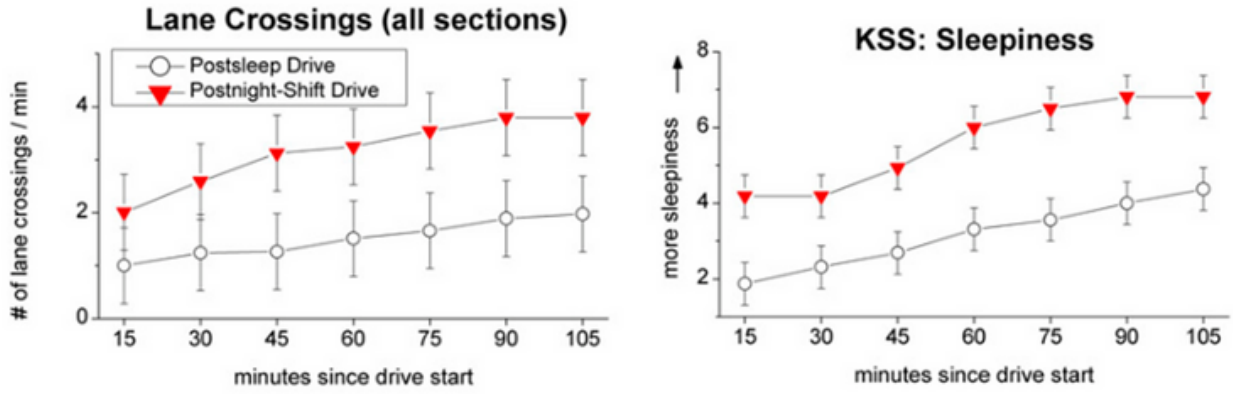
An experimental instrumented vehicle study found that healthy individuals were able to maintain driving performance relatively well across a 10-hour drive, with only a minor performance decrement, if they had three 15-minute breaks and one 30-minute break approximately every 2-hours. (28) From this it was inferred that during daytime driving, regular breaks were sufficient to maintain driving performance. However, there was no control condition of no breaks and therefore the results must be interpreted with caution.

A survey study evaluated almost 400 heavy vehicle truck drivers by the roadside and collected information on either their last trip, or, if they had a crash in the last 3 years, the trip of the crash. (29) They divided breaks into durations of <10-minutes, 10- to 20-minutes, 21- to 30-minutes, 31- to 40-minutes, 41- to 50-minutes and greater than

50-minutes. Breaks between 21- to 30- minutes was used as a reference. Breaks of 31- to 40-minutes were no different from the reference category. All other break categories had elevated risk relative to the reference, but only the 10- to -20-minute break was associated with a significant increase in risk, with the odds of a crash 2.6 times greater than in the reference category.

An experimental study assessed shift workers during a 2-hour instrumented vehicle drive on a track after a night shift and after a night of rest. (5) Every 15-minutes drivers had short breaks of one- to two-minutes to complete sleepiness surveys. Despite these frequent breaks, indicators of sleepiness as per EEG and eyeblink measures continued to increase as did lane crossings and near crash events (Figure 7). This suggests that breaks of a minute or two do not provide adequate recovery to prevent time on task effects.

Figure 7: Example of the continuing increase in lane crossing and sleepiness despite short one- to two- minute breaks every 15-minutes. Extracted from Lee 2016. (5)



We believe that more evidence is required to evaluate whether a 15-minute continuous rest provides sufficient recovery, and if not, what should be the minimum break time under different circumstances. Additionally continuous drive time and the time of day prior to the break appears to have an impact on efficacy and therefore multiple potential drive times prior should be evaluated (2-,3-, 4- and 5-hours) as well as time of day effects.

Breaks of 15-minutes or less during driving – Summary

There have been only a few studies that have evaluated short rest breaks of 15-minutes during driving. Many of the studies were experimental and utilised healthy controls. In general, a 15-minute break was only considered sufficient to provide recovery if the driving duration was less than 2-hours. Beyond this a

longer break of 30-minutes was deemed necessary. Multiple short breaks of only a few minutes do not appear to be effective at preventing severe sleepiness. There is some evidence that a nap break of 15-minutes provides good recovery of both subjective and physiological sleepiness, but this was evaluated only in a single study. A study of heavy vehicle truck crashes found that breaks of 10- to 20-minutes have a crash risk that is double that of longer breaks of 21- to 30-minutes. This doubling of crash risk is similar to what is observed at a BAC of 0.05. Hence, optimal break durations for alleviating sleepiness risk appear to be at least 20-minutes, with no evidence to support benefits of multiple very short breaks under 15-minutes.

Break duration of 15 minutes or less outside of driving

The effect of short rest breaks has been evaluated outside of the driving context. One study evaluated the impact of accumulated break rest times on work-related ladder fall injuries. (31) A dose-response relationship occurred whereby the greater the accumulated break time, the longer the time to injury. Relative to the reference of no break, breaks of 1- to 15-minutes, 16- to 30-minutes and 30- or more minutes reduced ladder fall hazards by 40%, 50% and 66% respectively.

A sleep deprivation study evaluated the impact of a short 10-minute rest break, comprising a light shoulder or neck exercise, during a 70-minute cognitive task following sleep deprivation. (40) The short 10-minute rest break improved task performance and subjective sleepiness but only for 15-minutes following the break. There was no improvement in EEG sleepiness. Hence, it was concluded that a short light exercise break does not provide sufficient recovery following sleep-related impairment.

A study of office-based computer workers compared break regimes of either 7.5-minutes after 50-minutes of work or 15-minutes after 100-minutes of work. (41) The 15-minute breaks were more effective in the late afternoon to recover from fatigue and emotional strain. In contrast the 7.5-minute breaks were more effective in recovering from mental and emotional strain in the early afternoon. Hence, this study concluded that differing break types may be required depending on the circumstances.

An EEG study evaluated the effects of a 5-minute break during a 65-minute auditory task that required participants to identify rare targets amongst a set of common

targets. (42) There was no improvement in reaction times with the break. However, there was a decrease in EEG sleepiness activity when comparing to an equivalent period of no break.

Breaks of 15-minutes or less outside of driving – Summary

We have provided a brief review of studies that have evaluated breaks shorter than 15-minutes in a non-driving context. This review is not intended to be exhaustive but is to provide a brief overview of the literature outside of driving. In summary, it appears that in a non-driving context, short breaks may have some partial beneficial effect on safety and sleepiness measured subjectively and objectively. However, many studies show that the effects of these breaks are very short lived. Additionally, while the breaks evaluated were short, they were frequent (e.g., repeated at 50- to 100-minutes) which is unlikely to occur in the heavy vehicle industry. Additionally, limited inference can be made from these studies to the driving context, where there are a range of unique, complex, and interacting sleepiness factors at play including the monotony of driving, time on task, driving at times not aligned with the circadian body clock and extended duration driving.

Impact on safety if the minimum 15-minute duration was removed as well as the 8-hour and 11-hour controls

There is no scientific evidence on this exact scenario. Available evidence suggests that continuous breaks longer than 15-minutes are ideal, while limited evidence suggests that breaks shorter than 15-minutes do not provide complete or sustained reductions in sleepiness. Hence, changing the break duration rules to allow multiple very short breaks could result in adverse safety consequences. We were also asked to comment on the effect of removing the minimum 15-minute continuous rest break and what impact that would have on longer periods of 24-hours, 52-hours, 7-days, 14-days, and 28-days. As per above, there is no scientific evidence that describes these scenarios therefore we are unable to speculate on associated risks.

Advice on additional controls that might facilitate the proposed changes to the schedule for users of electronic recording device

Based on the literature review there are no controls that could be introduced that would faciitate the proposed changes to the schedule for users of electronic recording devices.

Section B1

Resetting the 24-hour period with a 10-hour continuous rest break

Under the current law, driving hours are counted across a 24-hour period: drivers are allowed to work up to 12 hours in a 24-hour period, and these periods must not overlap. There is confusion amongst drivers about whether taking a major rest break resets the 24-hour period to zero. This confusion is evident in recent court cases where drivers committed a critical breach for working more than 12 hours in a particular 24-hour period because they thought their major rest break reset the 24-hour period.

It is proposed to add an additional element to the general schedule whereby a continuous stationary rest break of 10 hours will reset the 24-hour period for counting driving hours. Following the proposed 10-hour rest, the clock for counting driving hours in a 24-hout period will restart. This proposed 24-hour reset break would only be available to solo drivers of fatigue-regulated heavy vehicles.

The proposed change would not:

- Replace the minimum rest requirement of 7 continuous hours within a 24-hour period.
- Change the maximum work times for the 7-day (currently 72 hours) and 14-day periods (currently 144 hours), to try and prevent back-to-back use of the 24-hour period reset break.
- Affect night rest break requirements (7 continuous hours of stationary rest time between 10pm and 8am, or 24 continuous hours stationary rest time).

The proposed change would:

- Enable nose-to-tail shifts, which are two extended shifts separated by a 10-hour rest break. This could result in 24 hours of work within 34 hours.
- Enable back-to-back overlapping periods, provided that the maximum work times over 7 and 14-day periods are not exceeded. This could result in 72 hours of work within 122 hours, or within about 5 days (five overlapping, back-to-back 24-hour periods). This scenario is shown in Figure 8, separately for work shifts that start in the morning and at night.

Figure 8: Day and night shift schedule scenarios enabled by the proposed change to the general schedule. Note that these scenarios meet the maximum working hours within a 7-day period requirement.

Literature Review

To understand the sleepiness and safety implications of this proposed change to the general schedule, consideration must be given to a combination of factors including:

1. the restorative ability of a 10-hour major rest break,
2. driving performance during extended nose-to-tail shifts,
3. driving at times when alertness is naturally lower across varying times of day, and
4. the cumulative effects with back-to-back nose-to-tail shifts, which result in "backward" shift rotation whereby work shifts become progressively earlier.

A broad literature review is provided for these topics below.

Major rest break durations

A major determinant of sleepiness and driving ability is sleep. Being awake for 17 continuous hours results in impairments in attention to a similar degree as a BAC above 0.05%. (43) At least 7 hours of sleep is required per day on a continuous basis for the average person to maintain optimal alertness and function. (44) Failure to meet this daily sleep requirement results in substantial impairments to driving performance and increases the risk of a crash, with 6 hours of sleep increasing crash risk by 1.3-fold, 5 hours sleep by 1.9-fold, 4 hours sleep by 2.9-fold, and less than four hours sleep by 15.1-fold, compared to 7 hours sleep. (45) These consequences on driving performance are related to lapses in attention, slower braking reaction times, and frequency of collisions found in both simulated driving and in track driving studies. (5, 46-48) While countermeasures such as caffeine can overcome inattentiveness to some degree, (49) they are insufficient in the face of major sleepiness-related alertness failures and have the potential to impact subsequent sleep periods, thereby impairing subsequent driving ability. For example, caffeine intake during a work shift may interfere with the ability to sleep during the next sleep period, which in turn, may impair alertness during the next work shift. (50) Accordingly, it is imperative that heavy vehicle drivers are given ample opportunity to obtain sufficient sleep during major rest breaks on a continuous basis to prevent alertness failures and substantial impairments to driving ability.

The restorative ability of a major rest break largely depends upon the opportunity for sleep that the rest break provides. In a 2018 study conducted as part of the Heavy Vehicle Driver Fatigue Project (51) by the Alertness CRC for the National Transport Commission, we found that an 11-hour major rest break was associated with 6.5 hours of sleep. (52) In the US and Canada, major rest breaks of 8 hours resulted in sleep durations of 4.8- to 5.4-hours for truck drivers. (53) When major rest breaks were increased to 10 hours in the US, sleep duration also increased to 6.3 hours. (54) In comparison, under conditions where major rest breaks are ≥8 hours, the average sleep was 5.3 hours for day schedules and 5.1 hours for evening schedules. (53)

A major rest break of 10 hours would likely result in a sleep duration of 6.1-6.5 hours. This is below the recommendation of 7 hours to support optimal alertness, impairing driving ability and increasing crash risk up to 1.3-fold.

Nose-to-tail shifts

The proposed changes to the general schedule would enable drivers to potentially work 12-hour shifts either side of a 10-hour major rest break in a work schedule known as nose-to-tail shifts. The 2018 Heavy Vehicle Driver Fatigue Project found that a longer major rest break between nose-to-tail shifts (11-h compared to 7-h) resulted in better attention and driving performance during the following 12-hour simulated work shift; however, it is unknown whether driving performance during the work shift

would have been more impaired compared to a subsequent work shift without overlapping the 24-hour period (i.e., compared to a standard shift). Beyond this study there have been no other investigations of driving performance during a nose-to-tail shift schedule.

Time of day and body clock effects

An important consideration for both on-shift alertness and off-shift sleep is time of day, imposed by circadian rhythm factors. Colloquially known as 'body clock' rhythms, circadian rhythms are fluctuations in bodily processes and functions across a ~24-hour cycle. (55) Multiple experiments have clearly demonstrated that alertness is profoundly influenced by circadian rhythms, with peak alertness around the circadian maximum and lowest alertness (i.e., peak sleepiness) around the circadian minimum in the core body temperature rhythm. The timing of lowest alertness is between 3-5am for most individuals, where their circadian rhythms are aligned for sleeping at night-time. Accordingly, driving at night - when sleepiness is at its highest - increases the risk of a road crash by more than five-fold. (10) The number of crashes caused by falling asleep peaks during the night, particularly towards the end of the night when prolonged wake from continuous driving interacts with circadian rhythm effects to result in a marked increase in the propensity to fall asleep. (56) Accordingly, sleepiness impairments will be highest when driving at night-time.

Likewise, the ability to sleep well is similarly impacted by time of day. This is evident in sleep durations during major rest breaks at night-time versus during the day, with breaks starting between 00:10- and 08:00-hours leading to shorter sleep compared to breaks starting between 14:01- and 20:00- hours in Australian heavy vehicle drivers. (57) In rail workers, a 12-hour rest break was associated with 8-hours of sleep when the break commenced at 20:00- to 22:00-hours compared to only 3.1-hours of sleep when the break commenced at 08:00- to 10:00-hours. (58) Enabling overlapping 24-hour periods with a 10-hour major rest break in-between will thus be expected to result in even less sleep if the break occurs during the daytime than if it occurred during the night-time, further increasing sleepiness and safety risks.

If the major rest break was to occur during the daytime, it is likely that drivers will sleep less than 6.1-to 6.5-hours and driving performance would be even worse.

Back-to-back nose-to-tail shifts

The major rest break duration and timing of breaks resulting from a nose-to-tail shift

schedule is likely to result in continuously short sleep durations. This is due to a combination of short sleeps within the 10-hour rest break and advancement of the break timing with each subsequent day, and will be further exacerbated under conditions where the break occurs during the daytime due to circadian effects. This type of work shift schedule is known as backward shift rotation, where the timing of the work shift and rest break advances each day. Backward shift rotation is known to substantially increase the frequency of drowsiness events in heavy vehicle drivers (59) and is associated with higher daytime sleepiness than a forward shift rotation schedule. (60) Given this evidence, greater sleepiness impairments and safety risks would be anticipated from advancing work shift and rest break timing enabled from overlapping 24-hour periods.

Sleepiness impairments will also likely accumulate over multiple consecutive days of short sleep durations due to chronic sleep restriction. In 2003, an experiment was conducted which restricted individuals' sleep opportunities to 4, 6, or 8 hours per night for 14 days. (61) By day 14, attention in the 4- and 6-hour sleep opportunity conditions were at levels equivalent to 48 hours of no sleep. Notably, self-reported sleepiness was a poor proxy for attention beyond day 4, with individuals appearing to be unaware of the accumulating performance impairments. This suggests that individual's ability to self-monitor their alertness under conditions of chronic sleep restriction is poor, which has important implications for driver's ability to self-monitor their alertness under these conditions.

In another study with a similar design, individuals' sleep opportunities were restricted to 3, 5, 7, or 9 hours per night for 7 days. (62) Here again, attention was impaired with shorter sleep opportunities and this impairment accumulated over subsequent days. The exception is that daytime impairments in the less severe sleep restriction conditions (5 and 7 hour) tended to plateau by days 2-3 rather than continue to accumulate, although performance was still worse than in the 9-hour condition. (62) Recovery to normal function requires several days of 'catch-up' sleep of more than 8 hours. (62) These findings suggest that the chronically short sleep imparted by nose-to-tail shift schedules would result in accumulating sleepiness impairments across consecutive shifts, further increasing safety risk.

Consecutive nose-to-tail shifts would result in backward shift rotation, which substantially increases drowsiness events compared to forward shift rotation. Sleepiness impairments would also accumulate over multiple consecutive days due to chronic sleep restriction, further increasing crash risk.

Effects of implementing a 24-hour period reset break

There is limited direct evidence currently available about the sleepiness and safety risks for nose-to-tail shifts. Nonetheless, the available evidence suggests that a sleep of about 6.1 hours can be expected during the proposed 10-hour major rest break if taken at night. While the 10-hour continuous major rest break may mitigate some ill effects versus a shorter major rest break, nose-to-tail shifts are likely to negatively affect sleepiness and safety due to time of day/circadian effects and work duration within a brief period (up to 24 hours work within a 34-hour period). Further, the resulting chronic sleep restriction from consecutive overlapping 24-hourr periods interacting with circadian misalignment due to advancing sleep and work schedules (backward shift rotation) will likely result in sleepiness impairments accumulating across successive days. Whether these outcomes are worse than under the current law remains to be directly tested.

Other changes to reduce sleepiness and safety risk if resetting 24-hour periods

Advice was sought on whether additional risk controls or other potential changes could be made to reduce the sleepiness and safety risks of resetting of 24-hour periods. Confident advice cannot be provided due to a lack of available evidence. It would be anticipated that a longer major rest break and limiting the number of occasions that an overlapping 24-hour period could be used within a 7-day period would be beneficial for reducing risk; however, the magnitude of any potential benefits is unknown.

Assessment of combined changes

As discussed previously, it is expected that the proposed changes under section A would result in greater sleepiness impairments and safety risks compared to the current law. Given that a 24-hour period reset break would likely increase risk independently (section B changes), the combination of the proposed changes under section A and B would also be anticipated to increase risk. Nonetheless, direct evidence regarding the magnitude of the expected increase in risk is lacking.

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Appendix D. Calculating the cost of crashes

Safety analysis was conducted using data on heavy vehicle crashes in each state in the HVNL region, between the years of 2017-2020 (inclusive).

Key findings – current state heavy vehicle crash analysis

The highest total numbers of heavy vehicle crashes across the four-year analysis period were in NSW and QLD (5629 and 5630), followed by VIC (2993), SA (936), and TAS (395). At the time of writing, relevant data for the ACT is yet to be obtained. The highest proportion of fatal crashes were in Victoria, with 6.7%, and the lowest in QLD and NSW, both with 4%. Of those jurisdictions with fatigue data available, NSW had the highest proportion of fatigue-related crashes (7.4%) and Tasmania the lowest (2.5%).

A key finding was that vehicles in the 4.5-12 tonne cohort made up over 70% of all heavy vehicle crashes in NSW, but only 54% of fatigue-related heavy vehicle crashes in NSW. Similarly, fatigue was a factor in 7.4% of all NSW heavy vehicle crashes, but 5.6% of crashes involving the 4.5-12 tonne cohort. This suggests that the 4.5-12 tonne vehicle cohort is significantly less likely to be involved in a fatigue-related crash than heavy vehicles in higher tonnage cohorts.

Due to limitations in data availability, NSW proportions for these figures were considered approximations of national proportions when calculating the total cost of crashes.

Approach and limitations

Crash data used in calculating the cost of crashes was provided by jurisdictions, and as such there was some variation in data availability and quality. Analysis was undertaken on crash data from Queensland, Victoria, New South Wales, South Australia, and Tasmania. In all jurisdictions, only crashes involving a heavy vehicle were included in the dataset. Where specified in the datasets, only crashes involving a casualty (fatality, or minor or major injury) were included.

For NSW and Victoria, this classification was further broken down into a subcategory of vehicles weighing between 4.5 and 12 tonnes. The remaining jurisdictions data did not include this classification, so an assumption was made that the proportion of heavy vehicles in this category would be the same as the proportion in NSW (90%). The Victorian data was similarly proportioned (88%).

The crash data from Queensland, NSW, and Tasmania included a field to indicate whether the crash was fatigue related. Again, for jurisdictions which did not include this data, number of fatigue-related crashes were approximated using the proportion from NSW. There are limitations to the use of fatigue as a crash factor since it is difficult for this to be determined as a definitive cause. The figures used for fatigue-related crashes are conservative and likely under-reported. However, it should be noted that the fatigued driver indicated as a crash factor is not necessarily the driver of the heavy vehicle. Hence the data includes multi-vehicle crashes involving a heavy vehicle and a fatigued light vehicle driver.

Vehicle at fault was also taken into consideration. Victorian crash data identifies an ‘offending vehicle’, and SA data indicates “unit responsible”. For these jurisdictions, it was possible to identify for which crashes the heavy vehicle was at fault. NSW data identifies a “key vehicle”, defined as

the unit which made the major manoeuvre in a crash. This does not necessarily indicate fault, but this was assumed in this analysis. For the remaining jurisdictions, the number of heavy vehicles at fault were approximated using the proportion from the Victoria data.

Stakeholders are encouraged to provide information and evidence that could assist in quantifying these impacts.

Developing a national figure

To quantify a national cost for crashes, a number of assumptions were made. The figure used for breakeven analysis was made up of the fatigue-related crashes in the 4.5-12 tonne cohort. For NSW this figure came directly from the historical crash data. For Queensland and Tasmania, real fatigue figures from the data were proportioned into tonnage cohorts using the percentages from NSW. For Victoria, real tonnage cohort figures from the data were scaled for fatigue using the proportion of fatigue-related crashes in NSW. For SA, crash data was proportioned into fatigue-related and tonnage cohorts using the percentages in NSW.

For all jurisdictions, costs were attributed based on figures from the crash data which indicated whether the crash resulted in a fatality or injury. The national crash figures are made up of the sum of these crash figures from all jurisdictions.