Australian Government
Productivity Commission

National Transport Regulatory Reform

Productivity Commission Draft Report

November 2019

This is a draft report prepared for further public consultation and input. The Commission will finalise its report after these processes have taken place.

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Publications enquiries

Media, Publications and Web, phone: (03) 9653 2244 or email: mpw@pc.gov.au

The Productivity Commission

The Productivity Commission is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians. Its role, expressed most simply, is to help governments make better policies, in the long term interest of the Australian community.

The Commission's independence is underpinned by an Act of Parliament. Its processes and outputs are open to public scrutiny and are driven by concern for the wellbeing of the community as a whole.

Further information on the Productivity Commission can be obtained from the Commission's website (www.pc.gov.au).

Opportunity for further comment

You are invited to examine this draft report and comment on it by written submission to the Productivity Commission, preferably in electronic format, by 15 January 2020 and/or by attending a public hearing. Further information on how to provide a submission is included on the inquiry website: https://www.pc.gov.au/inquiries/current/transport/make-submission

The final report will be prepared after further submissions have been received and public hearings have been held and will be forwarded to the Australian Government by 3 April 2020.

Public hearing dates and venues

Location	Date	Venue
Adelaide	Wednesday 29 January	Hotel Grand Chancellor, 65 Hindley St, Adelaide
Sydney	Thursday 30 January	SMC Conference and Function Centre, 66 Goulburn St, Sydney
Brisbane	Friday 31 January	Flex, Level 1, Annex Building, 345 Queen Street Brisbane
Canberra	Tuesday 4 February	Dialogue, 4 National Circuit, Barton
Melbourne	Wednesday 5 February	Level 12, 530 Collins Street, Melbourne

Please note, public hearings are subject to interest and may be held in other locations, if required. Participation in public hearings is available via teleconference. Please visit the inquiry website www.pc.gov.au/inquiries/current/transport/public-hearings to register your interest in participating in a public hearing.

Commissioners

For the purposes of this inquiry and draft report, in accordance with section 40 of the *Productivity Commission Act 1998* the powers of the Productivity Commission have been exercised by:

Paul Lindwall	Presiding Commissioner
Ken Baxter	Commissioner
Malcolm Roberts	Commissioner

Terms of reference

I, Josh Frydenberg, Treasurer, pursuant to Parts 2 and 3 of the *Productivity Commission Act 1998*, hereby request that the Productivity Commission undertake an inquiry into national transport regulatory reform.

Background

Australian governments have been working collaboratively towards safer and more integrated national markets in transport arrangements for a number of years, with the aim of improved outcomes in freight and passenger transport markets.

In 2008-09, the Council of Australian Governments (COAG) agreed national transport reforms for heavy vehicles, rail safety, and domestic commercial vessels. Inter-Governmental Agreements (IGA) were agreed in 2011, specifying objectives for reform in each area. The IGAs provided for the establishment of national laws for each area, administered by newly established national regulators, the National Heavy Vehicle Regulator (NHVR), the Office of the National Rail Safety Regulator (ONRSR), and the National Marine Safety Regulator (NMSR). To help ensure that reforms progress as intended, COAG agreed in 2011 that the Productivity Commission would undertake an assessment of the economic benefits of reform once there had been progress with implementation.

Complementing earlier transport reforms, in July 2018, the Council of Australian Governments' Transport and Infrastructure Council agreed a framework for developing a 20-year national Freight and Supply Chain Strategy, which is being informed by the outcomes of the *Inquiry into National Freight and Supply Chain Priorities*.

Scope of the inquiry

The Productivity Commission is to investigate the long-run economic impacts of transport regulatory reforms agreed by COAG in 2008-09 relating to heavy vehicle safety and productivity, rail safety and maritime safety and to make recommendations for further reforms towards a more integrated national market for transport services.

In undertaking the inquiry, the Commission should examine:

1. the benefits accrued from each reform stream (heavy vehicle, rail safety and maritime safety). In assessing the economy-wide impacts, the Commission should consider:

(a) the benefits derived directly to the transport industry

(b) the benefits derived for the community from consistent national safety regulation

(c) the benefits derived through the transport industry's role as an input to other industries

(d) the impact of cross border consistency for industry and governments

(e) relevant global or domestic changes impacting the transport economy since 2008

(f) the most important contributors to the benefits of transport reforms.

2. the implementation and development of the three national regulators (heavy vehicle, rail safety, and maritime safety), and the delivery against agreed objectives as set out in the IGAs and COAG priorities for transport. The Commission should also consider the capacity of local governments in supporting the implementation.
3. opportunities for reform to further integrate and harmonise the regulation of the national freight market, and the current focus and remit of ONRSR, NMSR and NHVR.

The Commission should also take into account the broader reform objectives and goals identified in the COAG Communiqués of 2008-09 and associated intergovernmental agreements, as well as in relevant IGAs implemented since.

The Commission should have regard to work being undertaken by the Commonwealth, States and Territories on complementary reforms including (but not limited to) rail standards harmonisation and interoperability, improved network access for higher productivity vehicles and the development of the National Freight and Supply Chain Strategy.

In undertaking its analysis, the Commission should exclude reform measures being progressed separately, such as cost reflective heavy vehicle pricing, as far as is practicable.

Process

The Commission is to undertake an appropriate public consultation process including holding hearings, inviting public submissions and releasing a draft report to the public.

The Commission should complete the inquiry within 12 months of its commencement.

The Hon Josh Frydenberg MP
Treasurer

[Received 5 April 2019]

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Acknowledgments

The Commission has used information from a range of sources in preparing this report. The Commission is grateful for the contributions made by individuals and organisations through their submissions and brief comments and their participation in meetings.

In particular, the Commission would like to acknowledge the National Heavy Vehicle Regulator, the Office of the National Rail Safety Regulator and the Australian Maritime Safety Authority. Each of these agencies provided the Commission with unpublished data that has formed an important part of the analysis for this draft report.

The Commission would also like to thank:

- Kellie Boland from Boland Transport and Marla Stone from Livestock & Rural Transporters Association of Victoria, who provided valuable insight to staff about how to engage with individual truck drivers
- the Bureau of Infrastructure, Transport and Regional Economics (BITRE), for its assistance in facilitating the Commission's request to State and Territory road safety authorities to gain access to, and get clearance to publish analysis using, the National Crash Database.

OVERVIEW

Key points

- COAG's reforms established national laws and regulators for heavy vehicles, rail, and domestic commercial vessels. After eight years, the transition is nearly complete.
- Reform has delivered more consistent regulation across most jurisdictions and is likely to have reduced compliance costs for some operators. Reform has lifted productivity by improving road access for larger, more efficient trucks.
- Unfinished business remains:
  - Western Australia and the Northern Territory do not participate in the national heavy vehicle regime
  - the national regulators have yet to assume full responsibility for enforcement
  - derogations from the national heavy vehicle and rail laws in some jurisdictions create unjustifiable compliance burdens for businesses
  - some grandfathering of domestic commercial vessels poses a risk to safety
  - approval processes for access to local roads can still be inconsistent, slow and lack transparency.
- Reform was expected to unlock large efficiency gains for heavy vehicle operators. While gains have been made, these forecasts were optimistic and have not been achieved.
- By most measures, safety has continued to improve since 2011. At present, it is unlikely that the recent reforms have contributed to additional improvement to safety outcomes.
- There are significant opportunities for COAG, regulators and industry to further improve productivity and safety.
- A new COAG agenda for the three sectors should build on the regulatory reforms by:
  - accelerating reform of infrastructure planning and management, including the Heavy Vehicle Road Reform agenda and trials of road user charging
  - removing unjustified derogations and grandfathering, using risk-based assessments of the evidence
  - strengthening the safety culture of industry through education and regulatory incentives for capable businesses to switch from 'tick the box' compliance to accredited, risk-based safety management systems
  - realising the full potential of new data technologies to improve safety and productivity
  - removing regulatory barriers — such as some Australian Design Rules — to the early adoption of new technologies which can lift productivity and improve safety.

Overview

Background

Transportation by land, sea, and air is vital to Australia's modern economy. The physical movement of goods, passengers, and raw materials accounts for 4.5 per cent of Australia's annual GDP. The freight supply chain connects virtually all sectors of the economy, facilitating domestic and international trade and production. The efficiency of freight in Australia affects the costs of domestic production, competition and productivity in various industries, and the prices of consumer goods.

Safety is the focus of much of the regulation in the transport sector and is the principal focus of this inquiry. Transport is inherently risky, and governments have a legitimate role in ensuring that safety standards are not compromised by commercial pressures. At the same time, governments and regulators must consider how best to achieve safety objectives while minimising costs to businesses and taxpayers. Properly designed regulation can lead to both improved safety and increased productivity — there is no intrinsic need to trade off safety for productivity.

The reforms at the focus of this inquiry

In 2009 the Council of Australian Governments (COAG) endorsed an historic shift to national regulation of heavy vehicles, rail, and domestic commercial vessels (DCVs), as part of the Seamless National Economy agenda. The reforms focused on the harmonisation of safety regulation for domestic commercial transport (figure 1). Replacing multiple State and Territory regulatory regimes with consistent national regulation for each sector was expected to improve safety and productivity.

After the signing of three intergovernmental agreements in 2011, governments developed national laws for each sector: the Heavy Vehicle National Law (HVNL), the Rail Safety National Law (RSNL), and the Marine Safety (Domestic Commercial Vessel) National Law (MSNL). Jurisdictions also began transferring powers to the new national regulators. The National Heavy Vehicle Regulator (NHVR) and the Office of the National Rail Safety Regulator (ONRSR) were established in 2012 and 2013 respectively. Regulation of domestic commercial vessels was transferred to the Australian Maritime Safety Authority (AMSA) in 2018.

Figure 1 **COAG transport reforms in a broader regulatory context**

	Heavy Vehicle	Rail	Maritime
2009 COAG reforms	**National regulatory regime** • Heavy Vehicle National Law • National Heavy Vehicle Regulator	**National regulatory regime** • Rail Safety National Law • Office of the National Rail Safety Regulator	**National regulatory regime** • Marine Safety (Domestic Commercial Vessel) National Law • Australian Maritime Safety Authority
	Applies to: All heavy vehicles >4.5t • Freight haulage • Oversize, overmass • Construction transport • Passenger buses	**Applies to:** All above and below rail operations • Freight rail • Passenger rail (excludes some light rail and tourist rail)	**Applies to:** Domestic Commercial Vessels - operating only within Australian waters • Passenger • Fishing • Hire and drive • Tourism
Other safety regulations	• Australian Road Rules • Manufacturing standards • Public safety and amenity • Workplace Health and Safety	• Manufacturing standards • Work Health and Safety	• Recreational vessels • Australian and foreign vessels covered under the *Navigation Act 2012* • Work Health and Safety
Other areas of transport policy	• Infrastructure provision, access and maintenance • Dangerous goods • Commercial incentives • Technological advancements	• Infrastructure provision, access and maintenance • Commercial incentives • Technological advancements	• Port access and maintenance • Fisheries management • Commercial incentives • Technological advancements
Other reviews and inquiries	• National Freight and Supply Chain Strategy		
	• HVNL review (NTC) • Heavy Vehicle Road Reform (TIC)	• Review of rail access regimes (DIRDC)	• Senate Inquiry into AMSA

What have we been asked to do?

The terms of reference set out three tasks for the Commission:

1. investigate the economic impacts of the 2008-09 COAG transport reforms
2. examine the implementation of the national transport regulation reforms, including the development of the three national regulators; the capacity of local governments in supporting the implementation; and the delivery against agreed COAG and intergovernmental agreement (IGA) objectives
3. assess the scope for future reforms to national transport regulation, including areas for further harmonisation and integration of the transport sector and the remit of the regulators.

The Commission has been asked to take account of the broader objectives of the 2008-09 COAG reforms, other associated intergovernmental agreements, and complementary reforms at the Commonwealth, State and Territory levels. These reforms include (but are not limited to) rail standards harmonisation and interoperability; improved network access for higher productivity vehicles; the National Freight and Supply Chain Strategy; and the broader Heavy Vehicle Road Reform agenda of the Transport and Infrastructure Council (TIC).

The Commission's task

The terms of reference set two major challenges for the Commission. The first challenge is to assess the implementation and economic impact of the COAG reforms. This assessment may also yield insights into how harmonisation can be pursued in the Australian federation.

The second challenge is to identify new reforms which could advance the objectives of the 2009 COAG reforms. In 2009, harmonisation was a practical, co-operative reform to improve safety and lower business costs. In 2019, with harmonisation largely achieved, the next opportunities for reform will be different: new, more flexible approaches to safety regulation, policy changes in critical areas such as infrastructure provision and funding, and using emerging technologies to lift both safety and productivity.

The Commission's approach to assessing impacts

The Commission has endeavoured to access the best available data to provide empirical evidence about safety and productivity. However, assembling the data has taken time and the data are often incomplete or inconsistent (or, at times, non-existent). Further, the implementation of the regulatory reforms has taken place over many years and there is no neat dividing line between pre-reform and post-reform periods. Some aspects of reform are recent, while other aspects predate the COAG reforms. Isolating the impact of one factor (regulation) when many factors are at work is inevitably contentious. Consequently, the assessment relies on a holistic body of evidence. This includes qualitative and quantitative

evidence, as well as substantial industry consultation. Further analysis will be undertaken for the final report.

The COAG reforms may prove, in time, to have contributed to improvement in safety outcomes. Some policy changes are designed to contribute to longer-term improvements, and their benefits may not yet be apparent. The evidence so far does not suggest that harmonisation has had a negative effect on safety; across most measures, safety outcomes have improved over the past decade.

Implementation and progress

Implementing the harmonisation agenda has been slower than expected, and the transition to national regulation has been uneven. After eight years, the COAG aim of seamless national regulation of heavy vehicles, rail and domestic commercial vessels is still incomplete.

National systems are in place

The primary goals of the harmonisation agenda have been achieved — national laws and regulators have been established for heavy vehicles, rail, and domestic commercial vessels. The HVNL replaced 13 model laws and six State and Territory transport related laws. The RSNL replaced 46 pieces of Commonwealth, State, and Territory law, and created a single national rail safety regulator. The MSNL replaced eight Commonwealth, State and Territory laws with a single framework for the certification, construction, equipment design, operation and administration related to domestic commercial vessels in Australian waters.

Different starting points in each mode

The scale of the harmonisation task across the three modes of transport has been considerable, partly due to the wide variations between State and Territory regulations. Heavy vehicle and rail regulation benefited from model laws and regulations developed by the National Transport Commission (NTC) before the 2009 COAG Agreement, although implementation was piecemeal. The HVNL and RSNL have been built on those early reforms.

By contrast, no model laws were developed for domestic commercial vessels before the 2009 COAG Agreement, resulting in highly inconsistent requirements across the country.

Regulation has been harmonised to a degree

The degree of harmonisation of transport regulation can be assessed in two ways: on the degree to which a national system exists in legislation and regulation; and the extent to which operators experience different regulatory requirements in different jurisdictions.

Two jurisdictions remain outside the heavy vehicle regime

Western Australia and the Northern Territory have not adopted the HVNL, choosing to retain their own regulatory regimes. Both jurisdictions apply a less prescriptive approach than the HVNL, and both consider that their legislation is better suited for local conditions while delivering at least comparable safety and productivity benefits. In the case of Western Australia, most interstate freight is delivered by rail rather than road, reducing (but not eliminating) the regulatory costs of different regimes across jurisdictions.

Derogations exist among signatory jurisdictions

When enacting the national laws, some jurisdictions have chosen to exclude, add to, or modify sections of the national law in their jurisdictions ('derogations'). Many derogations are administrative or technical in nature with limited practical effect. In some cases, derogations act to make the law more flexible and less prescriptive. However, in other cases, derogations are substantial and have significant effects on operators.

There are over 70 derogations from the HVNL, with 25 in New South Wales alone. Enforcement provisions account for most derogations in the HVNL, creating inconsistent application of enforcement powers. One significant inconsistency relates to periodic vehicle inspections, which are required annually in some jurisdictions but not at all in other jurisdictions.

There are over 80 derogations from the RSNL. Four main areas have been identified by industry as significant issues: hours-of-work rules to manage fatigue; drug and alcohol testing; requirements for data logging equipment; and lags caused by the use of mirror legislation.

Mirror legislation can cause lags

The national laws have been implemented by States and Territories in two different ways. Jurisdictions that are signatory to the national laws (other than those hosting the legislative instruments) are required to apply the national laws by either referring to, or mirroring, the host legislation. The latter involves enacting separate State legislation which must be amended every time the national law is changed. Western Australia uses mirror legislation for the RSNL, as does South Australia for the HVNL.

Whether national laws are adopted via application or mirror legislation affects national consistency. Using mirror legislation means that changes to the national law require each State parliament to pass amendments to their State law. This takes time, with the result that the host and State mirror laws are inconsistent during that period. Inconsistencies with the RSNL have lasted up to two years.

Some residual State and Territory responsibilities remain

The national regulators have engaged in service level agreements (SLAs) with State and Territory Governments as a transitional measure. SLAs allowed for the national law to be enforced and administered by existing regulators before the newly established regulator has fully developed its capacity and systems. The application of SLAs was uneven. Some State and Territory Governments opted to not enter agreements, while others established SLAs with some or all three of the regulators. Differences exist across jurisdictions about which functions remain with States and Territories and which have been transferred to the national regulators.

The use of SLAs mean that some State and Territory Governments retain responsibilities for transport regulation and enforcement that were nominally assigned to the national regulators. Inconsistency across jurisdictions means that regulated parties need to familiarise themselves with who is responsible for what in each jurisdiction. While the differences can be subtle, they add to the cost and complexity of doing business, especially if there is uncertainty about how national laws are applied in practice. The national regulators in heavy vehicle and rail have stated that they intend to terminate the remaining SLAs within the next few years.

Some grandfathering provisions are increasing safety risks

Grandfathering arrangements in the MSNL allow a significant number of vessels to continue operating under old (State-based) regulations rather than the new regulations. Grandfathering applies to vessel build and maintenance standards, as well as survey, crewing, and competency requirements. The effect of grandfathering can be significant. For example, in some States there was no requirement for regular vessel surveys before the COAG reforms. The grandfathering of these vessels means they may be substantially less safe than equivalent vessels operating in other States.

Vessels can retain their grandfathered status if sold to an owner who continues to operate it for the same purpose. There is anecdotal evidence that grandfathered vessels may command a premium in the market when compared with purchasing new vessels meeting safety requirements. This creates windfall gains for owners of grandfathered vessels, while the vessels and their operation potentially could be unsafe.

Above rail operators face inconsistencies between rail networks

Despite being covered by one national regulator and one national law, rail operators can experience multiple operating regimes, especially when traversing different track infrastructure. One legacy of railway networks being built by separate jurisdictions is different engineering standards for trains and track equipment. Above rail operators often require approvals from rail infrastructure managers for cross-border routes and for moving rolling stock between rail networks. In some cases, this has led to lags for operators seeking to operate the same rolling stock in different jurisdictions.

There are thirteen rail infrastructure managers operating networks in Australia, with potential differences in systems, processes and technologies.

Overall, inconsistencies between rail infrastructure procedures inhibit the scope for rail businesses to operate across the country, reducing the potential productivity, competition and safety benefits. Resolutions to these inconsistencies are beyond the scope of ONRSR's responsibilities. In some cases, harmonisation of track technologies or radio systems may not be economically viable. There may be more scope for consistency if technology evolves away from track-based signalling and towards equipment on-board the rolling stock.

Transitional issues

The transition from State-based regulation to a national system has required co-operation between the Australian, State and Territory Governments and the national and State-based regulators. Some criticisms of the national system may reflect transitional issues likely to diminish as implementation continues.

Transferring responsibilities and resources

New South Wales, Queensland and Victoria are yet to transfer regulatory responsibilities fully to the NHVR. A NSW handover will not occur before 30 June 2020. Queensland's transition is due to commence in 2020-21. Victoria is yet to agree a final timetable. To carry out their responsibilities, the national regulators have recruited or absorbed State and Territory Government staff.

Managing these staff movements has been challenging. The transfer of staff from State regulators to national regulators has been unwieldy, creating management challenges for the regulators. Delays in staff movement have delayed the national regulators achieving full operational capability.

Developing national regulators and their systems

Establishing national regulators has required the development of various operational systems, including systems for enforcement and record keeping. This has been a complex process. For example, data collection by State and Territory regulators was often inconsistent or incomplete, with the result that the national regulators started with information deficits.

Core systems have had to be developed. Under the HVNL, the NHVR accepted responsibility for processing road access permits for restricted access vehicles. However, when the NHVR was launched, the processing system almost immediately failed to cope with the unexpectedly high volume of applications. The functions had to be returned to State and Territory Governments. This failure may have been averted if a pilot program or similar transitional mechanism had been used.

Each of the national regulators has developed their capabilities over time. The degree of progress for each regulator has been influenced by the scale and nature of their respective tasks and the time and resources allocated to the task.

Given that AMSA formally assumed responsibility for administering the MSNL in July 2018, it has had less time to adapt to the role than the NHVR and ONRSR. In its first year, AMSA has already implemented various changes, including altering its survey and inspection regimes and building service delivery capacity. For industry, this has meant that the new regulatory regime is still being implemented. However, AMSA should have made more progress in building its systems and capabilities following the 2014 Australian Government announcement that AMSA would assume responsibilities as the national marine safety regulator.

Have the objectives been achieved?

The Intergovernmental Agreements signed in 2011 set out COAG's objectives and intended outcomes from the national transport reforms (table 1).

COAG's aim was to improve safety and productivity in the sectors and address impediments to competition and distortions in the allocation of resources in the economy.

Productivity gains from improved access for heavy vehicles

The 2008-09 COAG reforms sought to increase road access for heavy vehicles by changing the decision-making processes for access and by creating a national regulator to facilitate the changes. Large productivity gains were expected from improving access to the road network for newer, larger, and safer heavy vehicles, through:

- greater transparency in the decision-making process

- encouraging road managers to make decisions consistent with guidance provided by the NHVR.

Significant progress is being made to put such systems in place. Progress has also been made in gaining the agreement of road managers to gazette routes to allow as-of-right access for restricted access vehicles. The NHVR has also worked with road managers to gain pre-approvals, allowing it to approve access immediately without referral to local authorities.

Table 1 **Key elements of COAG's transport IGAs**

	Heavy Vehicle IGA	*Rail IGA*	*Maritime IGA*
Signatories	All States and Territories except Western Australia	All States and Territories	All States and Territories
Objectives	• Seamless national regulation • Consistent and streamlined administration and service provision of regulation	• Seamless national safety regulation of rail operations • Improved rail safety	• Safe operations with effective, consistent and efficient regulation • Minimise legal and administrative costs • No overall increase in regulatory burden
Intended outcomes	• Enhanced safety, productivity and efficiency • Removal of inefficiencies from inconsistent jurisdictional requirements • Reduced regulatory burden and compliance costs	• Promotion of safety and safety improvement • Improved productivity and efficiencies from consistent national requirements • Decreased regulatory burden	• Improved safety and lower public, industry and environmental risks • Reduced complexity and increased certainty re. design, construction, equipment, operation and crew certification • Remove inter-state barriers to transfer of labour and commercial vessels
Intended outputs	• A national law • An independent national regulator • National standards for delivery of regulatory services and activities • NHVR and Government service level agreements to support implementation of the national system	• A national law • An independent national regulator • Expansion of the Australian Transport Safety Bureau's role to cover rail safety investigations nationally	• A national law • An independent national regulator • A national compliance and enforcement system, consistently applied • A national database of domestic commercial vessels

The value of improvements to heavy vehicle access management were initially estimated in the Regulation Impact Statement to be around $9 billion over 20 years in net present value. These estimates included access for restricted vehicles, including Performance Based Standards (PBS) vehicles and vehicles operating at higher mass limits and concessional mass limits. It is still too early to determine whether these benefits will be achieved, although growing numbers of PBS and other large vehicles suggest some efficiency gains are being delivered. Although access is improving, it is substantially less than originally envisaged

(which was ambitious). Further substantial productivity benefits are unlikely to be achieved without other complementary reforms, including the National Heavy Road Reform agenda being developed by the Transport and Infrastructure Council.

Direct gains from removing duplication of regulation

The removal of inter-jurisdictional differences or duplication is likely to have resulted in some efficiency gains, although the gains may not always be readily observable (or large). Some of the intended efficiency gains have been confirmed anecdotally. For example, the ability to recognise marine qualifications nationally has improved operators' ability to hire staff from interstate. Similar efficiencies are emerging in the rail sector as contractors find it easier to work across jurisdictional boundaries. Again, these efficiency gains are not easy to measure.

Progress in transport safety policy

Some changes to transport safety policy are likely to contribute to better safety in the longer term, though their benefits may not be evident at this stage. Some reforms have resulted in structural or systemic improvements to safety risk factors (box 1).

Box 1 Examples of improved safety policy under the national regimes

Chain of Responsibility (heavy vehicle)

In heavy vehicle transport, Chain of Responsibility (CoR) laws assign safety responsibilities to parties within the supply chain (for example, transport operators, clients), making them accountable for breaches or safety incidents where they have influenced non-compliance. In principle, CoR laws not only recognise that safety outcomes are influenced by many factors, but that driver behaviour can be influenced significantly by systemic factors. Several stakeholders have noted the potential importance of CoR laws to achieving better safety outcomes, although given their recent introduction into the HVNL, there is little evidence yet of its effectiveness.

Fatigue management and accreditation (heavy vehicle)

While there remain various areas where fatigue management could be improved, there has also been incremental progress on the issue as a result of the harmonisation agenda. All jurisdictions across Australia have some form of fatigue management regulation in place for heavy vehicles, though this differs in application between Western Australia, the Northern Territory, and HVNL jurisdictions.

Developments have also occurred in heavy vehicle accreditation. It has so far helped to provide structure and oversight to operators' safety management, and in return, allowed operators some level of regulatory concession and flexibility.

Co-regulation (rail)

In rail transport, many of the substantive changes to safety regulation involve the use of accreditation. ONRSR appears to be effective in managing a risk-based approach, targeting activity to operators with higher risk profiles. ONRSR uses accreditation of operator safety management systems to allow greater intervention when necessary, but a lighter touch for capable operators undertaking low risk activities or managing risks well.

Interface agreements (rail)

Another positive development has been the use of interface agreements as the main way of managing level crossing safety under the RSNL. The law requires that rail transport operators and/or road managers (typically local governments) enter into an agreement to coordinate their management of safety risks at interfaces. Level crossings are a key area of safety risk. It is valuable to assign management of this safety issue to the party best able to control this risk.

Safety equipment and general raising of standards (maritime)

In maritime transport, some of the most significant improvements in safety regulation relate to aspects of grandfathering provisions that have been progressively wound back by AMSA. These include minimum standards for on-board safety equipment, such as float-free EPIRBs.

In addition, moving to a national system has meant, in some cases, an increase in the stringency of regulation. For example, some smaller commercial vessels in Queensland had previously not been subject to a surveying regime at all. However, the overall impact on safety also varies between newer and older vessels, due to grandfathering provisions.

Areas where the impacts of harmonisation are small or unclear

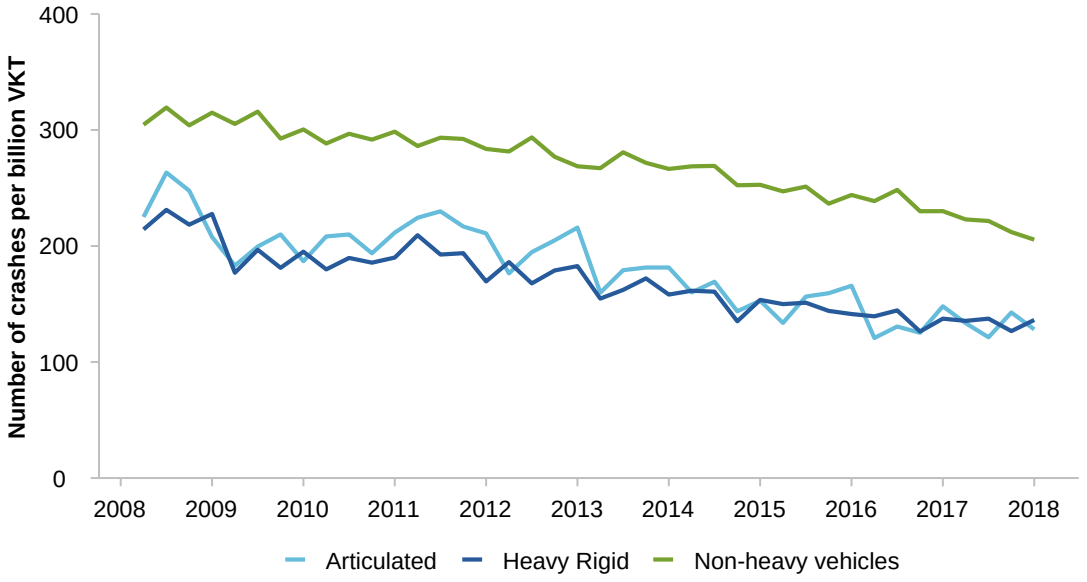
Safety outcomes have been relatively consistent

There have been significant improvements in heavy vehicle safety over the past decade. As shown in figure 2, the number of heavy vehicle crashes involving injury or death (per billion vehicle kilometres travelled) decreased by about 40 per cent between 2008 and 2018.

This rate of decline has been similar for all types of vehicles, indicating that the overall downward trend is likely to be due to factors affecting all vehicle types. These factors may include improvements in road infrastructure and maintenance, better driver education and training, increased or better targeting of road rules enforcement, or improvements in vehicle design and their safety features.

Figure 2 **Heavy vehicle safety outcomes have improved over time**

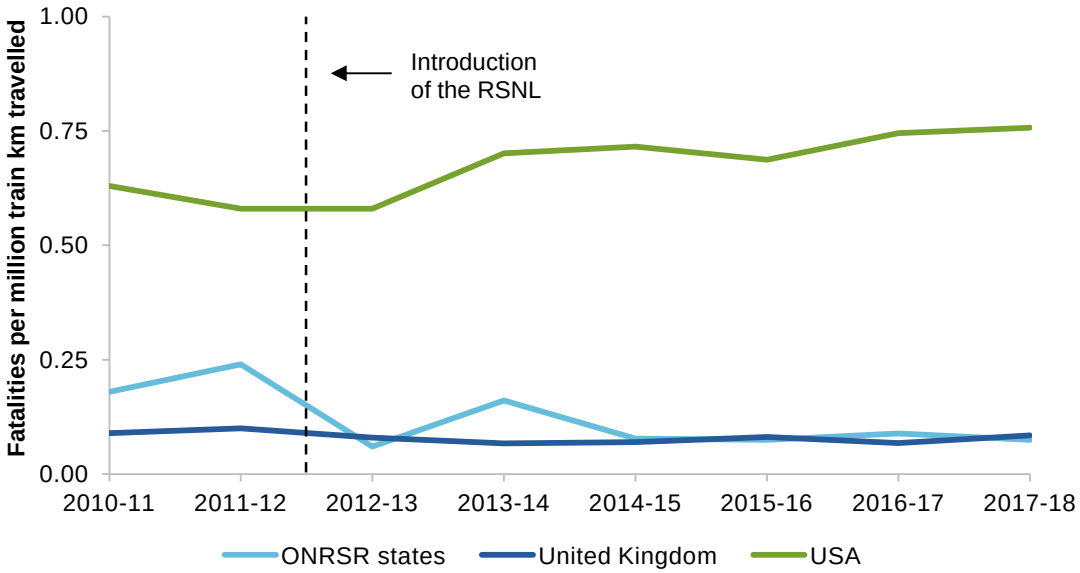
Crashes involving injury or death per billion vehicle kilometres travelled (VKT)



The numbers of fatalities or serious injuries associated with the rail sector are low, particularly if trespass and death by suicide are excluded. To assess the potential impact of the rail national law on rail safety, an analysis has been undertaken of trends in fatalities, level crossing incidence reports, collisions and derailments. The evidence suggests that safety outcomes have been constant and comparatively positive by international standards (figure 3).

Figure 3 **Rail related fatalities have fallen**

Fatalities per million train kilometers travelled



Relative to other modes of transport, the number of fatalities or serious injuries associated with domestic commercial vessels is low. Data collected by AMSA show that there were 62 fatalities involving domestic commercial vessels in Australia between 1 July 2013 and June 2019 (figure 4). That said, some fatalities reported are due to natural causes, and are unlikely to be avoided through safety regulation directly under AMSA's remit.

Data on the number of reported safety incidents for selected jurisdictions indicates that there has been no significant improvement in incident rates since the introduction of the MSNL in 2013 (figure 5).

Mixed and missing evidence on compliance costs

The impact of harmonisation on compliance costs depends partly on the nature and extent of compliance costs before the COAG reforms. In the case of maritime transport, due to the differences between regulatory regimes before the national system, the MSNL has had mixed effects on compliance costs. In some jurisdictions, operators of smaller vessels have experienced significant increases in compliance burden. In other jurisdictions, operators have seen the stringency of regulatory requirements reduced, potentially reducing regulatory burden. The overall impact on compliance costs also varies between newer and older vessels, due to grandfathering provisions.

Figure 4 **Fatalities associated with domestic commercial vessels**

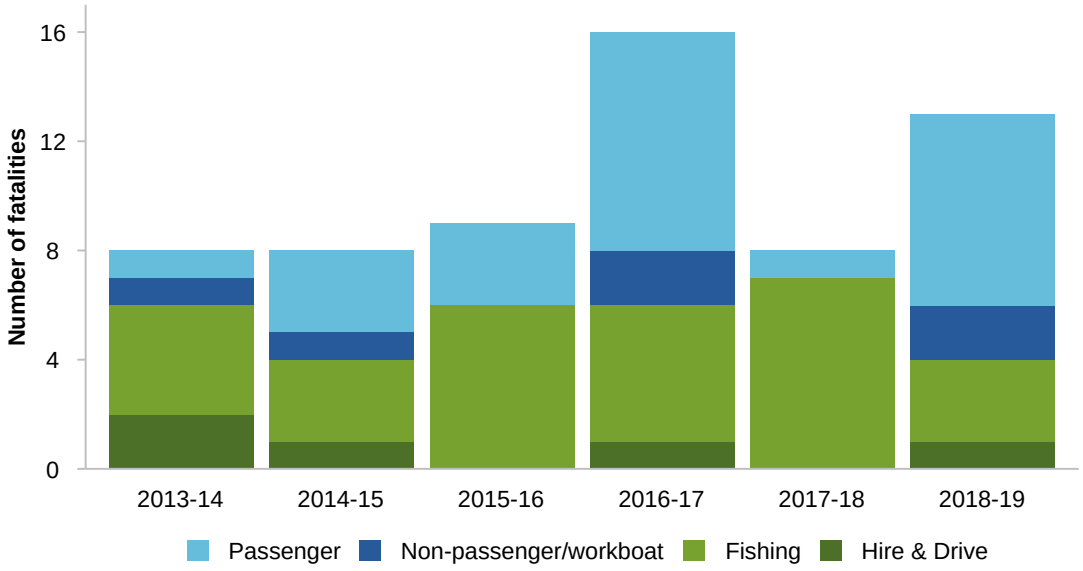
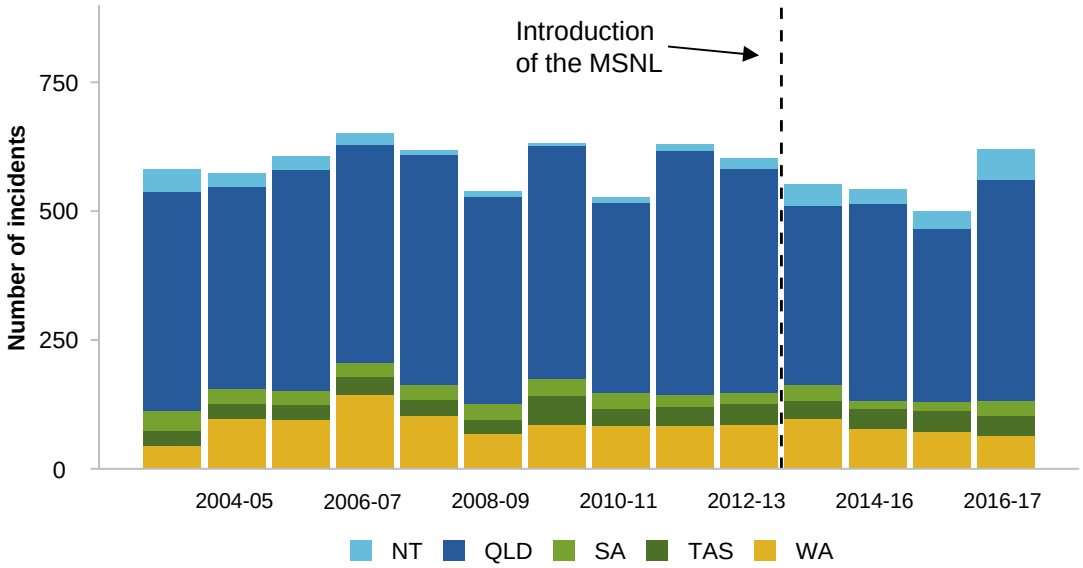


Figure 5 **There has been no significant change in safety incidents since the introduction of the MSNL**

Number of maritime incidents, July 2003 - June 2017



It is unclear whether the national laws have led to operators devoting more time or resources to compliance. Across all three modes of transport, submissions suggested that the current instruments can be unnecessarily complex and need simplification. For the many small

operators of heavy vehicles and domestic commercial vessels, some key requirements seem complicated if not confusing.

Given that the HVNL contains almost 800 sections (plus 5 sets of regulations), it is not surprising that the law has been described as complex. The length of the HVNL is due largely to its prescriptive nature. For some operators, prescription has the benefit of certainty. These operators prefer clear direction from the regulators. By the same token, many operators have reportedly encountered uncertainty as a result of the NHVR moving to a more flexible approach under Chain of Responsibility regulation. To this end, the NTC is reviewing the HVNL.

Further action is required

There are aspects of the national regulatory regimes that could be improved. Some issues are transitional and are likely to diminish as implementation draws to a close. For other areas, further action is needed by regulators and governments.

The experiences of harmonising transport regulation have yielded several lessons that could be relevant when undertaking other reform initiatives involving harmonisation (box 2).

Access and permits (heavy vehicle)

While some productivity gains have been achieved with respect to heavy vehicle access, processing times for some access approvals remain problematic. Some issues could be addressed by changes to the HVNL, for example, where governments could improve the permit regime by simplifying the categories of heavy vehicles (thereby facilitating road manager assessments).

However, the greatest benefit would arise from increasing the use of gazettal notices that allow as-of-right access. This would remove the need for operators to apply for once-off permits. In addition, greater use could be made of pre-approval arrangements, which allow the NHVR to approve permit applications for a given route (subject to clear constraints such as time of day access), without further approval from local government. An increasing number of local governments have agreed to use either or both instruments, reducing the number of permit applications requiring case by case decisions by local governments.

Gains would also arise from building capability for infrastructure managers (State, Territory, and local governments), which would have implications not only for access, but also for infrastructure provision. This may require more fundamental reforms by State, Territory, and local governments, and are discussed below in the forward-looking agenda.

Box 2 Lessons learned about harmonisation

Transport is one of several industries highlighted by the 2008 Seamless National Economy agreement as suitable for regulatory harmonisation. The lessons learned so far from the implementation of the harmonisation agenda in transport may inform other policy initiatives where harmonisation is intended. Some of the key lessons are outlined below.

The ideal form and degree of harmonisation differs case by case

The question of whether or how to pursue national consistency is not straightforward. Inconsistencies between jurisdictions may have significant implications for safety or productivity. Where this is the case, governments should consider whether moves toward consistency are supported by evidence and, if so, whether the appropriate course of action is via uniformity, mutual recognition, or greater flexibility.

Making use of the pre-implementation phase

As noted above, the scale of the harmonisation task is shaped partly by the extent of disparity between State and Territory regimes. In heavy vehicle and rail regulation, some progress toward harmonisation was made before the 2009 COAG agreements, through the use of model laws. On the other hand, the regulation of domestic commercial vessels (prior to the 2009 COAG agreements) stands out as an example of vastly different and inconsistent regulatory approaches. Moreover, in the period before AMSA became the national regulator for domestic commercial vessels, little progress was made by State and Territory Governments to gradually move their regulatory regimes towards harmonisation.

Consolidating State and Territory datasets may be difficult

In cases where the harmonisation task involves the establishment of a national regulator, this is likely to require administrative data to be collated centrally from States and Territories, perhaps for the first time, into a central database. By their nature, jurisdiction-specific regimes would have placed limited value on maintaining consistency with other jurisdictions in either the form or detail of their datasets. A considerable amount of time and resources may be needed for this task in particular, and data should be shared with the national regulator as early as possible.

Regulator resourcing should be certain

The 2009 COAG reforms brought together activities previously undertaken by the States and Territories, offering the potential for economies of scale. Evidence suggests that, so far, these efficiencies are unlikely to have been realised, at least for the NHVR and ONRSR. This is not surprising, given that transfers of staff and responsibility are still occurring and given the complexities that have been faced by each regulator.

However, prolonged uncertainty over funding can limit a regulator's ability to effectively provide services in the short term or to plan service levels in the longer term. This has been the case to some degree in maritime transport, where the approach to cost recovery will not be determined until 2021 — eight years after the implementation of the MSNL. Any barriers to service delivery or forward planning will have implications for the effectiveness of the regulator, and thereby, for safety outcomes.

(continued next page)

Box 2 (continued)

Transitioning mechanisms should include sun-setting provisions

Grandfathering arrangements allow certain operators to continue operating under old (State and Territory) regulations rather than under new regulations. The use of grandfathering is itself a clear impediment to national consistency. In maritime transport, the use of grandfathering has extended beyond its intended transitional nature, and has resulted in prolonged inconsistency.

Similarly, Service Level Agreements (SLAs) are undoubtedly a useful tool in aiding the implementation of and transition to a national law and national regulator. They may allow for a smoother and more gradual transition from one regulator to another, potentially providing regulated businesses with more guidance and notice. At the same time, the extended use of SLAs during implementation may prolong the time required for a national regulator to reach maturity.

Using an applied laws approach aids harmonisation

Where national laws are implemented, some jurisdictions may choose not to adopt them outright. Usually this occurs when there are concerns about jurisdictional sovereignty. For example, a mirror approach could be used in place of an applied laws approach.

In the short term, a mirror approach leads to an identical result to an applied laws approach, where the host law is replicated directly into a model instrument. However, whenever the national law is amended within the host jurisdiction, there may be a lag before the mirroring jurisdiction is able to pass amendment legislation, causing inconsistencies in the meantime. Where a mirror jurisdiction ultimately agrees to pass the amendments in full, any lags due to the mirroring process are wasteful and unnecessary.

An applied laws approach is more conducive to national consistency than a mirror law approach. Mirroring should not be the preferred approach for harmonisation, however it is preferable (especially in the short term) to an agreement not being reached with a jurisdiction, resulting in them remaining a non-signatory. Despite its flaws, a mirroring approach generally provides a greater degree of national consistency than a situation where jurisdictions opt out of national laws.

Implementation progress is beholden to incremental negotiation

The difficulty of implementing reforms across the States and Territories has been longstanding. This reflects not only the inherent difficulty in creating a uniform regulation that applies well in each jurisdiction, but also the difficulty of achieving unanimous agreement from the governments of all jurisdictions.

The model of harmonisation for heavy vehicle, rail, and domestic commercial vessel transport has been one that has required initial and ongoing agreement between COAG members. This partly explains the extended timeframe for implementation of the harmonisation reforms.

Even eight years after the signing of the heavy vehicle IGA, some form of negotiation involving State and Territory Governments are ongoing. This includes, for example, pending agreements on the terms under which jurisdictions will transfer regulatory services under the HVNL back to the NHVR. Negotiations will also continue between COAG members about cost-recovery arrangements for AMSA, due to be resolved in 2021, pending a review.

Fatigue management and flexibility (heavy vehicle)

The effective management of fatigue is critical to safety and should not be compromised. However, evidence from heavy vehicle operators indicates that prescriptive fatigue management can have perverse effects, compelling drivers to take risks to comply with the rules. There is frustration with compliance activities, such as maintaining work diaries.

Restrictions on working hours are unavoidable and are indirect measures for managing fatigue. While a limit on working hours is sensible, there is inevitably debate on the actual limits. The regulator already has discretion to permit more flexible arrangements where an operator can show that safety will be maintained. Basic and Advanced Fatigue Management Accreditation under the National Heavy Vehicle Accreditation Scheme (NHVAS) allow operators to work extended hours. Advanced Fatigue Management Accreditation allows an operator to propose its own working hours, supported by in-house fatigue management practices.

Subject to advice from the NTC review into driver fatigue management, governments should amend the HVNL to allow the NHVR to more easily provide regulatory concessions from prescribed aspects of fatigue management regulation, where it is satisfied that more effective systems of fatigue management are in place. Alternatively, the NHVR should make use of its existing powers by amending its accreditation schemes to recognise technology-enabled management systems, and/or accredited management systems. However, some outer limits on hours of operation should remain.

Accreditation (heavy vehicle)

There are three accreditation schemes for heavy vehicles: the NHVAS, TruckSafe, and the Western Australian Heavy Vehicle Accreditation (WAHVA). While participation in the NHVAS and TruckSafe are voluntary, accreditation under WAHVA is compulsory for operators using restricted access vehicles in Western Australia.

Accreditation through the NHVAS offers an operator regulatory concessions (for example higher mass limits, extended working hours) conditional on having an approved safety management system. It is estimated that about 20 per cent of operators are accredited.

TruckSafe is an initiative by the Australian Trucking Association and the Australian Logistics Council to raise professional and safety standards. The scheme requires operators to meet a set of minimum standards across key areas such as fatigue management. Membership of the scheme may assist an operator to satisfy obligations under Chain of Responsibility legislation.

The operation of accreditation schemes has been examined by the Medlock review (2018). The review recommended improvements to accreditation, including a single national framework which would extend regulatory concessions to members of all accredited schemes. Processes are underway to implement the recommendations from the Medlock

review, with an NHVR working group set to provide further recommendations to State and Territory Governments.

Fatigue management derogations (rail)

It may be valuable for ONRSR and State and Territory Governments to focus on removing inconsistencies in fatigue management applying to freight routes crossing multiple jurisdictions (and multiple rail networks). In some cases, a single journey may encounter different fatigue management requirements due to jurisdictional derogations or the requirements of rail infrastructure managers. This will also affect future infrastructure, including the Inland Rail project, where operators will encounter different fatigue management requirements in Victoria (no prescribed outer limit on hours), New South Wales (9 hour maximum shift), and Queensland (9 hour shift with 8 hours driving).

Governments should commit to harmonisation of fatigue management for inter-jurisdictional rail freight routes. The process should involve an independent review, including evidence on the implications for safety.

Appropriate regulation for Class 4 Domestic Commercial Vessels (maritime)

The domestic commercial vessel fleet is diverse. The fleet ranges from large passenger and industrial vessels to hired kayaks and tinnies. This diversity presents challenges for AMSA in establishing a visible regulatory presence and delivering services.

It is valuable to consider whether the remit of AMSA and other maritime regulators is appropriate in principle. This depends on whether vessels of similar type and operation are subject to similar regulation; whether there are significant benefits from national regulation; and whether State and Territory regulation had resulted in significant barriers to efficiency or safety.

In the case of Hire and Drive (Class 4), these vessels are likely to have more in common with recreational (domestic) vessels (as they are operated by a recreational master) than with commercial vessels. Their operational use is leisure-related, rather than commercial. Given the nature of their operation, the models of vessels are likely to be similar to recreational vessels, (ranging from yachts to kayaks), and are likely to traverse similar waterways.

Overall, there is good reason for Class 4 Hire and Drive vessels to be returned to the remit of State and Territory regulators, which remain responsible for recreational vessels.

Vessel survey inspection and grandfathering (maritime)

Some grandfathering provisions pose a significant risk to maritime safety. This has been acknowledged by various stakeholders, including AMSA.

State and Territory coroners have recommended the removal of grandfathering for domestic commercial vessels, especially fishing vessels which tend to be older, more widely exempted, and operating in higher risk conditions.

In the regulation impact statement for the 2018 reforms to the vessel survey regime, it was estimated that about 6000 vessels were operating under grandfathered arrangements, with the vast majority of these vessels operating in Queensland.

COAG and AMSA should remove unjustified grandfathering regulations, with priority given to ending grandfathering of vessels exempt from survey requirements. A transitional period of around five years would allow vessel owners to plan for the change over time and reduce its financial impact. AMSA should not maintain grandfathering of survey requirements through marine orders or exemptions.

A new survey regime for domestic commercial vessels commenced on 1 July 2018. Before this date, domestic commercial vessels were required to undergo annual vessel survey (except where grandfathering or an exemption applied). Changes to the survey regime include:

- reduced periodic survey requirements for the majority of DCVs (up to once every 5 years)
- expanding the category of vessels exempt from surveys
- more flexibility in the timing of surveys, to ensure that vessel maintenance activities can be better aligned with the surveys.

The changes simplify regulations and better align survey requirements for DCVs with the risk of individual vessels. However, there are concerns about how AMSA has determined the risk profile of particular types of vessels.

In particular, AMSA's lack of comprehensive data about the domestic commercial vessel fleet makes it difficult to accurately determine the risk profile of particular types of vessels. This lack of data will also likely frustrate future efforts to assess the impact of the vessel survey reforms on safety outcomes.

Data collection and reporting (maritime)

The public information for safety outcomes among domestic commercial vessels is sparse. This lack of data likely reflects several factors, including:

- no national statistics on domestic commercial vessels were compiled before AMSA became the national regulator, as such vessels were under State and Territory jurisdiction

- underreporting of safety incidents by operators
- research bodies such as the Bureau of Infrastructure, Transport and Regional Economics report extensively on road safety but not maritime safety
- as the DCV fleet covers several industries, it is not straightforward for DCV industry bodies or other regulators to keep a complete set of safety data specific to DCVs.

The Commission considers that the published safety data for the domestic commercial vessel industry, including by AMSA as the national regulator, are insufficient.

Safety data are necessary to provide a basis for comparison between outcomes under the national regulator and previous State and Territory regulators, and to provide accountability for the national system. AMSA should not only work to improve incident reporting by industry participants, but also improve the depth and detail of its published data.

Approach to compliance costs (all modes)

The regulators do not approach the measurement and analysis of compliance costs in systematic ways. ONRSR conducts stakeholder surveys which contain information relevant to the issue but does not monitor, assess and publish the results. The NHVR is aware that there are significant compliance costs from aspects of its activities but does not report on these costs. Similarly AMSA does not monitor and report on compliance costs.

As a matter of accountability, each of the national regulators should be required to monitor compliance costs in some way, and report regularly on the level and change in these costs. Accountability through transparency should be complemented by regulators' ongoing commitment to reduce compliance costs in ways that are consistent with improving safety outcomes.

A forward-looking policy agenda for transport

The 2009 COAG reforms focused on establishing three national regulatory regimes. However, the role of government in influencing safety (and productivity) outcomes is much broader than creating a new regulator (figures 6 and 7). The overall 'regulatory system' perspective takes account of the multiple regulatory regimes and a range of public institutions, across several areas of policy. This 'system-wide' view is valuable when considering how the many aspects of regulation and policy might work together to improve safety outcomes. For example, the productivity and efficiency of transport are primarily influenced by policy and institutional decision making outside the purview of safety regulators, including the management and provision of infrastructure.

Below are some of the key issues to be addressed in a forward-looking policy agenda for transport safety and productivity. These include emerging issues that have become more prominent in the past decade, or will likely become prominent in the near future.

Figure 6 **The roles of government in influencing safer practices**

Figure 7 **The roles of government in influencing productivity**

Road infrastructure provision and utilisation

Heavy vehicle productivity is dependent on many issues related to infrastructure provision, management and utilisation. Well-functioning mechanisms for managing road access allow carriers to complete transport tasks using higher productivity vehicles, and increase the degree of certainty around ongoing investments in the vehicle fleet. For access management to function well, infrastructure managers need to make timely decisions based on the technical aspects of road assets. This requires infrastructure managers to have sufficient knowledge of their road assets, as well as the necessary engineering skills and decision-making capabilities.

Underlying these processes is the requirement for infrastructure managers to balance various objectives, including the effects of heavy vehicle access on transport productivity and road maintenance costs, as well as aspects of public amenity and safety. Also of relevance are the mechanisms seeking to ensure that road managers have adequate funding for infrastructure provision and maintenance, and that road users contribute adequately to road funding. A balance is required between the demand for more infrastructure and the cost of providing it, with consideration for road users' valuation and willingness to pay.

These relationships suggest two things. First, road infrastructure managers are at the centre of planning, building, and maintaining the road network, and facilitating its efficient use by road users. Second, a set of interconnected reforms will drive improvements to the productivity of our road system.

Progress on road infrastructure provision, utilisation and funding arrangements

Presented in this report are compelling arguments for reform to road infrastructure arrangements. While there are a range of potential approaches, choices will need to address some key considerations (box 3).

Several aspects of reform have advanced or are underway. For example, a small scale on-road trial (140 vehicles) of heavy vehicle road pricing commenced in July 2019, largely to test whether existing telematics technology can measure mass and distance effectively. A larger scale trial involving up to 1000 vehicles will commence in 2020. The Commission supports these initiatives.

Valuable work has also commenced in researching and understanding how pricing for heavy vehicle charges might work in practice. Public consultations have been held on the prospect of independent price regulation with respect to heavy vehicle charges. There have been multiple reports into Heavy Vehicle Road Reform and price-setting models. One issue being debated is whether road infrastructure provision is best delivered by government departments or more independent institutional structures such as statutory authorities or government owned corporations.

Box 3 **Key considerations in choosing road provision and funding models**

The provision and funding of road infrastructure can be considered in terms of the following key road-related tasks:

- setting overall road-related outcomes, undertaking project appraisals, and deciding on the aggregate level of expenditure on road provision
- deciding how that expenditure is to be allocated between different projects — new construction, and the rehabilitation and maintenance of existing roads
- supervising project delivery to ensure decisions have been implemented efficiently
- charging for the use of roads to achieve more efficient use of the infrastructure.

The way these tasks are undertaken can differ considerably, depending on the institution responsible for undertaking the task and how performance is monitored.

The model of road funding and management should:

- seek to strengthen links between road-related revenue to road-related expenditure. This would help to determine road users' preferences and willingness to pay for road infrastructure services.
- involve the adoption of well-designed institutional and governance arrangements.

Institutional arrangements for road provision and management

Ensuring the efficient, long-term management of infrastructure requires appropriate allocations of responsibility, accountability, and resources. The Commission has canvassed a range of institutional models (each with its own merits) that could be used by State and local governments (box 4).

The institutional arrangements for road provision and management are likely to become more important. New and emerging approaches to road infrastructure management include various uses of telematics data (discussed below). Such approaches would benefit from both scale (that is, pooling data) and technical expertise (for example, in data management and analysis).

Box 4 **Different approaches to road infrastructure management**

There are four broad institutional models that are used, or could be used, in the roads sector.

- *Departmental model* — a model of project selection and management and allocation of road funding by governments, with earmarking of road-related taxes and charges used to fully fund roads on an economically sustainable basis.
- *Road fund model* — project selection, and management and allocation of road funding undertaken by a separate dedicated entity that operates at arm's length from government on an economically sustainable basis. This approach was proposed by the Commission in its inquiry into Public Infrastructure, and is currently in operation in New Zealand.
- *Corporatised public road agency model* — public road authorities (integrating all tasks relating to road funding and provision) are run on a more economically sustainable basis using both funding from governments and revenue raised from direct charges on road users, with those charges and road service standards overseen by a regulator.
- *Private provision model* — private ownership and provision of roads (such as the road concession model).

Variations and hybrids of these models are also possible. For example, the road fund model could also include the tasks of funding and provision of infrastructure services in the one entity, in which case it would have some similarities to the corporatised public road agency model.

Intermodal freight efficiency

The importance of efficiency across modes of transport is highlighted in the Freight and Supply Chain Strategy. In submissions to this inquiry, stakeholders from the rail industry discussed intermodal substitution between heavy vehicles and rail freight, arguing that shifting more of the freight task from road to rail could improve safety and reduce road congestion.

At the outset, it should be recognised that the choice of mode is a commercial decision, and government regulation should be neutral between transport modes. Businesses will select the mode which best meets their needs. As road and rail transport have different strengths, they are imperfect substitutes. Much of the freight load on major routes is not contestable, and in many cases road and rail act as complementary modes of transport. Where competition is possible, the relatively agile nature of road transport means that rail is unsuitable for all freight tasks and is less efficient when there is double and triple handling over relatively shorter distances. This makes it difficult to estimate the degree of substitutability, given that it is not possible to assume that all traffic observed on a highway could be replaced by rail.

Nevertheless, competition between road and rail does occur on long distance freight routes. In situations where rail freight replaces road freight, there are likely to be safety benefits associated with moving larger amounts of freight on dedicated lines, away from general road traffic. It is difficult to provide meaningful estimates of such benefits, given the limitations listed above and the dynamics of innovation in both rail and road transport. In particular,

innovations in safety equipment and safety technology are progressing more rapidly in road transport due to the volume of road traffic in Australia and overseas.

An efficient outcome in intermodal freight would need to balance many factors relating to: the planning and building of freight-related infrastructure; the potential for regulatory costs to cause distortions to intermodal competition; and access arrangements. Regulatory measures which seek to shift more freight from road to rail are likely to be counterproductive by imposing large efficiency costs on freight transport and the community. A focus on safety and innovation across all modes of transport is more effective, less costly, and leads to improved safety.

Allowing transport safety regulation to evolve

Many submissions to this inquiry have discussed the merits of prescription and risk-based regulation.

The choice of regulatory approach is not mutually exclusive (figure 8). A mix of prescriptive and risk-based measures is required, reflecting the nature of the safety risks and allocating these to the party best able to manage them.

Placing more emphasis on risk-based management in safety regulation requires regulators and industry to develop stronger skills in some areas (for example, risk assessment, accreditation) and apply data-driven strategies to identify and manage risks. In other cases, risk based management is too complex and, usually for the operator, prescriptive rules may be the least cost option and have the advantage of being simpler for business to comply with and for regulators to enforce.

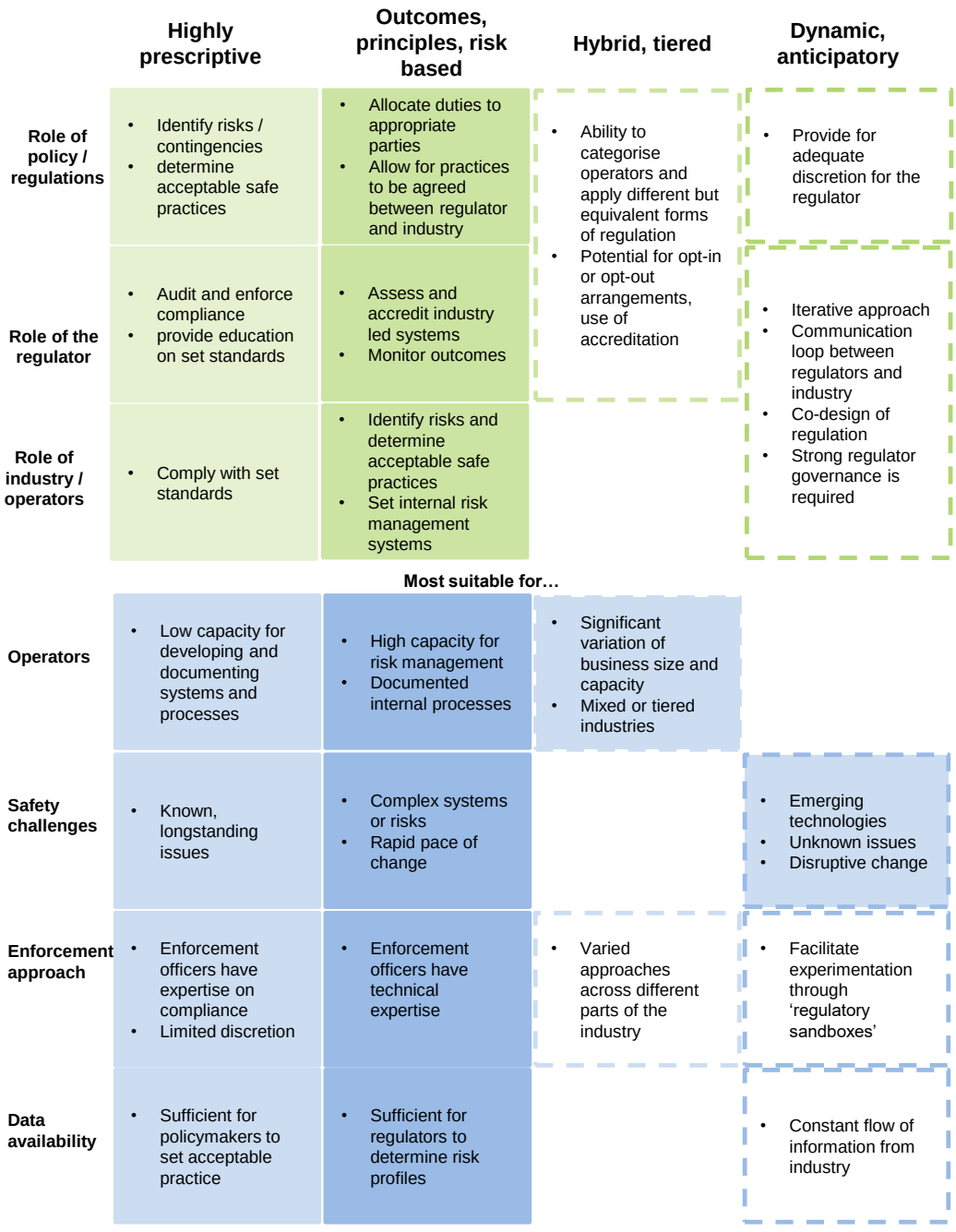
As far as possible, a decision to use prescription or a risk-based measure should take into account which party is best placed to understand and control the safety risk, and the costs of doing so.

Focusing on safety outside the commercial transport sector

Significant improvements to transport safety outcomes could be made by improving behaviours outside of the commercial transport industry. Data from the National Transport Insurer suggests that, in a significant proportion of major heavy vehicle accidents, other road users are at fault. Among multi-vehicle incidents in 2017 which did not involve a fatality, the heavy vehicle driver was at fault 65 per cent of the time. For fatal multi-vehicle crashes, the heavy vehicle driver was at fault less than 20 per cent of the time.

State and Territory Governments should seek to improve the behaviour of general road users when sharing the road with heavy vehicles.

Figure 8 **Various models of safety regulation relevant to transport**



Improving incident investigation

In the transport sector, investigation is conducted by various agencies such as:

- police forces, to determine any immediate criminal liability

- for fatal accidents, State and Territory coroner's offices to identify the persons who died, the cause of death and the circumstances surrounding the death
- bodies such as the Australian Transport Safety Bureau (ATSB) to determine the technical causes of the accident, and to publish findings and policy recommendations aimed at improving safety.

Each form of investigation serves a critical role in improving safety outcomes through the prevention of future accidents.

The so called 'no-blame' or 'no-fault' investigation is the approach of the ATSB. This provides valuable information to policy and regulatory decision-makers. It is important that the ATSB's capacity to investigate incidents and accidents in the various modes is sufficiently resourced in addition to its current responsibilities.

The full potential of incident investigation to improve safety outcomes has not been realised in the current system. In heavy vehicle regulation, the introduction of no-blame investigation would improve policy decisions. The ATSB should undertake a clearly defined pilot of incident investigation for heavy vehicle transport, with adequate additional resourcing for the task. This should involve analysing safety data to define a narrow set of potential incidents for investigation.

Furthermore, the role of the ATSB in investigating maritime incidents involving domestic commercial vessels was not resourced at the time of the COAG reforms. Similarly, the ATSB's ability to investigate rail incidents and to contribute to better safety policy would be improved with appropriate resourcing.

In addition, the ATSB's remit should be expanded to allow an investigative role for transport accidents involving self-driving technologies, regardless of the mode of transport. This would contribute significantly to ensuring safety standards during the trial and introduction phases of these technologies.

Safer and more productive transport technologies

The age of transport equipment and the technology embodied in it can have implications for safety and productivity. More frequent renewal of fleets increases the use of new safety equipment. Using new technologies can also reduce operating costs and lead to productivity improvements for industry.

Some unintended barriers to the supply of safe vehicles to the Australian market are creating disincentives for operators to update their safety technologies. For example, Australian Design Rules (ADRs) can prevent the use of unmodified imported trucks. Regulations around heavy vehicle mass and width limits result in drivers removing safety equipment from imported vehicles to save weight or reduce width. Part of the success of the PBS scheme appears to be that it allows new designs to sidestep ADR processes.

The Australian Government should minimise the regulatory burden associated with adopting new technologies by permitting access to technologies adopted in other leading economies.

Enabling interoperability will also be important, given that Australia is likely to be a net importer of these technologies. The ADRs and in-service vehicle standards should be updated to allow for the expedited uptake of new and internationally approved transport technologies, including automated technologies. Given that Australia is a relatively small market, COAG should aim for national and international consistency of laws and standards where practicable.

Harnessing transport data to improve safety and productivity

The Commission considered various aspects of data access in its 2017 inquiry into Data Availability and Use. The inquiry found that 'improved data access and use can enable new products and services that transform everyday life, drive efficiency and safety, create productivity gains and allow better decision making'. There are various challenges for policy throughout the data lifecycle (figure 9).

Vehicle telematics can deliver significant productivity and safety benefits for a range of parties. However, some of these benefits, such as improved revenue collection and infrastructure planning, do not accrue to private parties. There may therefore be a role for government to encourage the uptake of telematics. Data capabilities will be central to the ability of regulatory regimes to shift to more modern approaches, and for infrastructure managers to adopt more efficient processes (both discussed above).

Facilitating data generation and collection

While technological developments have exponentially increased the potential to generate and share transport data, in practice, both of these activities remain somewhat of a bottleneck. In some cases, mandatory compliance has been effective (for example, the Vessel Monitoring System required of off-shore fishing vessels). Where operators are free to opt into generating and sharing data, adoption has been patchy and slow to gain momentum (for example, in-vehicle telematics).

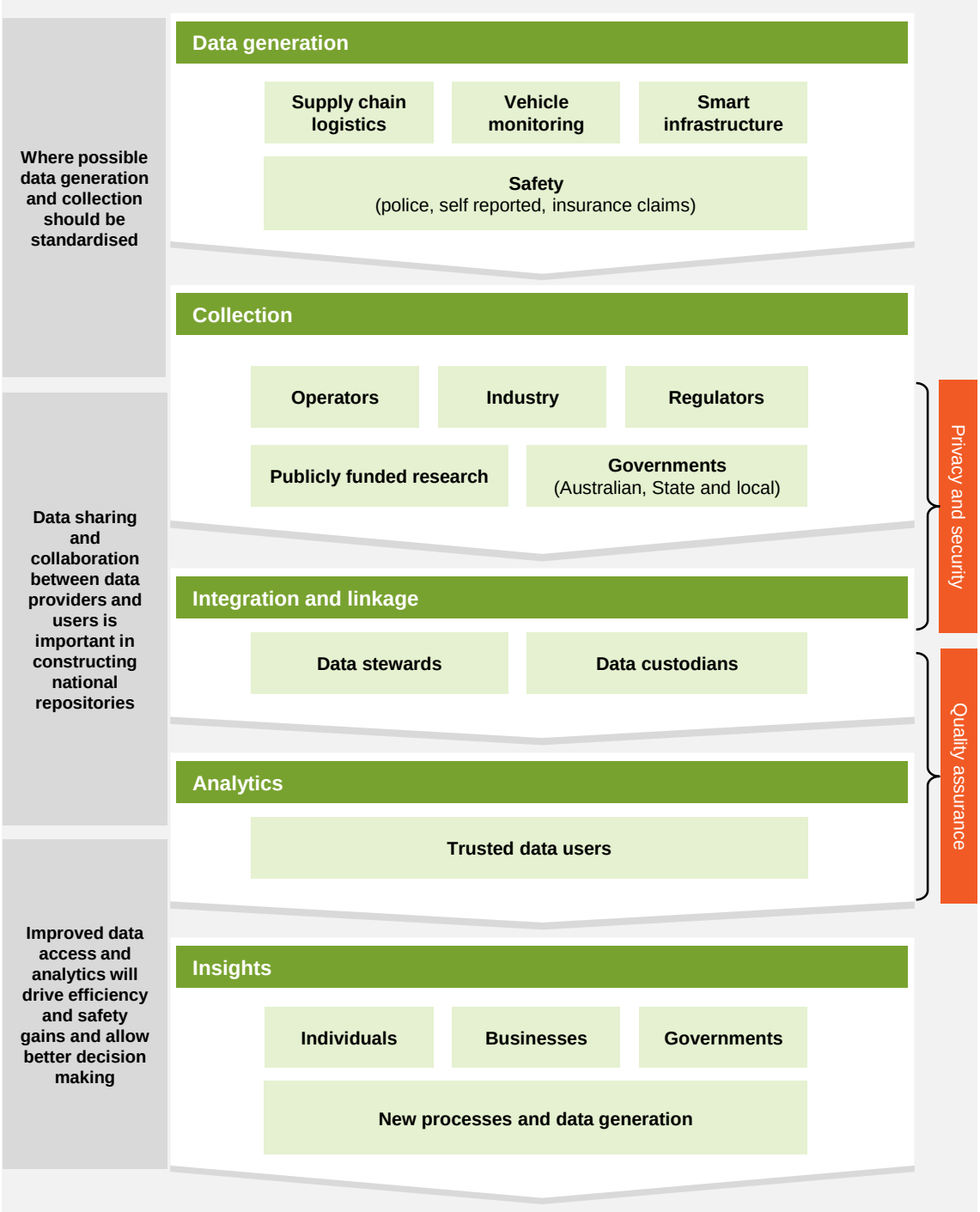
The benefits of networked systems risk being underprovided if systems depend on businesses to opt in, or if consensus is required for coordination purposes. For example, smaller operators may lack the capability to collect and/or use telematics data. These operators may have no incentive to do so, since the benefits of tracking and optimising the use of a relatively small fleet may be minimal.

Government policy can influence the adoption of telematics. The NTC highlighted several mechanisms for accelerating the uptake and use of telematics, including: technology trials, awareness campaigns, adoption of technologies into vehicle and design standards, updating government fleets and by offering regulatory, financial and productivity incentives. In the

heavy vehicle sector, a number of national initiatives encourage the use of telematics through the National Telematics Framework.

It is likely that the willingness of businesses to invest in generating and sharing their data will depend on how the data might be used.

Figure 9 **The transport data lifecycle**



Data sharing and integration

Telematics data is collected by a range of parties and used for a variety of purposes. While some of the potential benefits of this data are specific to the individual operator, there are larger, broader benefits from the collection and integration of data across many operators.

Uncertainty exists around how third parties should access telematics data. Governments and regulators should facilitate the adoption of technologies by operators to generate and share data by providing legal assurances about the acceptable use of such data, and clarifying the value proposition to individual operators of their participation in data sharing regimes. The data access powers of regulators, enforcement agencies and accident investigation bodies should be clarified to enable these bodies sufficient access to undertake their respective tasks, without compromising privacy and confidentiality.

There is likely to be significant value in consolidating data in a central repository. Data should be collected from all parts of the industry with appropriate privacy and competition protections. The National Freight Data Hub announced by the Australian Government should be accessible to all parties in the industry, with appropriate privacy restrictions.

Technical capabilities alone should not determine enforcement approaches

The Commission has heard relatively consistent anecdotal evidence of recent experiences with data systems, showing that some in the industry have concerns that the use of data in safety regulation could lead to heavier-handed, more interventionist enforcement.

As discussed above, the approach to safety regulation (and its evolution over time) should be determined by the characteristics of industry and the nature of regulatory challenges. Regulators should not move to a more interventionist enforcement regime simply because the technical capability is available.

Data-sharing arrangements should be designed to allay industry concerns about heavier-handed enforcement. This could involve legal assurances restricting the uses of data. More broadly, appropriate safeguards will be critical if there is to be wider acceptance of the use of telematics.

Using transport data for infrastructure planning, research, and policy purposes

Access to a greater quantity and quality of data should allow users, such as regulators, industry bodies, or research agencies, a greater ability to create risk management tools or advice. This is likely to be increasingly valuable as regulations become more outcomes-based, and more onus is put on operators to make decisions about safety management.

Telematics technology in particular is improving the potential to monitor heavy vehicle movements. Such data could be valuable in informing funding and resource allocation mechanisms for infrastructure managers.

Another use of data that may add significant value for industry is through research and policy development — particularly in improving safety regulation. Among the three modes of transport at the focus of this inquiry, maritime transport appears to be the least well-served by public research agencies aside from the regulator itself. There is likely to be value in having public agencies outside of the national regulator conducting research into maritime safety.

Conclusion

The harmonisation of transport safety regulation was a practical, co-operative reform to improve safety and lower business costs. National laws and regulators are now largely in place. The next challenges for transport policy will involve building on the foundations laid by these reforms. They include moving to more flexible approaches to safety regulation, progressing changes in infrastructure provision and funding, and harnessing emerging technologies to lift both safety and productivity. Lessons learned from the harmonisation of transport safety will be vital to pursuing further reform.

Draft findings and recommendations

Do we have nationally consistent regulatory regimes?

DRAFT FINDING 4.1

Implementing national transport regulation and establishing national regulators has been slower than anticipated. Both the regulation and the regulators are works-in-progress. Creating a national regulatory system is complex and time consuming, with early expectations proving to be optimistic.

DRAFT FINDING 4.2

There are many derogations by jurisdictions to the national laws. There are over 70 derogations from the Heavy Vehicle National Law and over 80 derogations from the Rail Safety National Law. Some derogations create unnecessary costs and complexity for industry and regulators. These derogations are contrary to the objectives of the Council of Australian Government's harmonisation reforms.

DRAFT RECOMMENDATION 4.1

The Transport Infrastructure Council should request that the National Transport Commission undertake a review of significant derogations from the Heavy Vehicle National Law and the Rail Safety National Law, with the aim of reducing regulatory inconsistency.

The Council of Australian Governments should commit to altering or removing derogations, or altering the national laws, to achieve best practice regulation.

DRAFT FINDING 4.3

Grandfathering was intended to smooth the transition to the Marine Safety National Law. However, open-ended grandfathering maintains the inconsistencies of previous State and Territory regimes, delays the adoption of new safety standards, complicates enforcement and discourages investment in new vessels and equipment.

DRAFT RECOMMENDATION 4.2

The national regulators should phase-out Service Level Agreements (SLAs) with State and Territory agencies by absorbing these functions at the earliest opportunity.

Where there is a business case to use SLAs with third parties, those parties should act under the direction of the national regulators to ensure consistent decisions across jurisdictions.

DRAFT FINDING 4.4

Despite having one national safety law and one national safety regulator, rail operators face differing standards, operating codes and procedures, set by rail network owners. Differences across networks create costs and delays for above-rail operators.

Has harmonisation of transport regulation improved safety?

DRAFT FINDING 5.1

There have been significant improvements in heavy vehicle safety over the past decade, with the number of heavy vehicle crashes involving injury or death per kilometre travelled decreasing by about 40 per cent between 2008 and 2018. The fall in crash rates is consistent with longer term trends and is likely to be due to factors affecting all vehicle types such as improvements in road infrastructure and safer vehicle design.

DRAFT FINDING 5.2

Most multi-vehicle fatal crashes involving a heavy vehicle are not the fault of the heavy vehicle driver — in 2017, the driver of the other vehicle was at fault 83 per cent of the time. For serious, non-fatal, multi-vehicle crashes involving a heavy vehicle, the heavy vehicle driver was at fault 65 per cent of the time (2017).

DRAFT RECOMMENDATION 5.1

State and Territory governments should seek to improve general road users' understanding of driving safely in the vicinity of heavy vehicles through education and enforcement measures.

DRAFT FINDING 5.3

The lack of effective mutual recognition of heavy vehicle accreditation between Western Australia and the jurisdictions that have adopted the Heavy Vehicle National Law is counter to the objectives of the harmonisation agenda and does not promote safety. Operators bear the costs of meeting the requirements of different jurisdictions.

DRAFT RECOMMENDATION 5.2

The Council of Australian Governments should amend the Heavy Vehicle National Law to give the National Heavy Vehicle Regulator (NHVR) greater scope to provide concessions from prescribed aspects of fatigue management regulation, where the NHVR is satisfied that more effective systems of fatigue management are in place, such as technology-enabled management systems, and/or accredited management systems.

Driver fatigue laws should continue to set outer limits on driving hours.

DRAFT RECOMMENDATION 5.3

The Council of Australian Governments should commission an independent review of the fatigue management laws applying in the rail sector to examine the scope for further harmonisation. This could be included in the broader review into derogations proposed by this inquiry (draft recommendation 4.1).

INFORMATION REQUEST 5.1

The Commission is seeking additional information about the operation and effectiveness of the Rail Safety National Law in relation to interface agreements, including:

- *the extent to which interface agreements are contributing to better safety outcomes*
- *options that could improve the negotiation process, and the extent to which risks are appropriately shared between road managers and rail operators.*

DRAFT RECOMMENDATION 5.4

The Australian Maritime Safety Authority should improve:

- incident reporting by owners of domestic commercial vessels
- its public disclosure of safety incidents by increasing the depth and detail of reported incidents.

Reporting should include a state-by-state and vessel-type breakdown of fatalities and injuries.

The Australian Government should request and fund the Australian Transport Safety Bureau to conduct investigations and publish research on safety incidents and accidents among domestic commercial vessels.

INFORMATION REQUEST 5.2

The Commission is seeking additional information about the operation of the vessel survey regime, including:

- *the appropriateness of the existing survey requirements for each vessel category*
- *any serious impacts on safety outcomes following the changes to the vessel survey regime.*

DRAFT RECOMMENDATION 5.5

The Council of Australian Governments (COAG) and the Australian Maritime Safety Authority (AMSA) should begin to wind up the grandfathering of safety regulations under the Marine Safety National Law (MSNL), with priority given to ending grandfathered exemptions from vessel survey requirements. AMSA should not maintain grandfathering of survey requirements through marine orders or exemptions.

COAG and AMSA should review all other grandfathering provisions under the MSNL. Unless found to be justified through a transparent, public cost-benefit assessment, all grandfathering provisions should be phased out within the next 5 years.

INFORMATION REQUEST 5.3

The Commission is seeking additional information about the situations where greater clarity is required between the operational jurisdiction of national transport regulators and workplace health and safety regulators and overlaps in their responsibilities. What options for rectification would be desirable?

Have the COAG reforms raised productivity?

DRAFT FINDING 6.1

Constraints around local government investment capacity and engineering expertise are limiting the effectiveness of the heavy vehicle reforms by preventing adequate assessment and upgrading of bridge and road infrastructure.

DRAFT RECOMMENDATION 6.1

Local governments should share engineering expertise and agree to consistent access arrangements for shared roads. The Australian Government should work with States and Territories to encourage this collaboration. States and Territories should report to the Council of Australian Governments in early 2020 on the status of this work.

DRAFT FINDING 6.2

The complexity of the vehicle classifications has limited the progress of faster access approvals, through permits, pre-approvals and notices.

DRAFT RECOMMENDATION 6.2

The Australian Government should seek simpler heavy vehicle classifications through the National Transport Commission's review of the Heavy Vehicle National Law for the purposes of access decisions. Additionally, the National Heavy Vehicle Regulator should provide more detailed and effective guidelines to road managers.

DRAFT FINDING 6.3

The National Heavy Vehicle Regulator (NHVR) has a well-developed information system that allows for effective management of its operational commitments. The NHVR is taking a strategic approach to the collection and use of data and this will allow it to target its activities better. It will also be able to drive broader policy change to improve productivity and safety.

DRAFT RECOMMENDATION 6.3

The National Heavy Vehicle Regulator should continue improving its data management processes, including how data are stored, integrated, analysed and reported.

DRAFT FINDING 6.4

The productivity gains from the reforms so far are much less than expected, although there is scope in the future for greater improvements as Performance-Based Standards vehicles become a larger proportion of the heavy vehicle fleet.

DRAFT FINDING 6.5

There is scope to rapidly increase the number of gazetted routes, reducing the need for permit applications. In many cases, permit approvals are given as a matter of course for certain vehicle types; these approvals should be replaced with as-of-right access by gazette.

DRAFT RECOMMENDATION 6.4

The Council of Australian Governments should direct road managers (including the state road authorities) to work with the National Heavy Vehicle Regulator to rapidly expand key freight routes covered by notices and allowing as-of-right access for larger vehicle types. The focus of this work should include:

- expanding the networks available for heavy vehicles with performance characteristics equivalent to B-doubles (including Performance-Based Standards (PBS) level 2A and 2B B-doubles) and type 1 and 2 road trains (including PBS equivalents)
- where there are classes of vehicles for which permit applications are almost universally approved, developing notices covering these vehicles
- meeting infrastructure requirements such as truck stops and logistics centres near major urban centres, allowing larger vehicles to be broken down into smaller units where required by urban road network constraints.

DRAFT FINDING 6.6

Data on the compliance costs for businesses for the three national regulators are not routinely collected, monitored and published.

DRAFT RECOMMENDATION 6.5

The National Heavy Vehicle Regulator, the Office of the National Rail Safety Regulator and the Australian Maritime Safety Authority should monitor the compliance and administrative costs created by the national regimes and report on the level and change in these costs in periodic (say 3 yearly) reporting. The first report should be published in 2020 to establish benchmark costs.

DRAFT FINDING 6.7

There is little evidence at this stage that compliance costs for businesses have fallen. Each regulator is pursuing changes that should help reduce costs in the future.

DRAFT FINDING 6.8

The Chain of Responsibility reforms appear to be resulting in greater focus at all parts of the supply chain on compliance systems. However, the proliferation of in-house systems may raise the compliance burden for transport contractors. Industry could play a stronger role in determining common standards for the heavy vehicle industry. In the rail industry this role is undertaken by the Rail Industry Safety and Standards Board.

Assessing the national regulators

DRAFT FINDING 7.1

The prescriptive approach of the Heavy Vehicle National Law impedes the National Heavy Vehicle Regulator from administering the law consistently with the Council of Australian Governments' objectives. A more outcomes-based approach to legislation and regulation would improve road safety, reduce the burden of compliance and administration, and increase the efficiency of road transport.

The National Transport Commission, which is reviewing the Heavy Vehicle National Law, is well placed to recommend improvements.

DRAFT RECOMMENDATION 7.1

The Australian Government should lead efforts through the Transport and Infrastructure Council to reform the Heavy Vehicle National Law. It should encourage State and Territory governments to remove prescriptive material from the legislation and to include an explicit mandate for the National Heavy Vehicle Regulator to take a risk-based approach to its functions.

DRAFT RECOMMENDATION 7.2

The Transport and Infrastructure Council should agree to have all regulatory functions still held by participating jurisdictions transferred to the National Heavy Vehicle Regulator no later than 1 January 2022.

DRAFT RECOMMENDATION 7.3

The Transport and Infrastructure Council should direct the National Heavy Vehicle Regulator to undertake the comprehensive collection and reporting of key safety risks and outcomes, similar to the Office of the National Rail Safety Regulator's annual *Rail Safety Report*.

INFORMATION REQUEST 7.1

Is the wording of the Marine Safety National Law an impediment to effective enforcement by Australian Maritime Safety Authority? Would a positive requirement that operators 'must ensure' safety be more consistent with providing the regulator with the powers it requires?

DRAFT FINDING 7.2

The broad scope of the Australian Maritime Safety Authority's responsibilities is an impediment to effective regulation of domestic commercial vessels. Safety regulation of 'Hire and Drive' recreational vessels could be undertaken effectively by State and Territory government agencies, which already regulate similar vessels that are not used for commercial activities.

DRAFT RECOMMENDATION 7.4

The Australian Government should negotiate with State and Territory governments to return responsibility for regulating Class 4 Domestic Commercial Vessels (Hire and Drive) to State and Territory agencies.

The Council of Australian Governments should consider the benefits and costs of returning regulatory responsibilities for other vessel types to State and Territory governments.

INFORMATION REQUEST 7.2

Are there activities within the Australian Maritime Safety Authority's responsibilities that the Council of Australian Governments should consider returning to State and Territory oversight?

Transport technology and data

DRAFT RECOMMENDATION 8.1

The Australian Government should amend the Australian Design Rules and in-service vehicle standards to allow for new transport technologies, including automated technologies, with proven productivity or safety benefits. The Australian Government should aim for national and international consistency of laws and standards where practicable, and accept safety devices adopted in other leading economies. The Council of Australian Governments should investigate whether a 'deemed to comply' approach would be practical for some technologies.

DRAFT RECOMMENDATION 8.2

The Australian Government should co-operate with stakeholders including Transport Certification Australia when developing the National Freight Data Hub. The Hub should include a regulatory framework for the collection, storage, analysis and access of transport data, including telematics data. This framework should specify the data access powers of regulators, enforcement agencies and accident investigation bodies, and should enable these bodies sufficient access to undertake their respective tasks, while protecting privacy and confidentiality.

DRAFT RECOMMENDATION 8.3

The Australian Government should impose a general safety duty on all parties with a significant influence over the safe operation of autonomous transport technologies. The creation of a general safety duty should not preclude the use of prescriptive rules where the assessed risks are high.

A reform agenda for safer transport

INFORMATION REQUEST 9.1

The Commission is interested in further information regarding the safety implications of commercial contracts in the industries covered by the Heavy Vehicle National Law (HVNL), Rail Safety National Law (RSNL), and the Marine Safety (Domestic Commercial Vessels) National Law (MSNL). In this regard, the Commission would be interested in understanding the effectiveness of safety duties applying to various businesses through the supply chain (for example, Chain of Responsibility, Workplace Health and Safety).

DRAFT FINDING 9.1

While some of the potential benefits of logistics data are specific to the individual operator, there are larger, broader benefits from the collection and integration of data across many operators. These broader benefits risk being underprovided if data generation and sharing are not facilitated.

DRAFT RECOMMENDATION 9.1

Governments (and their agencies) and industry should consider how best to harness logistics and telematics data to improve incentive-based safety regulation, with the aim of influencing behaviours that increase safety and productivity.

Governments and regulators should aim to facilitate the adoption of technologies by operators to generate and share data by:

- providing legal assurances about the acceptable use of such data
- clarifying the value proposition to individual operators of their participation in data sharing regimes.

INFORMATION REQUEST 9.2

To what extent are changes needed to the administration of the Marine Safety National Law, workplace health and safety regulation, and environmental regulation of fisheries? How might the interface between regulators and operators be made more effective?

INFORMATION REQUEST 9.3

To what extent are heavy vehicle drivers receiving adequate on-the-job training, and informal guidance from more experienced to less experienced drivers?

If a more formal training system were to be devised, what would this look like, and should training requirements target the newly licensed or should it also include incumbent, experienced drivers?

DRAFT RECOMMENDATION 9.2

The Australian Government should direct the Australian Transport Safety Bureau (ATSB) to undertake a defined, targeted trial of incident investigation for heavy vehicles, with adequate additional resourcing for the task. Subject to the successful outcome of the trial, the Government should amend the *Transport Safety Investigation Act 2003* to confirm investigation of incidents involving heavy vehicles as a function of the ATSB.

DRAFT RECOMMENDATION 9.3

The Australian and State and Territory Governments should:

- formalise the role of the Australian Transport Safety Bureau to investigate all serious incidents involving domestic commercial vessels, and agree a funding model to support this role
- agree to a funding model to enable the Australian Transport Safety Bureau to adequately carry out its established role in the investigation of rail safety incidents.

DRAFT RECOMMENDATION 9.4

The remit of the Australian Transport Safety Bureau should be extended to include any incident where autonomous technologies at or above SAE level 3 autonomy may have been involved.

A reform agenda for transport productivity

DRAFT FINDING 10.1

Some local governments are struggling to deliver timely heavy vehicle access assessments. While resourcing is important, more resources alone will not guarantee greater efficiency. Other factors including access to data and appropriate technical skills, and economies of scale in permit applications also contribute to greater efficiency.

DRAFT RECOMMENDATION 10.1

The Council of Australian Governments should provide support to ensure local government has the financial and technical capacity to deliver its role as asset manager for local roads. Transparency and accountability of performance should accompany any additional support, particularly with respect to processing times for access permits and the use of notices to gazette heavy vehicle routes.

This should be pursued in the context of broader changes under the Heavy Vehicle Road Reform agenda.

DRAFT FINDING 10.2

There are different approaches to cost recovery in each of the three modes, from near full cost recovery in rail, to very limited cost recovery in heavy vehicles and maritime. The amount of government funding received by each national regulator reflects these arrangements.

DRAFT RECOMMENDATION 10.2

The national regulators (particularly the National Heavy Vehicle Regulator and the Australian Maritime Safety Authority) should move towards cost recovery arrangements in line with the Australian Government Cost Recovery Guidelines. Consistent arrangements across the three transport regulators will eliminate the risk of distorting intermodal choices.

INFORMATION REQUEST 10.1

What productivity-related issues could be better progressed in rail freight? What institutional arrangement would be valuable in driving the productivity agenda in rail, and if such changes involve the Office of the National Rail Safety Regulator, what would its role be?

PART I

INTRODUCTION

1 About this inquiry

1.1 National transport regulatory reform

In 2009, as part of the seamless national economy agenda, the Council of Australian Governments (COAG) endorsed a shift to national regulation of heavy vehicles, rail and domestic commercial vessels.[1] Replacing State and Territory government regulation with consistent national regulation for each sector was expected to cut regulatory costs, boost productivity and improve safety. Between 2009 and 2011, economic gains were estimated for each of the reforms — the heavy vehicles reforms were expected to deliver $5.6 to $31.2 billion over 20 years, the domestic commercial vessels reforms, $103 to $126 million over 20 years, and the rail reforms, $28 to $71 million over 10 years (NAMSRS 2009, p. 10; NTC 2011a, pp. 15, 58, 2011b, p. v). Most of the heavy vehicle benefits were expected to flow from the wider use of larger, more productive heavy vehicles across the road network.

After the signing of three intergovernmental agreements in 2011, governments developed national laws for each sector and began the transfer of powers to new national regulators. The National Heavy Vehicle Regulator and the Office of National Rail Safety Regulator were created in 2012 and 2013 respectively. Regulation of domestic commercial vessels was transferred to the Australian Maritime Safety Authority in 2013.

The transition to national regulation of heavy vehicles, rail and domestic commercial vessels has been uneven. Not all jurisdictions have adopted the new laws. Western Australia and the Northern Territory still regulate heavy vehicles under their own legislation. State regulations continue to apply in some instances, such as fatigue management for operators of heavy vehicles, and there are many derogations, some substantial, from national regulation. The transfer of service delivery from state to national agencies has been gradual and is not yet complete.

[1] A domestic commercial vessel is a vessel that is Australian owned, used for commercial, government or research activity, and is not operating or intending to operate outside the Australian Exclusive Economic Zone.

1.2 What was the Commission asked to do?

The terms of reference set out three tasks for the Commission:

1. investigate the economic impacts of the 2008-09 COAG transport reforms
2. examine the implementation of the national transport regulation reforms, including the development of the three national regulators; the capacity of local governments in supporting the implementation; and the delivery against agreed COAG and intergovernmental agreement objectives
3. assess the scope for future reforms to national transport regulation, including areas for further harmonisation and integration of the transport sector and the remit of the regulators.

The Commission has been asked to take account of the broader objectives of the 2008-09 COAG reforms, other associated intergovernmental agreements, and complementary reforms by the Australian, State and Territory Governments. These reforms include (but are not limited to) rail standards harmonisation and interoperability; improved network access for higher productivity vehicles; and the National Freight and Supply Chain Strategy (box 1.1).

The Commission has been asked to exclude from the inquiry reforms being progressed separately (for example, heavy vehicle road user charging (box 1.1)), except to the extent that it is necessary for the Commission to reach a view on COAG's national transport reforms.

A review of the Heavy Vehicle National Law by the National Transport Commission is underway. This review is tasked with delivering a modern, outcome-focused law to regulate the use of heavy vehicles. Drafting of the new legislation is scheduled for November 2020 to November 2021 (NTC 2019).

Box 1.1 Other transport reforms

A number of transport reforms have been undertaken by governments in recent years. These include: rail standards, harmonisation and interoperability; improved network access for higher productivity vehicles; the National Freight and Supply Chain Strategy; and heavy vehicle road user charging.

Rail standards harmonisation and interoperability

The Rail Industry Safety and Standards Board is responsible for the development and management of industry standards, rules, codes of practice, guidelines and handbooks for the Australian rail industry. Rail standard harmonisation and interoperability has been considered a number of times by COAG; further harmonisation is being considered with respect to safety, operations, rolling stock, infrastructure, wheel rail interface, train control systems and railway, and railway level crossing safety.

Improved network access for higher productivity vehicles

The Heavy Vehicle National Law is the primary mechanism for providing access to the network for higher productivity vehicles. The State and Territory Governments have also made changes in recent years to access conditions.

National Freight and Supply Chain Strategy

In August 2019, Transport Ministers agreed to the National Freight Supply Chain Strategy and National Action Plan. The Strategy and Plan complement the national transport regulatory reforms, and set an agenda for integrated national action across all freight modes.

Heavy vehicle road charging reforms (excluded from inquiry analysis)

Work on national heavy vehicle road user charging as an alternative to registration fees and fuel-based charging is ongoing. A small scale on-road trial led by the Department of Infrastructure, Transport, Cities and Regional Development commenced in mid-July 2019. A large scale trial is proposed to commence in early 2020.

Sources: ARA (2019); DITCRD (2019b, 2019c).

1.3 What does the transport sector look like?

Transport activity in Australia

The transport, postal and warehousing sector is vital to the Australian economy, generating about 4.5 per cent of Australia's economic output in 2018-19,[2] and employing about 5.1 per cent of the workforce[3] (ABS 2019c, table 4, 2019a, table 6).

2 September 2018 to June 2019.

3 August 2018 to May 2019.

There are major freight flows all across Australia (figure 1.1). In 2018, the total domestic freight task was 770 billion tonne kilometres[4] (BITRE 2018, p. 67). Rail carries 57 per cent, road carries about 28 per cent of the freight task and coastal sea freight carries 14 per cent (air transport carries less than 1 per cent). Heavy vehicles carried almost all road freight (over 94 per cent), with light commercial vehicles and light rigid trucks carrying the rest (Commission estimates using (ABS 2019d)).[5] Domestic commercial vessels only carry a small proportion of coastal sea freight. Coastal sea freight is largely carried by Australian vessels regulated under the *Navigation Act 2012 (*Cwlth) and foreign flagged vessels.[6]

While rail and road compete in the transport of bulk and non-bulk freight, each has its own competitive advantages (NTC 2016, p. 15). Rail transport largely carries bulk freight with iron ore and coal accounting for 80 per cent of the rail freight task. Road freight transport largely carries time-sensitive and/or perishable goods (for example, fruits and vegetables), consumer goods (for example, whitegoods and electronics), and construction materials (such as steel, concrete and timber).

In 201516, the total domestic passenger transport task was 433 billion passenger kilometres, almost half involving travel within the capital cities (BITRE 2018, p. 77). Passenger cars carry the majority of the national domestic passenger transport task (64 per cent). Buses make up 5 per cent of the task, rail 4 per cent, air 16 per cent, and other 10 per cent.

Light commercial vessels, light rigid trucks, Navigation Act Australian vessels, foreign flagged vessels, passenger cars, and air transport were not covered by the 2008-09 COAG national transport reforms.

Over the past five decades, passenger movements by bus and rail have increased steadily (figure 1.2). The freight task has risen sharply across the road and rail sectors (coastal shipping has been static) (figure 1.3). Robust freight growth is expected to continue.

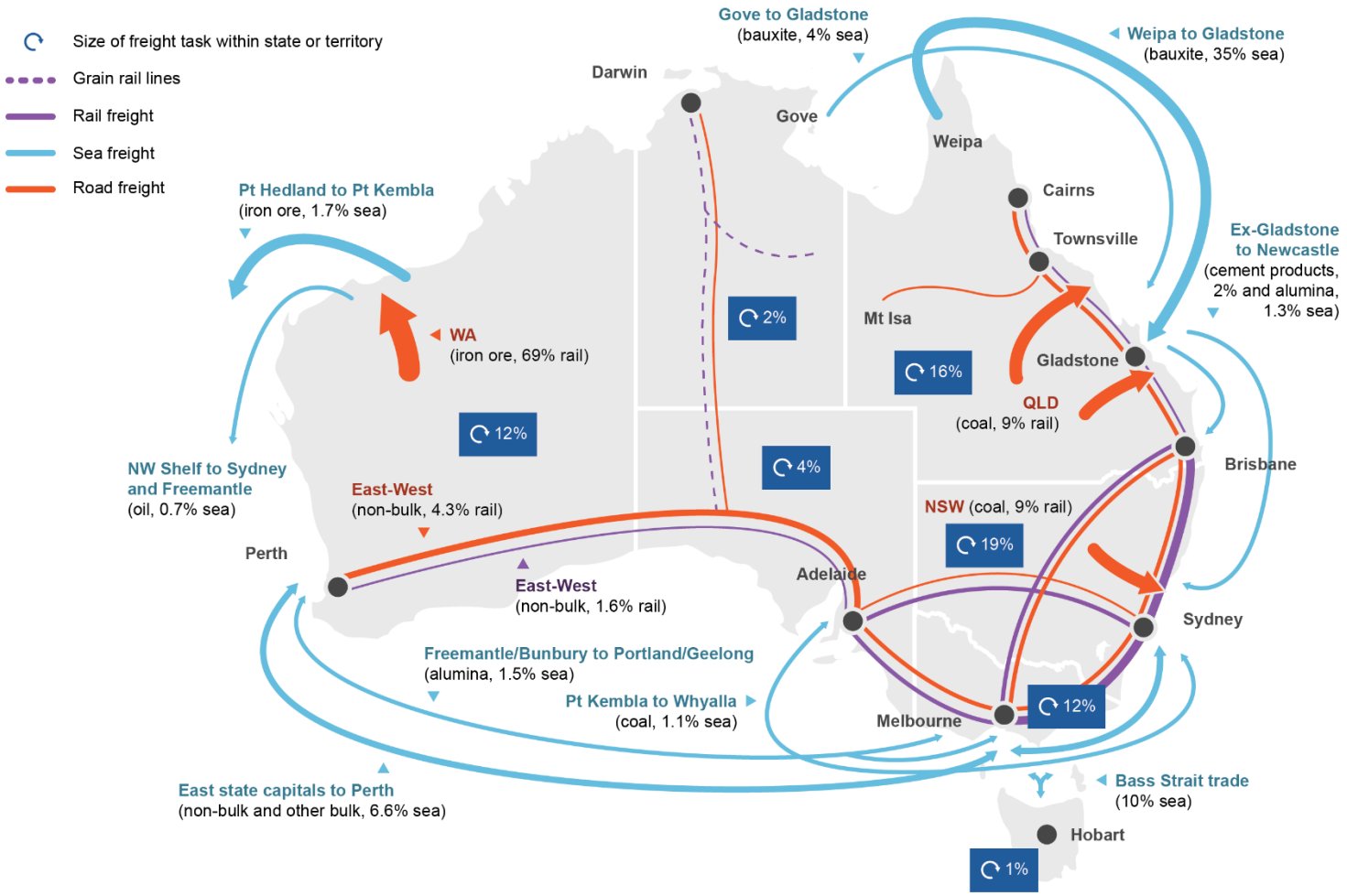
While transport related fatalities are decreasing, particularly from accidents involving heavy vehicles, the number of injuries and fatalities is still very high — in 2018, 1320 people were killed in transport accidents (ABS 2019b). The potential for injury or death in the transport sector is higher than in many other sectors (Safe Work Australia 2019). Meeting future demand without jeopardising safety will require significant investment in infrastructure, technology, good governance and effective regulation.

4 A tonne kilometre refers to the movement of one tonne by one kilometre.

5 Light rigid trucks are rigid trucks that are 3.5-4.5 tonnes gross vehicle mass.

6 A *Navigation Act 2012* (regulated) Australian vessel, is a commercial, government or research vessel that is Australian owned, and is for use on an overseas voyage. A foreign flagged vessel is a vessel registered in or operating under the authority of a foreign country.

Figure 1.1 **Major freight flows in Australia**[a]

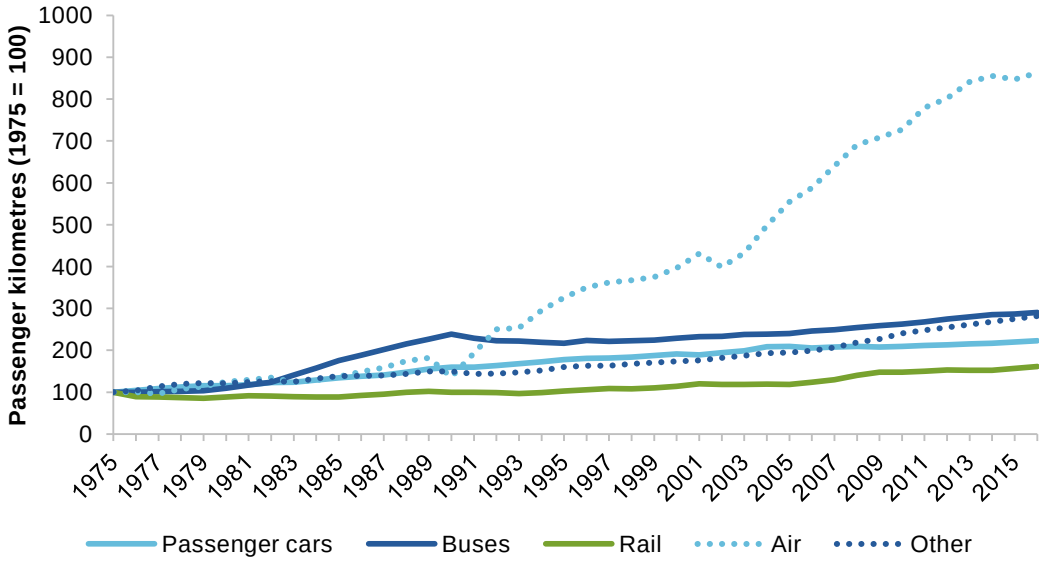


[a] Figure shows Australia's domestic freight task by mode, with thicker arrows indicating greater volumes of freight, but not the value or performance of Australia's freight and supply chains.

Source: Reproduced chart in TIC (2019b, p. 9).

Figure 1.2 **Growth in air transport has outstripped growth in other transport modes[a]**

Passenger kilometres, indexed, base year = 1975



a 'Other' represents primarily non-freight use of light commercial vehicles, as well as motorcycles and non-business use of trucks and ferries.

Source: Commission estimates based on BITRE (2018, p. 77).

Industry and operating environments

Each of the three modes of transport — heavy vehicles, rail and domestic commercial vessels — has distinct characteristics reflecting different operating environments.

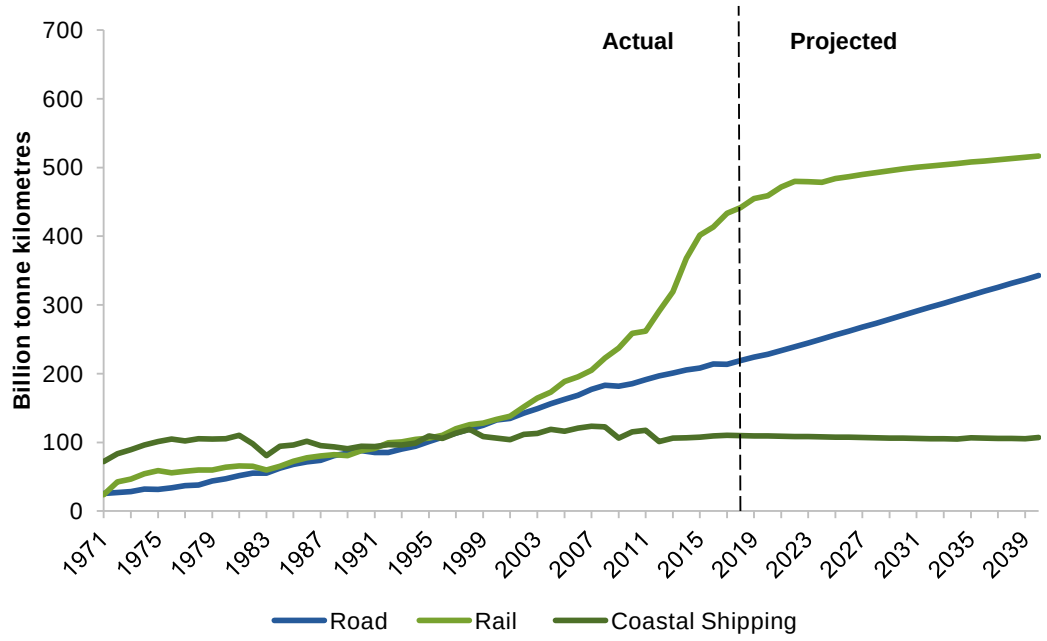
Road freight operators can be divided into two broad categories: hire-and-reward operators, and ancillary operators (NTI 2016, p. 6). Hire-and-reward operators specialise in freight delivery and logistics services; these businesses range from a self-employed person driving a single vehicle to a large, national business with substantial fleets. Ancillary operators do not sell transport services; these businesses operate in sectors such as agriculture, mining and construction and use their own heavy vehicles for incidental tasks such as moving goods and equipment.

Heavy vehicles also include buses for regular passenger transport services, and tourism. State and Territory governments still have some responsibilities for the regulation of buses.

In the rail industry, operators fall into two main categories: below rail operators, managing the track and infrastructure; and above rail operators, responsible for the trains and rolling stock. Railway vehicles are involved in freight and passenger transport.

Figure 1.3 **Increase in the freight task forecast to continue[a,b]**

Domestic goods transport, total bulk and non-bulk, billion tonne kilometres, 1971 – 2040



[a] A billion tonne kilometres refers to the movement of one billion tonnes by one kilometre. [b] Air freight does not appear in this chart but is about 0.3 billion tonne kilometres.

Source: DITCRD (2019a).

In the domestic commercial vessel industry, operators engage in a diverse range of marine activities — commercial fishing and aquaculture, tourism, oil and gas exploration and extraction, as well as passenger and freight transport.

Of the three sectors, the heavy vehicle industry is the largest in terms of the number of operators and fleet — more than 39 000 operators and 890 000 registered vehicles (NHVR 2018, p. 8). The domestic commercial vessel industry is the next largest — about 27 000 vessels (AMSA 2018, p. 32), followed by the rail industry — 184 accredited operators (ONRSR 2019) and about 2200 locomotives (Ferrier Hodgson 2014, p. 9).

In both the heavy vehicle and domestic commercial vessel industries, there are many small operators. In road freight, about 70 per cent of operators have only one truck (NTC 2016, p. 28). Only 6 per cent of operators have more than four vehicles. In the domestic commercial vessel industry, there are a large number of small fishing vessel operators and boat hire operators.

Domestic commercial vessels, rail and heavy vehicles operate with different levels of interaction with other users. Heavy vehicles often operate in high density areas, sharing the road with light vehicles and pedestrians. Heavy and light railway vehicles interact with road

users and pedestrians where there is track and at level crossings. Domestic commercial vessels operate in large bodies of water, and encounter other vessels relatively infrequently.

1.4 The Commission's approach

The Commission's approach to assessing impacts

The Commission has used both quantitative and qualitative evidence to investigate the impacts of the COAG national transport reforms, including data from the Australian Bureau of Statistics; Department of Infrastructure, Transport, Cities and Regional Development (formerly the Department of Infrastructure, Regional Development and Cities); Transport Certification Australia; the National Heavy Vehicle Regulator; the Office of the National Rail Safety Regulator; and the Australian Maritime Safety Authority. The Commission thanks all data providers for their assistance.

Given various data limitations, in many cases it is not possible to quantify with rigour the changes in productivity and safety, or attribute reliably the changes to the COAG reforms. Furthermore, as the transition to the national systems has taken place over a number of years, and is still occurring, there is no neat division between the pre-reform and post-reform periods. Many initiatives that are part of the national laws predate the COAG reforms.

The Commission is cognisant of the fact that the reforms were designed to contribute to longer term improvements, and significant net benefits may have not yet been realised.

The Commission will publish in December 2019 a technical appendix that explains the quantitative analysis that it has undertaken.

The Commission consulted widely

The Commission has consulted widely with stakeholders. Appendix A provides details of the individuals and organisations that have participated in the inquiry.

The Commission thanks all inquiry participants for meeting with Commissioners and staff, making submissions, and providing helpful information to inform the inquiry.

Further opportunities for participation

Individuals and organisations are invited to examine this draft report and comment on it by written submission to the Commission by 15 January 2020. Further information on how to provide a submission is available on the inquiry website at https://www.pc.gov.au/inquiries/current/transport/make-submission.

There will be opportunity to provide formal oral evidence to the inquiry by participating in a public hearing. More information on the dates and locations of public hearings can be found on the inquiry website.

The final report for the inquiry

The work presented in this draft report should be seen as a work in progress. Further analysis using additional data and consultation will be undertaken for the final report. The final report will be prepared and forwarded to the Australian Government by 3 April 2020.

1.5 A guide to the rest of the report

Part I of the report is introductory, and provides conceptual frameworks on safety and more background information about the 2008-09 COAG transport reforms.

Part II addresses tasks one and two of the terms of reference, exploring the impact of the reforms and the implementation and development of the national laws and regulators.

Part III addresses task three of the terms of reference, exploring the opportunities for reform.

Each chapter in the report focuses on a particular topic, and contains discussions on the three modes where relevant — heavy vehicles, rail, and domestic commercial vessels.

2 Approaches to safety regulation

Key points

- All Australians are exposed to safety risks in the transport sector. In 2018, 1320 people were killed in transport accidents, which is 12.2 per cent of fatalities due to known external factors. These fatalities represented an estimated 44 214 years of potential life lost (or an average of 33.5 years per person).
- Injuries and fatalities have profound emotional and physical impacts on individuals, their families and communities. Economic costs can also be large, ranging from direct costs, such as healthcare and insurance, to indirect costs such as lost production and income.
- Markets provide some incentives toward safer practices. Individuals have obvious incentives to protect themselves from injury, although their ability to accurately judge risks may be limited. Businesses also have strong incentives to invest in safety to avoid higher costs and reputational damage.
- However, markets can fail to satisfy society's preferences for safety. In these circumstances, government intervention may be warranted, provided it is well calibrated and is likely to yield a net benefit. Examples of safety regulation in the transport sector include the national transport laws, the Australian road rules and dangerous goods transport regulation. The sector is also subject to economy-wide occupational and workplace health and safety laws.
- Regulation can reduce but not eliminate safety risks; if poorly designed or enforced, regulation can exacerbate safety risks or produce other unintended consequences. Regulation also creates costs for governments, businesses and the broader community. In most cases, there is likely to be a tipping point where incremental changes to improve safety will come at a cost greater than any expected benefits and the community's willingness to absorb these costs.
- At times, it may be difficult or even impossible to measure the direct impact of regulations on safety outcomes which include the incentive effects of the regulation upon people and businesses.
- To ensure that regulation achieves its objectives, it is important that regulators have an appropriate range of compliance and enforcement tools, and adequate resources. It is also important for regulated businesses to cultivate a strong internal safety culture — for example, by investing in preventative measures or encouraging high levels of hazard reporting. A strong safety culture in the community also contributes to safety.
- Regulation needs to be systematically reviewed and updated, to ensure that it remains fit for purpose over time. Timely, high quality data are essential to underpin regular performance monitoring and to facilitate risk-based approaches to compliance and enforcement.

2.1 Safety in the transport sector

Safety risks are present in every facet of our lives. Whether it is travelling, working, eating or exercising, all activities involve some risk of harm or injury. Transport is no different — the nature of the task presents many inherent risks for workers as well as the public. In 2018, 1320 people were killed in transport accidents, which is 12.2 per cent of fatalities due to known external factors.[7] These fatalities represented an estimated 44 214 years of potential life lost (or an average of 33.5 years per person) (ABS 2019).

Injuries and fatalities have a significant impact on Australians, both in terms of the mental and physical impact on individuals and their families and communities, and the costs to the Australian economy. Some costs are direct, such as health care costs, insurance premiums and compensation payments. Other costs are indirect, such as lost productivity, and the loss of current and future earnings.

Factors driving safety outcomes

Safety can be thought of as a combination of the likelihood of an accident occurring and the harm that would result if it does. It follows that safety measures can reduce the probability of an accident and/or mitigate the impact of an accident.

In the context of this inquiry, safety means risks of personal injury, death, or damage to property, as a result of a transport-related incident. This includes risks to employees or others in the workplace, passengers or the general public (for example, pedestrians or other users of roads and waterways).

Many factors affect safety in the transport sector (figure 2.1). The Australian Transport Safety Bureau defines a 'safety factor' as an event or condition that increases safety risk (ATSB 2008, p. 13) including:

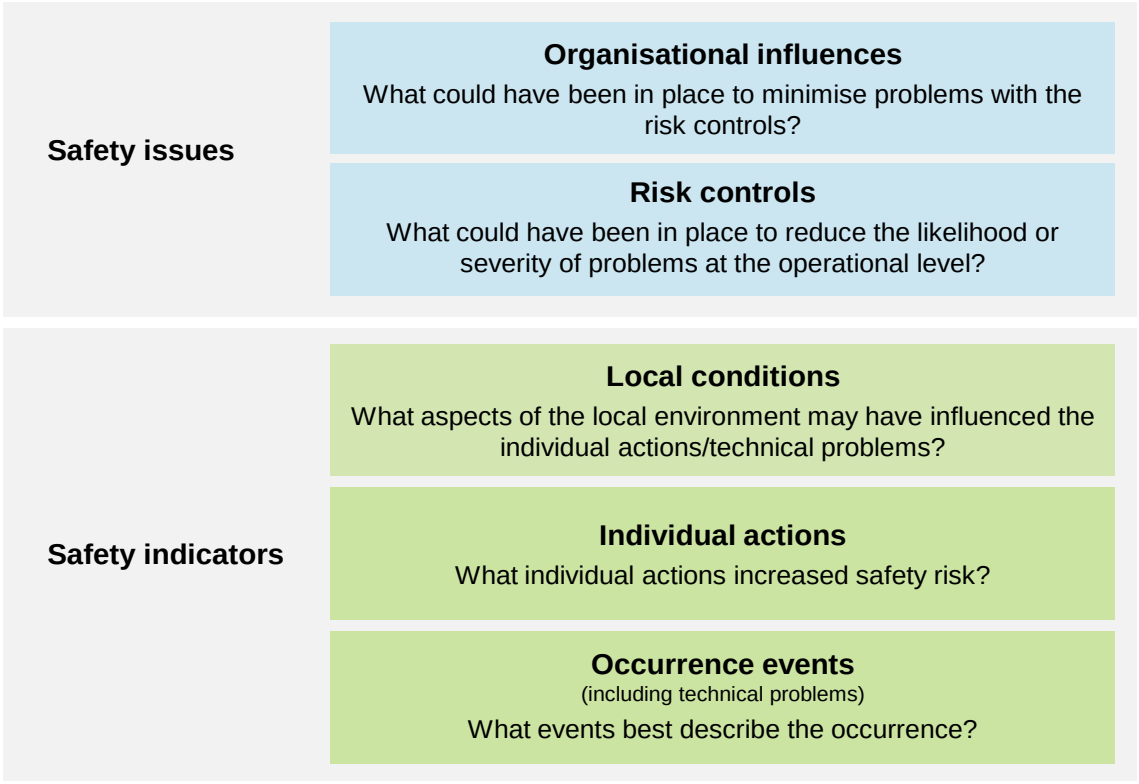
- decisions by drivers, skippers or other crew
- characteristics of a vehicle or vessel (including its design and working condition)
- how well a vehicle or vessel has been built and maintained
- environmental and other operating conditions such as the weather
- the actions of others (for example, other users of roads or waterways).

These factors, in turn, are a product of other forces. Decisions made by transport operators, for example, are a function of their skills, experience and health, and the incentives they face. This includes competitive pressures, the nature of regulation, and the driver's own appetite for risk.

[7] Deaths due to causes external to the body (for example, intentional self-harm, transport accidents, falls, poisoning).

However, not all safety factors result in an adverse safety outcome. And not all safety outcomes are directly attributable to a single safety factor. This poses some difficulties for empirical analysis of safety regulation. While regulatory regimes must be held accountable for outcomes, those outcomes will also reflect risk factors that are difficult to isolate or which may sit outside the scope of regulation. And, even where the aggregate numbers of serious safety incidents in an industry are low, this fact alone may not be proof of appropriate regulatory settings.

Figure 2.1 **Many factors influence safety outcomes in transport[a,b]**



a Safety issues will usually refer to problems with an organisation's risk controls, or a variety of internal and external organisational influences that impact on the effectiveness of its risk controls. In other words, it is a factor for which an organisation has some level of control and responsibility and, if not addressed, will increase the risk of future accidents. **b** Safety factors that are not safety issues can therefore be termed 'safety indicators'. For example, the fact that a train driver has a medical condition is not a safety issue itself, but it is a safety factor that may indicate that there is a safety issue associated with the rail operator's medical examination processes.

Source: ATSB (2008).

2.2 The role of governments in ensuring safety

Despite generally shared incentives for safe operations, there are several reasons why market forces alone may not adequately cater for society's preferences for safety in transport (box 2.1).

Consumers generally face direct incentives to seek out goods and services that protect their own safety, although they may not have a sufficient evidence base for their decisions. Consumers face less direct incentives to consider the effect of their decisions on public safety or the safety of workers and, again, may lack essential knowledge.

Similarly, whether businesses succeed depends partly on their ability to supply products that meet society's preferences with regard to safety. Businesses have strong incentives to invest in safety to the extent that safety incidents (such as road accidents) result in higher costs, disruptions to their business and reputational damage. However, transport operators may face commercial incentives to take greater risks (for example, driving when fatigued) or otherwise underinvest in safety.

It is therefore unsurprising that there are numerous layers of safety regulation in the transport sector, such as the national transport laws, the Australian road rules, dangerous goods transport regulation, and workplace health and safety regulation.

Box 2.1 **Sources of market failure**

- **Information failures** — individuals are not always able to make fully-informed decisions in their best interest, because they do not have access to all relevant information, or do not have the technical expertise to interpret it. For example, passengers on a ferry will generally be unable to (cheaply) obtain and understand information about the maintenance history of the vessel, or the ferry operator's qualifications (information asymmetry).
- **Negative spill-over effects or 'externalities'** — the costs and benefits incurred by those using a good or service do not always fully reflect the impacts their use has on others. For example, a fatigued heavy vehicle driver may cause injury or damage to pedestrians or other road users.
- **Public goods** — goods or services that may be underprovided by the private sector because 'free riders' cannot be excluded from enjoying the benefits. Examples of public goods include street lighting and traffic lights.

Sources: PC (2006, 2011).

How far should safety regulation go?

Regulation is most simply defined as a principle, rule, or law designed to control, govern or influence conduct. While market failure may point to a need for regulation, there is no easy way to determine what constitutes a sufficient or reasonable level of safety in the eyes of the community. The community will naturally have expectations that governments and industry will reduce risks as far as practicable, and governments may feel compelled to respond to these expectations, particularly in the wake of a serious safety incident.

However, applying this *general* preference for safety through regulation may lead to unacceptable outcomes for the community, or to other unintended outcomes (box 2.2). For example, low speed limits for passenger vehicles may reduce the risk of accidents but will also diminish the benefits enjoyed by motorists and in some cases has led to an increase in the risk of accidents. In most cases, there is likely to be a tipping point where incremental changes to reduce risk will come at a cost greater than any expected benefits and the community's willingness to absorb these costs.

Finally, while regulation can exert some external influence on an organisation's safety processes, a strong internal safety culture (for example, by investing in preventative measures or encouraging high levels of hazard reporting) is an important factor in maintaining high levels of safety. As previously discussed, organisational influences are an important determinant of safety outcomes (figure 2.1). If an organisation tolerates frequent breaches of safety standards, a dangerous culture may develop, leading over time to progressively more significant safety breaches.

Box 2.2 Regulations can have unintended consequences

Where regulations fail to take into account how people's behaviour might change, there may be unintended consequences which undermine the intention of the regulation. One such example is a proposal by the United States Federal Aviation Administration (US FAA) to introduction a regulation requiring children under the age of 2 years to travel in child-restraint seats on commercial aeroplanes.

In its subsequent analysis, the US FAA found that if families were required to purchase an additional seat on an airline in order to travel with a child, some might instead to choose to drive. As driving is statistically much more dangerous than flying, this substitution would increase overall safety risks to families, with the US FAA estimating that the *airline* child-restraint seat requirement would result in between 13 and 42 more fatalities over 10 years in *highway* travel. As a result, the regulation was not introduced.

Source: US FAA (2005).

Balancing safety and other objectives

It is natural for societies to aspire to reduce the risks of personal injury or property damage wherever possible. Reducing the incidence of harm is always, in itself, a desirable policy goal. Yet, the questions of whether and how safety should be regulated are more complicated, particularly considering the implications for other economic objectives.

In aggregate, some safety outcomes are equivocal from a policy perspective. For example, as a thought experiment, one could consider a technological change that meant a particular amount of freight could be moved in one trip instead of four, but with twice the probability of a safety incident occurring during each trip. Assuming all the freight were moved, this would mean that:

- the total expected number of safety incidents would reduce by half — a desirable outcome from society's perspective

- each person involved in those freight trips would have twice the probability of being involved in a safety incident — an undesirable outcome from their perspective.

This inquiry takes the approach that both perspectives must be considered. Policy should aim to improve economy-wide safety outcomes, with consideration given to the scale of the freight task. For example, as the freight task increases over time, policy should aim to reduce the rate and number of safety incidents associated with the entire freight task.

At the same time, it is important for policy to consider whether changes in work practices would result in safety risks falling disproportionately on a subset of transport workers. For example, if productivity increases over time, and fewer workers were needed to move the same amount of freight, policy should consider whether transport workers' jobs are themselves becoming more or less risky.

2.3 Principles of effective regulation

The Australian Government guidelines for best practice regulation encourage policy makers to consider the complete range of policy options available to them (Australian Government 2014). The preferred policy option should be the best of all options available, including the 'do nothing' option. Good regulatory practice has several features (box 2.3).

Regulation has costs

There are sound reasons for regulation. However, regulation has costs, which may include administration costs to government, compliance costs to businesses and costs to the broader community (such as restricting individual choice or higher prices).

Unnecessary compliance costs can reduce firms' profitability, or lead to higher prices for consumers, and influence consumer or business investment decisions in unintended ways. Policy makers should aim to ensure that the cost to government of administering regulations, and to firms of complying with them, are proportionate to the problem and be the minimum necessary to achieve stated policy objectives.

Policy makers generally have a choice between prescriptive or principles-based regulation (box 2.4), each having its advantages and disadvantages. Prescriptive regulation can provide clarity and certainty to regulated businesses. This may be valuable for smaller businesses which lack the resources to develop their own safety arrangements, provided the prescriptive regulation is clear and not excessively burdensome.

In many cases, it would be simpler and cheaper for businesses to adopt an established risk control than develop in-house solutions. It would also be simpler for regulators to enforce this requirement. However, the certainty from prescriptive regulation can come at the expensive of flexibility and innovation; overly prescriptive regulation can discourage businesses from developing new, more effective ways to address safety risks. Prescriptive regulation can promote a focus on process — compliance with rules — rather than outcomes.

If key provisions are fixed in black letter law, these provisions will be difficult to adjust to meet changing circumstances.

Box 2.3 What is effective regulation?

The Organisation for Economic Cooperation and Development and the Council of Australian Governments have outlined principles of effective regulation, including that regulation should:

- serve clearly identified policy goals, and be effective in achieving those goals
- have a sound legal and empirical basis
- produce benefits that justify costs, considering the distribution of effects across society and taking economic, environmental and social effects into account
- minimise costs and market distortions
- promote innovation through market incentives and goal-based approaches
- be clear, simple, and practical for users
- be consistent with other regulations and policies
- be compatible as far as possible with competition, trade and investment-facilitating principles at domestic and international levels
- remain relevant over time
- government action should be effective and proportional to the issue being addressed.

Sources: OECD (2005); COAG (2007).

Box 2.4 Prescriptive or principles-based regulation

Prescriptive or rules-based regulation sets out in specific detail how regulated entities should behave, stipulating precisely what they can or cannot do. For example, the Australian Road Rules prescribe that motor vehicle drivers and passengers must wear a seatbelt. Prescriptive regulation generally (but not always) has the advantage of being uniform, clear and unambiguous. Prescriptive regulation may also be easier to enforce — it limits the regulator's discretion in interpretation, leaving enforcement officers to focus on whether or not a rule has been contravened. However, prescriptive regulation is generally inflexible, and cannot automatically adapt to changes in the regulatory environment, such as the development of new technologies. It may also encourage 'box-ticking' or technical compliance, rather than compliance with the spirit and intent of the law.

In contrast, principles-based regulation sets an overall objective or standard that must be achieved, rather than prescribing in detail what steps must be taken. For example, section 18 of the Australian Consumer Law requires that business not engage in misleading or deceptive conduct, but does not specify in detail what steps businesses should take to comply. Such principle-based rules allow for flexibility in how the regulatory objectives are achieved. Principles also remain relevant where there are changes to technology or other material changes in how the industry operates.

In practice, regulation often includes elements of both prescriptive and principles-based rules. Policy makers may also address issues caused by excessive prescription by allowing for exemptions from the law. Similarly, a lack of detail in principles-based regulation may be remedied through regulatory guidelines or codes of conduct.

Sources: ALRC (2008); NTC (2019).

Compliance and enforcement

To ensure that regulation achieves its objectives, policy makers should consider how regulations will be administered and enforced. It is vital that regulators have an appropriate range of compliance and enforcement tools, and adequate resources. Regulators also need to consider how they educate stakeholders about risk and compliance.

Regulator practices have an important bearing on the effectiveness of the regulation and the compliance costs imposed. Heavy handed administration of regulation can reduce innovation and act as a disincentive to investment, including the entry of new firms. Governments have recognised that risk-based approaches to compliance and enforcement can reduce costs for businesses and regulators, and facilitate greater achievement of the objectives of the regulation (for example, QLD Government 2019).

In order to adopt a risk-based approach, regulators need flexibility in how they enforce the law (box 2.5). Where regulation provides for particular enforcement tools (for example, infringement notices, penalties or fines), policy makers need to ensure that this does not unduly constrain regulators in how they respond to breaches, or preclude the use of some tools for effective (and low cost) compliance strategies. In addition, regulators require accurate, timely data in order to determine effective risk profiles.

Box 2.5 Risk-based regulation

A risk-based approach to regulation involves basing enforcement priorities and other regulatory decisions on the likely risk of adverse outcomes, and the potential seriousness of these outcomes. It requires regulators to begin by identifying the risks that they need to manage, not the rules they have to enforce.

When a regulator employs a risk-based approach, it is recognising that different regulated activities or environments present different levels of risk. Armed with knowledge about such differences in risk, a regulator can then tailor the delivery of regulation so that compliance costs are proportionate to the benefits of addressing those risks. In an ideal setting, this approach provides regulators with a transparent, systematic and defensible framework of targeting the use of their limited resources and of focussing their compliance and enforcement activity to the areas of highest risk.

Notwithstanding, the use of a risk-based approach requires regulators to have accurate information and data about regulated entities, as well as sufficient resources to systematically target their effort to regulatory areas presenting the greatest risks. Regulators may face challenges in adopting a risk-based approach. For example, they may lack the power or discretion to implement a fully risk-based system, such as the discretion to not enforce penalties for minor or initial breaches of regulations. They may also need to respond outside of a risk-based framework to an evolving political or regulatory environment, or where they only have a partial view of the activities of regulated parties.

Sources: Black and Baldwin (2010); PC (2013); NZPC (2014).

Regulatory review

Regulations need to be systematically and regularly reviewed and updated. Even regulations with sound objectives may have unintended economic or social effects. With changes in technology and economic and social conditions over time, even well designed regulations can become less effective or unnecessarily costly, or may inhibit the adoption of newer and safer technology or practices (PC 2011, p. 18).

Policy makers can ensure that regulation remains relevant by setting requirements for a review process as part of the development of new regulatory proposals, for example, by incorporating sunset provisions or review requirements in legislative instruments. Such reviews are likely to be particularly important where there is significant uncertainty about compliance burdens or the overall benefits to society. It is also important that adequate data are available to facilitate robust review processes, both in relation to the effectiveness of legislation and to the actions of regulators.

3 Harmonising transport regulation

Key points

- Since federation, an array of State, Territory, and Australian Government laws and regulations have applied to heavy vehicle, rail and maritime transport, in part reflecting the constitutional treatment of transport.
  - The transport sector has historically been subject to sector-specific safety regulation, in addition to Workplace Health and Safety laws, in each State and Territory.
  - From the mid-2000s, governments implemented piecemeal reforms to incrementally improve the national consistency of transport-specific safety regulation, for both the heavy vehicle and rail sectors.
  - In 2008 under the Seamless National Economy National Partnership Agreement, the Council of Australian Governments (COAG) agreed to promote consistent national regulations across various sectors, including transport.
- In 2009, COAG agreed to create national regulatory regimes for rail safety, marine safety (for domestic commercial vessels), and heavy vehicle safety and productivity.
  - COAG's aim was to improve safety while reducing costs and regulatory burdens on transport businesses, particularly those businesses operating across State and Territory boundaries.
  - Three intergovernmental agreements were signed in 2011: Heavy Vehicle Regulatory Reform, Rail Safety Regulation and Investigatory Reform, and Commercial Vessel Safety Reform. This led to the establishment of national laws for each mode of transport, administered by national regulators.
- The regulatory regimes governing the three transport modes vary, reflecting the history, challenges and complexities of regulation in each sector. For example:
  - the Heavy Vehicle National Law is particularly prescriptive, enshrining many specific requirements in legislation
  - the Office of the National Rail Safety Regulator (ONRSR) uses a 'co-regulatory' approach, which shares regulatory responsibility between the regulator and industry. By contrast, the National Heavy Vehicle Regulator (NHVR) and the Australian Maritime Safety Authority (AMSA) have sole regulatory responsibilities
  - AMSA has a remit that is broader than the Marine Safety National Law (and includes international vessels) while the functions of the NHVR and ONRSR are limited to the national laws.

In Australia, transport by heavy vehicle, rail, and some maritime vessels has historically been subject to an array of State, Territory, and Commonwealth laws and regulations. One of the main areas of regulation relates to safety, which is covered by both Workplace Health and Safety (WHS) laws, and safety regulations specific to transport. The latter regulations

were the subject of the COAG reforms at the focus of this inquiry. Namely, in 2009, COAG agreed to create national regulatory regimes for rail safety, maritime safety, and heavy vehicle safety and productivity.

This chapter provides a brief history of transport regulation reform in Australia before 2009 (section 3.1) and outlines the key elements of COAG's 2009 national transport reforms (section 3.2).

3.1 History of transport regulation

Since federation, State and Territory Governments have been largely responsible for regulating heavy vehicle, rail and domestic commercial vessels, reflecting the division of powers in the Australian Constitution (box 3.1). Jurisdictions applied their own laws, with differing standards and scope.

Multiple State and Territory regulatory regimes can be costly for businesses operating across jurisdictions. However, individual State and Territory regimes can also improve regulation by allowing for competitive federalism (Commonwealth of Australia 2006, p. 10).

Box 3.1 The constitutional foundations of transport regulation

The Australian Constitution confers an exclusive power over the Commonwealth to make laws concerning a limited range of issues (for example, defence, external affairs and corporations), while the States retain powers to make laws over any area where the Commonwealth does not have exclusive powers. The Constitution does not confer a general power on the Commonwealth to regulate transport. However, it does confer some specific legislative powers relating to transport. These specific powers, involving railways, include control of railways for military purposes, consensual acquisition of State railways, and the power to make laws with respect to trade and commerce, extending to navigation, shipping and State-owned railways. In addition, some of the Commonwealth's exclusive powers may be indirectly related to transport, including the broad trade and commerce power.

Australia's federal system, promulgated through the Constitution and its distribution of powers, poses unique challenges to regulatory reform. It has led to a mix of State, Territory and Commonwealth regulation of road and rail transport, and ports. These constitutional constraints affect the means by which regulatory change can occur, and the achievement of nationally consistent regulation (chapter 4). Tensions between the different levels of government (particularly the Commonwealth and the States) as a result of the constitutional distribution of powers is also evident in other transport industries, including aviation regulation.

From the late 1990s, governments sought to reduce the regulatory burdens from multiple, disparate regimes. These reforms focused on aligning some of the major regulatory requirements in each jurisdiction. This period of harmonisation can be seen as a precursor to the COAG agreements of 2009 which announced the creation of a single, national regulatory regime for each sector (heavy vehicle safety and productivity, rail safety and domestic commercial vessel safety).

Heavy vehicle reforms before 2009

Significant reforms were made to the regulation of safety in heavy vehicles in the decade before 2009. Several of these reforms produced programs which are now incorporated in the Heavy Vehicle National Law (HVNL) (figure 3.1).

In 1999, the National Heavy Vehicle Accreditation Scheme (NHVAS) was established. The scheme encouraged operators to improve their safety and other management systems via mass and maintenance concessions. Fatigue management was added to the NHVAS in 2008. Accreditation allows operators to transport greater loads, omit some annual inspection requirements and have greater flexibility when managing fatigue risks. The scheme became part of the HVNL in 2013 and is administered by the NHVR.

The National Heavy Vehicle Driver Fatigue reform process also commenced in 1999, following a Commonwealth parliamentary inquiry (HRSCCTA 1999). Recommendations from the inquiry included strengthening 'chain of responsibility' regulation and creating more flexible regulation of driver hours through accreditation. The reform process was completed in 2008, albeit with only four States participating (New South Wales, Victoria, Queensland and South Australia). Elements of these reforms were carried over into the HVNL, including record keeping, work diaries and general fatigue management.

In 2003, the National Road Transport Commission (now the National Transport Commission (NTC)) developed the *Road Transport Reform (Compliance and Enforcement) Bill 2003* (the Bill). The Bill intended to provide a nationally consistent, and best practice legislative scheme. The Bill was never passed into law, but became the basis for future chain of responsibility laws.

Chain of Responsibility (CoR) laws were introduced in 2005. States and Territories amended their existing road safety and heavy vehicle legislation to create new obligations on supply chain participants where goods were to be transported by road at any point in the journey, regardless of whether the parties owned or directly managed the heavy vehicles. CoR is now a key element of the national law.

The National Heavy Vehicle Inspection Manual (NHVIM), introduced in 2004, was intended to provide nationally consistent procedures, standards and criteria for heavy vehicle inspections. Each criterion is now linked to a heavy vehicle standard in the national law. Most jurisdictions have adopted the NHVIM. However, some States (Queensland, South Australia and Tasmania) apply additional criteria and requirements, while the Northern Territory has not adopted some elements.

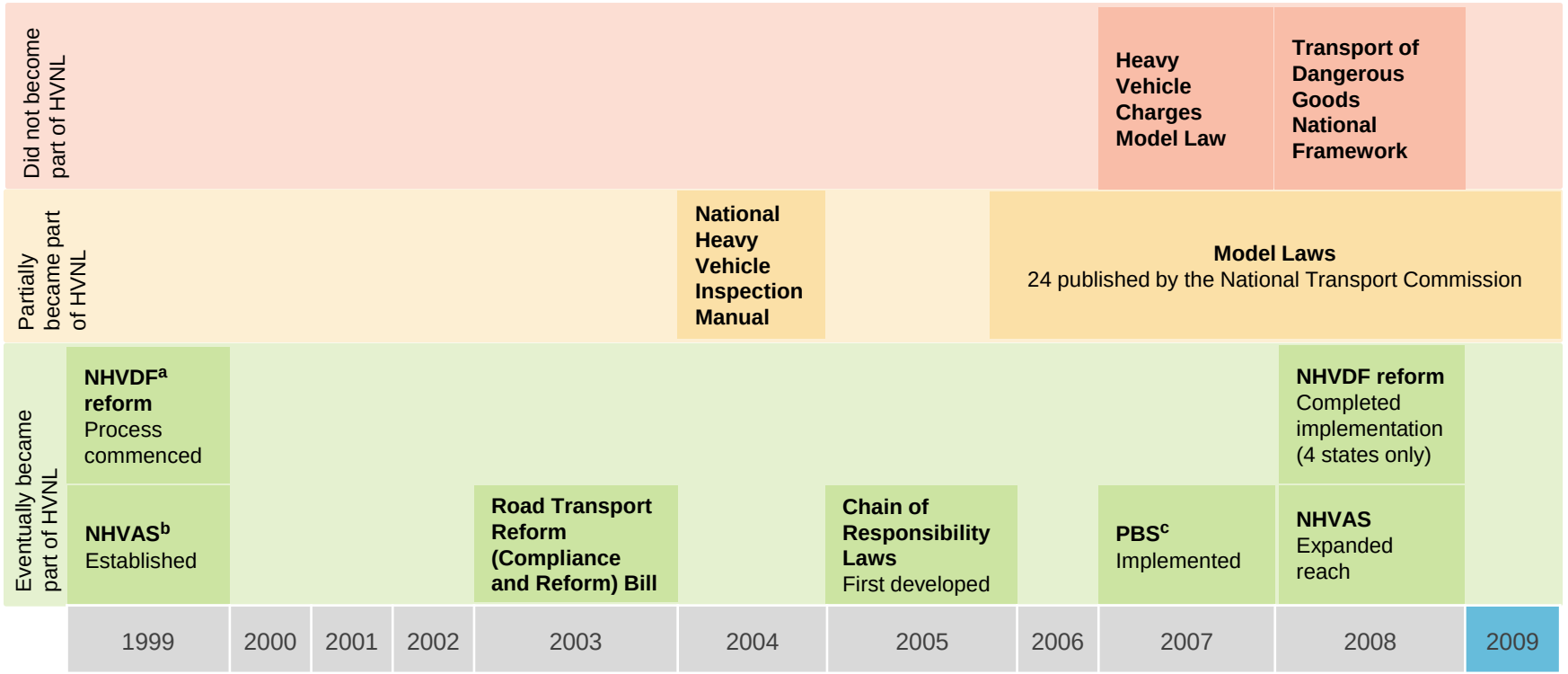
The Performance-Based Standards (PBS) scheme (discussed in chapter 6), now a part of the national law, was first considered in the late 1990s but not implemented until 2007. The PBS was developed to improve approval processes for innovative and more productive vehicle designs, with the aim of facilitating greater access to local roads (NTC 2017).

Model laws were also developed from 2006 to 2009 by the NTC to provide for a coordinated approach to heavy vehicle regulation. These model laws covered oversize and overmass vehicles, heavy vehicle standards, driving hour regulations, compliance and enforcement, and driver fatigue. The model laws were useful in facilitating COAG's national harmonisation agenda, and many were eventually included in the national law.

Since 2008, jurisdictions have, to varying degrees, adopted the national framework developed by the NTC for regulating the transport of dangerous goods (Deloitte Access Economics 2018). The Australian Code for the Transport of Dangerous Goods by road and rail is a key part of the framework, underpinned by model laws and regulations (Deloitte Access Economics 2018, p. 19; DIRDC 2018).

While the HVNL has absorbed many pre-2009 reform initiatives, not all reform initiatives have been carried over to the HVNL. For example, in 2007, the Australian Transport Council (now the Transport and Infrastructure Council) launched a review into cost reflective heavy vehicle pricing in response to the Productivity Commission inquiry into road and rail freight infrastructure pricing (PC 2006). The result was a model law on heavy vehicle charges, approved in 2007 by the Australian Transport Council, but not incorporated into the national law.

Figure 3.1 **A range of pre-2009 heavy vehicle reforms existed, many of which found their way into the HVNL**



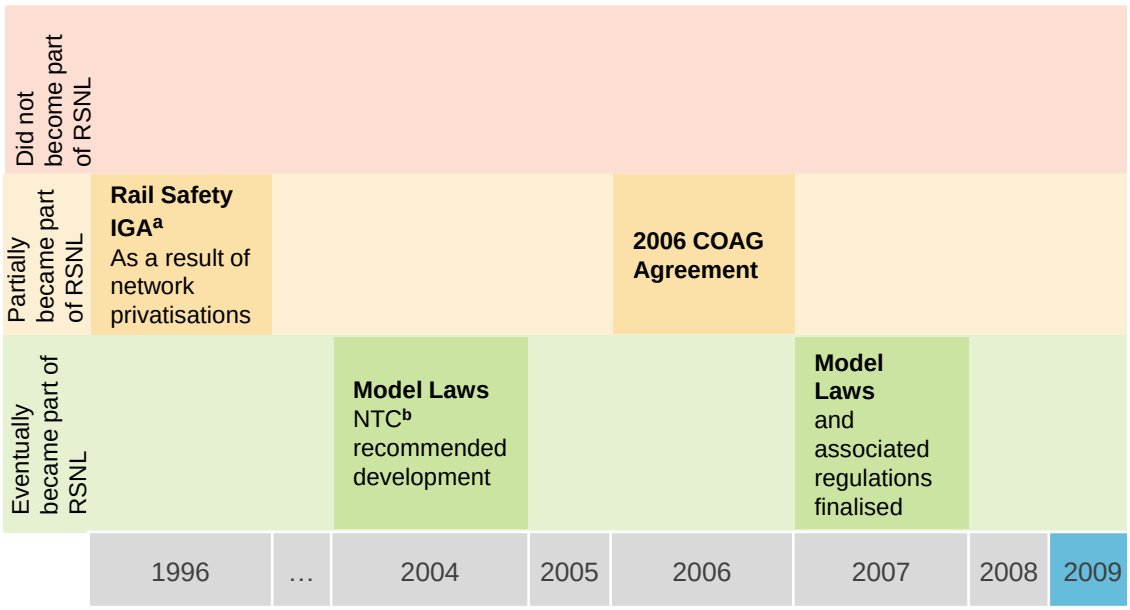
[a] National Heavy Vehicle Driver Fatigue reform. [b] National Heavy Vehicle Accreditation Scheme. [c] Performance-Based Standards scheme.

Rail reforms before 2009

Movement toward a national system of rail safety regulation began in 1996, with the signing of a rail safety intergovernmental agreement. The agreement was intended to establish a nationally consistent approach by aligning State and Territory legislation and requiring the use of Safety Management Systems (SMSs). These are still in use today under the Rail Safety National Law (RSNL).

Though States and Territories all used SMSs as their main accreditation tool, there were inconsistencies in approach and limits on interstate mutual recognition (PC 2000). This situation led the NTC to recommend the development of nationally consistent model legislation (model laws) (NTC 2004). These model laws were finalised in 2007, strengthening the existing accreditation process and introducing General Safety Duties (for example, drug and alcohol, fatigue and health and fitness duties), compulsory Interface Agreements and a systematic hierarchy of regulatory sanctions. Although implemented inconsistently, these model laws helped to align rail safety regulation across jurisdictions and formed the basis of the final national law. Figure 3.2 sets out these key reforms and their incorporation into the RSNL.

Figure 3.2 **Pre-2009 national rail reforms**



[a] Rail Safety Intergovernmental Agreement. [b] National Transport Commission.

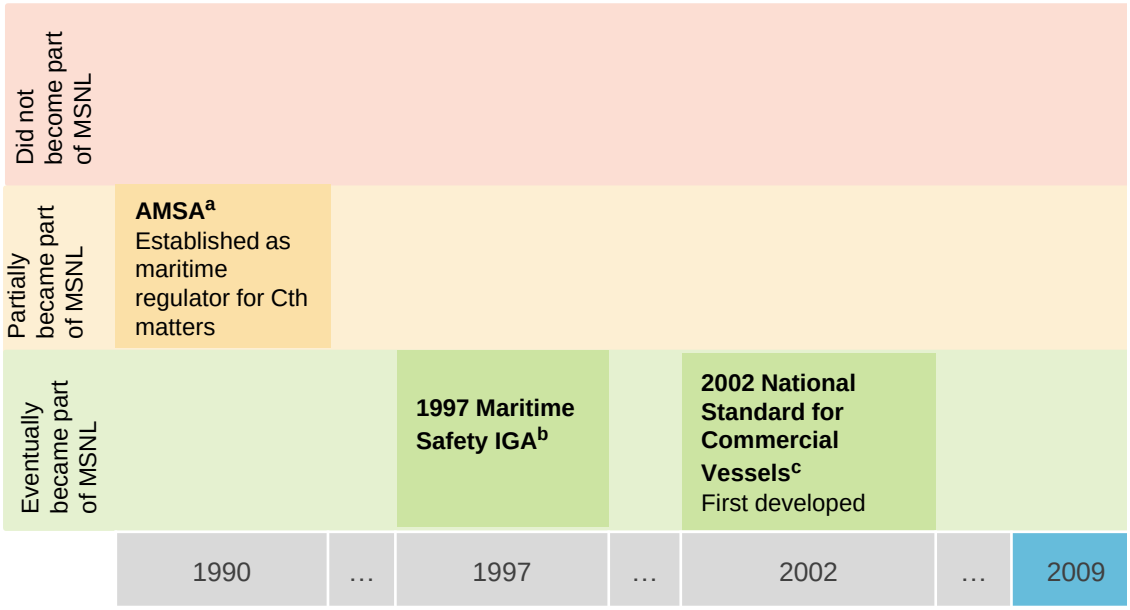
While the model laws were being developed, COAG agreed to 'harmonise and reform rail and road regulation within five years' (COAG 2006, p. 6).

Before the 2009 COAG rail reforms, each State and Territory was responsible for developing and implementing its own rail safety regulatory regime, with each appointing its own regulator. The schemes across the jurisdictions were similar, due to the existence of partially implemented model laws.

Domestic commercial vessel reforms before 2009

In contrast to heavy vehicles and, to some extent, rail, there were limited efforts to harmonise the regulation of domestic commercial vessels before the 2009 COAG agreements. The Australian Maritime Safety Authority (AMSA) was established as the Commonwealth's maritime regulator in 1990, responsible for search and rescue, control of ship-sourced marine pollution, and safety regulation of maritime operations in Australia and of Australian ships operating overseas (Commonwealth of Australia 1990). State and Territory regulators were responsible for non-Commonwealth maritime matters, mainly recreational and commercial vessels registered to only operate within Australian waters. Figure 3.3 sets out these key reforms and their incorporation into the Marine Safety National Law (MSNL).

Figure 3.3 **There were very few pre-2009 maritime safety reforms**



[a] Australian Maritime Safety Authority. [b] Maritime Safety Intergovernmental Agreement. [c] Became part of the Marine Safety National Law via subordinate legislation.

A 1997 intergovernmental agreement to establish a national marine safety regime was a significant early attempt at national reform. In 2002, the Australian Transport Council (now the Transport and Infrastructure Council) endorsed a National Standard for Commercial Vessels (NSCV), providing 'a common national standard for the design, construction, crewing and operation of vessels' (Australian Transport Council 2002, p. 3). The NSCV was

intended to be incorporated into the national regulator's remit; it is now part of the MSNL via subordinate legislation (the *Marine Safety (Domestic Commercial Vessel) National Law Amendment Bill 2014* (Cwlth)).

Unlike heavy vehicles and rail – which had some national model laws in place – the domestic commercial vessel sector before 2009 was regulated by States and the Northern Territory with separate laws and regulators. The sector was marked by major differences in:

> … safety requirements, the recognition of vessel survey, safety certification and qualifications/certificates of crew, and considerable variations in the level and nature of ongoing monitoring of compliance with safety standards. (NAMSRS 2009, p. 7)

As noted by AMSA, the regulatory situation before the national system was:

> … seven very different systems that were regulated, implemented, overseen and cost recovered across the entire spectrum of possibilities. (sub. 35, p. 4)

Regulatory differences between States and the Northern Territory extended to the definition of a commercial vessel that would be subject to regulation (NAMSRS 2009, p. 48), and the mandatory nature of surveys. For example, Queensland had no annual survey requirements for the vessels likely to be subject to regulation, while the rest of the States and the Northern Territory required annual surveys of vessels to some degree (with some exemptions, and variations based on the length and categorisation of vessels) (NAMSRS 2009, Appendix C, Table 2d).

3.2 The 2009 COAG national transport reforms

In 2009, COAG agreed to create national regulatory regimes for heavy vehicle safety and productivity, rail safety and maritime safety. This involved replacing State- and Territory-specific laws and regulators with national laws and regulators in each of the three transport modes. COAG aimed to improve safety while reducing costs and regulatory burden for transport companies and, as a result, lowering costs of exports and trade (COAG 2009a). Intergovernmental agreements (IGAs) to this effect were signed in August 2011.

Before 2009, COAG entered into a range of transport-related negotiations and agreements (box 3.2). The 2009 reforms were part of a broader COAG reform agenda (box 3.3).

Box 3.2 COAG reform processes leading to the 2009 transport reforms

COAG's reform processes before 2009 laid the foundations for the 2009 transport reforms.

In March 2008, COAG endorsed a broad reform agenda with the goals of boosting productivity, increasing workforce participation and geographic mobility, and delivering better services for the community. The reform agenda covered 27 areas of regulatory reform in areas of shared Commonwealth, State and Territory responsibility. One aim of this agenda was to promote consistent national regulations across various sectors, including transport.

In July 2008, COAG acknowledged that Australia's 'overlapping and inconsistent regulations' were impeding productivity growth. The need for continued domestic microeconomic reform to enhance Australia's competitiveness and productivity was also recognised. In response, COAG agreed to develop a reform package to 'deliver a seamless national economy', comprising of the 27 previously identified reform areas plus a variety of new priority areas for competition reform, including national transport policy, anti-dumping, parallel importation of books, rationalisation of occupational licences and further reforms to infrastructure access.

In November 2008, COAG signed the *Intergovernmental Agreement on Federal Financial Relations*, which recognised that, while State and Territory Governments have constitutional responsibility for many areas of service delivery, coordinated action may be desirable to address various economic and social challenges. Under the new framework, more than 90 different payments from the Commonwealth to States and Territories for specific purposes were combined into new National Agreements across the key areas of health care, early childhood and schools, skills and workforce development, disability services, and affordable housing.

In December 2008, COAG signed the *National Partnership Agreement to Deliver a Seamless National Economy*. Under this, the Commonwealth, States and Territories agreed to work together 'to deliver more consistent regulation across jurisdictions and address unnecessary or poorly designed regulation, to reduce excessive compliance costs on business, restrictions on competition and distortions in the allocation of resources in the economy'. National transport policy was a priority, with uniform regulation of heavy road vehicles and rail safety, and a nationally consistent approach to maritime safety regulation identified as key areas of reform. Despite the agreement formally ending on 31 December 2012, COAG maintains its commitment to implementing these reforms.

Sources: COAG (2008b, 2008a, 2008c).

Box 3.3 Other relevant COAG reforms since 2008

Other COAG activities during this period focused broadly on infrastructure and on developing nationally-consistent regulation, including work on:

- road maintenance, rail projects and community infrastructure projects funded via national partnerships as part of the stimulus response to the Global Financial Crisis — the Nation Building and Jobs Plan (Feb–April 2009)
- better integrated infrastructure and land-use planning arrangements (national objective and planning criteria agreed Dec 2009)
- a road reform plan covering heavy vehicle pricing (considered most recently in 2013)
- a national ports strategy (2011).

COAG's agenda post-2013 has also covered:

- rationalisation of regulators (May 2014)
- a national partnership agreement on land transport infrastructure to 'support freight rail and road projects that help deliver a safe, sustainable and efficient national transport system' (October 2014)
- an intergovernmental agreement on Competition and Productivity Enhancing Reforms including efficient investment and usage of infrastructure for road transport (December 2016).

Sources: COAG (2009b, 2009c, 2011a, 2013, 2014a, 2014b, 2016).

Three intergovernmental agreements

The three relevant 2011 IGAs covered Heavy Vehicle Regulatory Reform (COAG 2011c), Rail Safety Regulation and Investigatory Reform (COAG 2011d), and Commercial Vessel Safety Reform (COAG 2011b). The IGAs sought to create a national law for each mode of transport and establish national regulators to administer them. However, the IGAs were not identical, with some differing objectives, intended outcomes and outputs (table 3.1).

The Heavy Vehicle IGA was intended to establish a uniform national regulatory system for all vehicles weighing more than 4.5 tonnes Gross Vehicle Mass or Aggregate Trailer Mass. Creating 'seamless' national regulation was expected to cut the regulatory burden on business and improve safety, productivity and efficiency. The reforms were expected to be in place by the end of 2012. The IGA was signed by COAG members, with the exception of Western Australia. Despite signing the IGA, Northern Territory ultimately chose not to adopt the resulting national law (and national regulator).

All COAG members signed the Rail IGA and Commercial Vessel IGA. The Rail IGA was intended to improve safety, reduce regulatory burden and improve productivity in the rail industry (COAG 2011d, p. 1). The Commercial Vessel IGA had a broader focus, including improving safety and decreasing risk to the public, industry and the environment, simplifying maritime safety requirements to increase certainty for industry, and reducing

costs by removing barriers to the movement of labour and domestic commercial vessels between jurisdictions.

Table 3.1 **Key elements of COAG's transport IGAs**

	Heavy Vehicle IGA	*Rail IGA*	*Commercial Vessel IGA*
Signatories	All States and Territories except Western Australia[a]	All States and Territories	All States and Territories
Objectives	• Seamless national regulation • Consistent and streamlined administration and service provision of regulation	• Seamless national safety regulation of rail operations • Improved rail safety	• Safe operations with effective, consistent and efficient regulation • Minimisation of legal and administrative costs • No overall increase in regulatory burden
Intended outcomes	• Enhanced safety, productivity and efficiency • Removal of inefficiencies from inconsistent jurisdictional requirements • Reduced regulatory burden and compliance costs	• Promotion of safety and safety improvement • Improved productivity and efficiencies from consistent national requirements • Decreased regulatory burden	• Improved safety and lower public, industry and environmental risks • Reduced complexity and increased certainty regarding design, construction, equipment, operation and crew certification • Removal of inter-state barriers to transfer of labour and commercial vessels
Intended outputs	• A national law • An independent national regulator • National standards for delivery of regulatory services and activities • NHVR and Government service level agreements to support implementation	• A national law • An independent national regulator • Expansion of the Australian Transport Safety Bureau's role to cover rail safety investigations nationally	• A national law • A national regulator • A consistently-applied national compliance and enforcement system • A national database of commercial vessels

[a] The Northern Territory signed the Heavy Vehicle IGA, but did not adopt the resulting national law. Western Australia neither signed the IGA nor adopted the national laws.

Sources: COAG (2011c, 2011d, 2011b).

Three national laws and regulators

The national laws for heavy vehicles, rail safety and maritime safety were to be the primary means to achieve the goals of the IGAs. The national laws also established national regulators for the three transport modes through the creation of the National Heavy Vehicle Regulator (NHVR) and the Office of the National Rail Safety Regulator (ONRSR), and the expansion of the remit of the Australian Maritime Safety Authority (AMSA).

While the laws and regulators were intended to be national in remit, there are various derogations (discussed in chapter 4). The effectiveness of the national regulators is analysed in chapter 7.

Heavy Vehicle National Law

The HVNL was passed by the Queensland Parliament (as host jurisdiction) in 2012, as a Schedule in the *Heavy Vehicle National Law Act 2012* (Qld). Other participating States and Territories then applied the law and its regulations via an 'applied laws' approach (chapter 4). South Australia chose to implement the HVNL via a 'mirror' approach (chapter 4). The HVNL came into force on 10 February 2014 (NHVR 2018).

The HVNL largely incorporated the pre-existing set of model laws[8] developed by the NTC in consultation with governments and industry. These model laws had not been broadly adopted by States and Territories before the introduction of the HVNL. Some model laws, such as the transport of dangerous goods model law, were not incorporated into the HVNL.

The HVNL provides for national standards for heavy vehicles, and addresses a range of issues including driver fatigue, vehicle safety (via, for example, the Intelligent Access Program and the NHVAS), vehicle operations (including mass, dimension and loading) and road access arrangements (through relationships with road managers).

The Governments of Western Australia and the Northern Territory did not apply the HVNL to their jurisdictions, and thus fall outside its coverage. However, Western Australia introduced its own road safety legislation in 2012 — the *Road Traffic (Vehicles) Act 2012* (WA) — which adopted many aspects of the HVNL. The WA regime is less prescriptive than the HVNL and differs in key respects, including vehicle accreditation, performance based standards, fatigue management, and approaches to chain of responsibility. These differences require trucking operators traversing Western Australia's borders to comply with at least two separate systems (the Western Australian system, and the HVNL and/or the Northern Territory system).

The Northern Territory has generally continued with a light-handed approach (for example, heavy vehicles can use all roads in the territory, with the exception of specified urban roads). In some instances, they have adopted aspects of the HVNL, including the heavy vehicle standards published in the National Heavy Vehicle Inspection Manual. The Northern Territory also offers flexibility to heavy vehicle operators by allowing operators to comply with their choice of the NT, WA or HVNL schemes (NT Government 2017).

National Heavy Vehicle Regulator and other institutions

The NHVR was established under the HVNL in 2013 and is responsible for the regulation of all vehicles under the scope of the HVNL in all States and Territories excluding Western Australia and the Northern Territory. The primary function of the NHVR is to give effect to the HVNL Act itself. Other responsibilities outlined in the HVNL Act include:

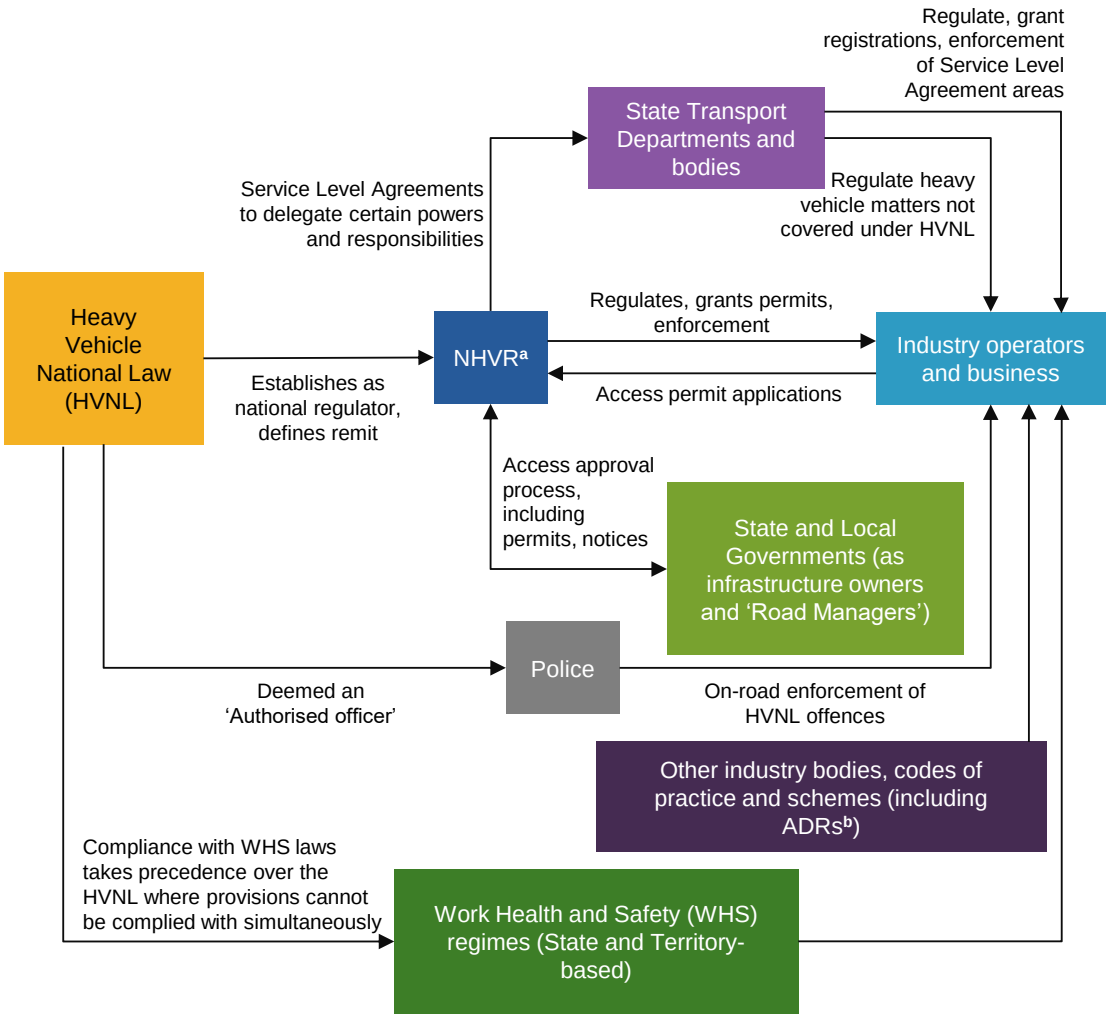
- national coordination of heavy vehicle access

[8] Model laws are non-legally-binding provisions intended to provide the basis for nationally-consistent laws, which become legally-binding when implemented by each individual jurisdiction.

- implementing and managing an audit program for heavy vehicle accreditation
- enforcement and compliance, including reviews and appeals
- monitoring and reviewing the operation of the HVNL
- keeping a database of heavy vehicles
- identifying and promoting best practice methods for compliance, managing risks to public safety and the productive and efficient transport of goods or passengers.

The NHVR does not operate in isolation; figure 3.4 outlines the many bodies and relationships working together within the heavy vehicle regulatory framework. Notably, WHS law is enforced alongside the HVNL, and tends to take the approach of requiring duty holders to eliminate or minimise risk generally. A similar, duty-based approach is also incorporated in the HVNL's Chain of Responsibility laws.

Figure 3.4 **Bodies and relationships involved in heavy vehicle regulation**



a National Heavy Vehicle Regulator. **b** Australian Design Rules.

Rail Safety National Law

The RSNL was passed by the South Australian Parliament (as host jurisdiction) in 2012, as a Schedule in the *Rail Safety National Law (South Australia) Act 2012* (SA). Other States and Territories then applied the law and its regulations in their jurisdictions via an applied laws approach, with the exception of Western Australia which opted to 'mirror' the national legislation rather than apply the South Australian version (chapter 4). Participating States and Territories progressively adopted legislation empowering the South Australian Act in their jurisdictions from October 2012 (New South Wales, Tasmania and the Northern Territory), April 2013 (Victoria), May 2014 (ACT) and October 2017 (Queensland). The RSNL came into force in January 2013 for the first participating States (New South Wales, South Australia, Tasmania and the Northern Territory).

To achieve the objectives of the Rail Safety IGA, the RSNL replaced 46 pieces of State, Territory and Commonwealth law (NTC 2014, p. 18), and created a single national rail safety regulator (replacing seven separate Commonwealth, State and Territory regulatory authorities), as well as broadening the rail incident investigation remit of the Australian Transport Safety Bureau.

The RSNL sets out the duties of parties involved in rail, including operators, manufacturers, and persons loading and unloading freight, as well as officers and rail safety workers. It also provides guidance on the development of safety management systems, and addresses rail safety information and investigation.

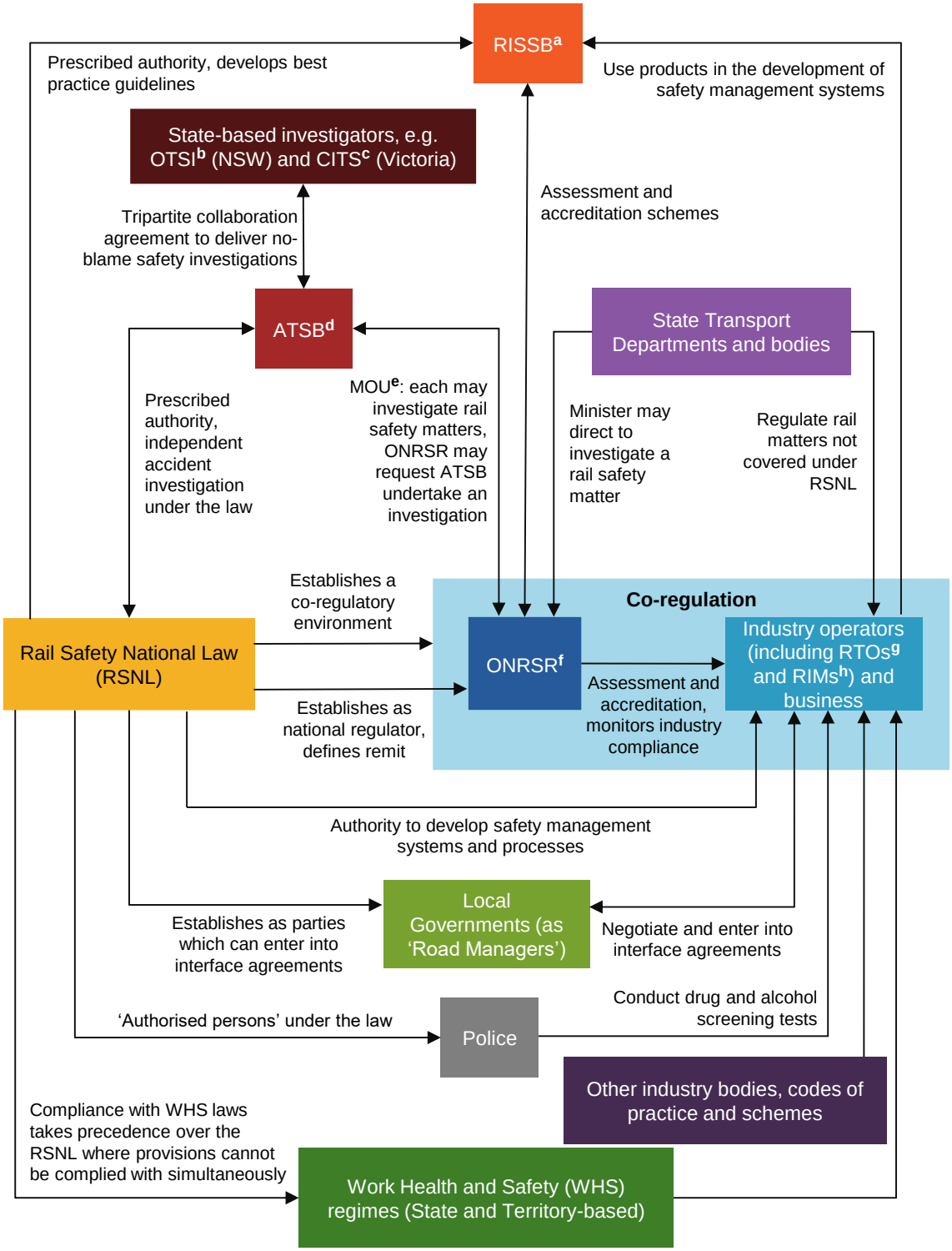
Office of the National Rail Safety Regulator and other institutions

ONRSR was established under the RSNL and commenced operation in 2013. ONRSR regulates above and below rail operations, as well as rail equipment manufacturing in all States and Territories. The main exemptions from ONRSR's remit are light rail in Victoria and some sugarcane rail networks in Queensland. ONRSR's main functions include:

- administering the RSNL
- administering a national scheme of accreditation for operators and infrastructure managers
- monitoring the implementation of operators' safety management systems and their safety performance (under a co-regulatory regime)
- undertaking compliance investigations and making enforcement decisions.

Though ONRSR is the sole national regulator for rail safety, there is a wide array of bodies and relationships contributing to the regulatory regime (figure 3.5). State and Territory WHS law is enforced alongside the RSNL, with both regimes tending to take the approach of requiring duty holders to eliminate or minimise risk generally. Memoranda of understanding between ONRSR and the various WHS regulators promote a 'collaborative approach to the administration of rail safety and WHS regulation' (ONRSR 2019).

Figure 3.5 **Bodies and relationships involved in rail safety regulation**



a Rail Industry Safety and Standards Board. **b** Office of Transport Safety Investigations. **c** Chief Investigator Transport Safety. **d** Australian Transport Safety Bureau. **e** Memorandum of Understanding. **f** Office of the National Rail Safety Regulator. **g** Rail transport operators. **h** Rail infrastructure managers.

Marine Safety National Law

The MSNL was passed by the Commonwealth Parliament in 2013 as a Schedule in the Marine Safety (Domestic Commercial Vessel) National Law Act 2012 (Cwlth), on behalf of all jurisdictions. However, jurisdictions were required to pass 'Application Acts' to fill any gaps in the Commonwealth's law-making power (COAG 2011b, p. 11). All jurisdictions have passed Application Acts bar Western Australia. However, Western Australia has agreed to the MSNL in-principle, and has transferred regulatory powers to the national regulator.

The MSNL replaced eight Federal, State and Territory laws with a single framework for the certification, construction, equipment design, operation and administration of domestic commercial vessels and seafarer qualifications in Australian waters. AMSA's remit, which previously covered international and Australian flagged ships under Port State and Flag State control, was expanded to include domestic commercial vessels.

The MSNL covers the safety duties of the parties involved in domestic commercial vessels, the powers and obligations of safety inspectors, the identification and certification of vessels and seafarers, and general incident reporting. Regulations have also prescribed transitional processes to allow vessels operating before the law's introduction to continue operating under the design, construction and survey requirements applying before the introduction of the new national system (chapter 4).

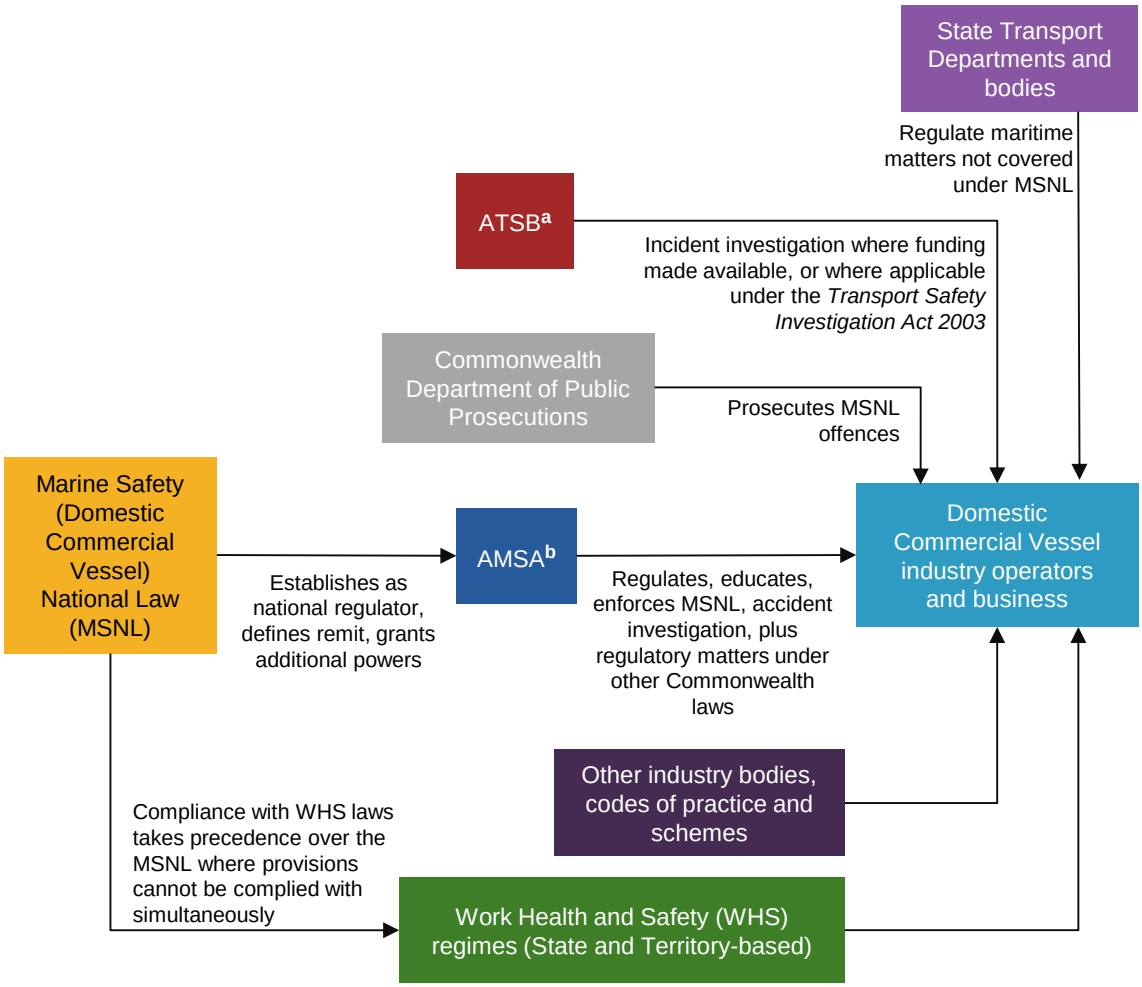
Australian Maritime Safety Authority and other institutions

Since July 2018, AMSA has been responsible for the regulation of domestic commercial vessels in all States and Territories. AMSA also regulates other vessels operating in Australian waters under separate legislation (for example, foreign vessels, defence vessels and regulated Australian vessels under the *Navigation Act 2012* (Cwlth)). Some of AMSA's main functions include:

- giving effect to the MSNL
- combatting pollution in the marine environment
- providing search and rescue services
- providing services to the maritime industry on a commercial basis, on request (AMSA 2019).

While AMSA has the principal responsibility (amongst its other functions) to regulate domestic commercial vessels, there are a range of other bodies and relationships present in the regulatory framework (figure 3.6). Similar to other modes of transport, WHS law is enforced alongside the national safety law, generally taking the approach of requiring duty holders to eliminate or minimise risk. While memoranda of understanding exist between AMSA and various WHS regulators, those agreements are not exhaustive in their description of the jurisdiction of each regime, noting that jurisdiction may be decided on a case by case basis, and that joint investigation of some incidents may be required.

Figure 3.6 **Bodies and relationships involved in domestic commercial vessel regulation**



[a] Australian Transport Safety Bureau. [b] Australian Maritime Safety Authority.

Differences between the regulatory regimes

Some key differences exist between the regulatory regimes governing the three transport modes covered by the COAG national transport reforms.

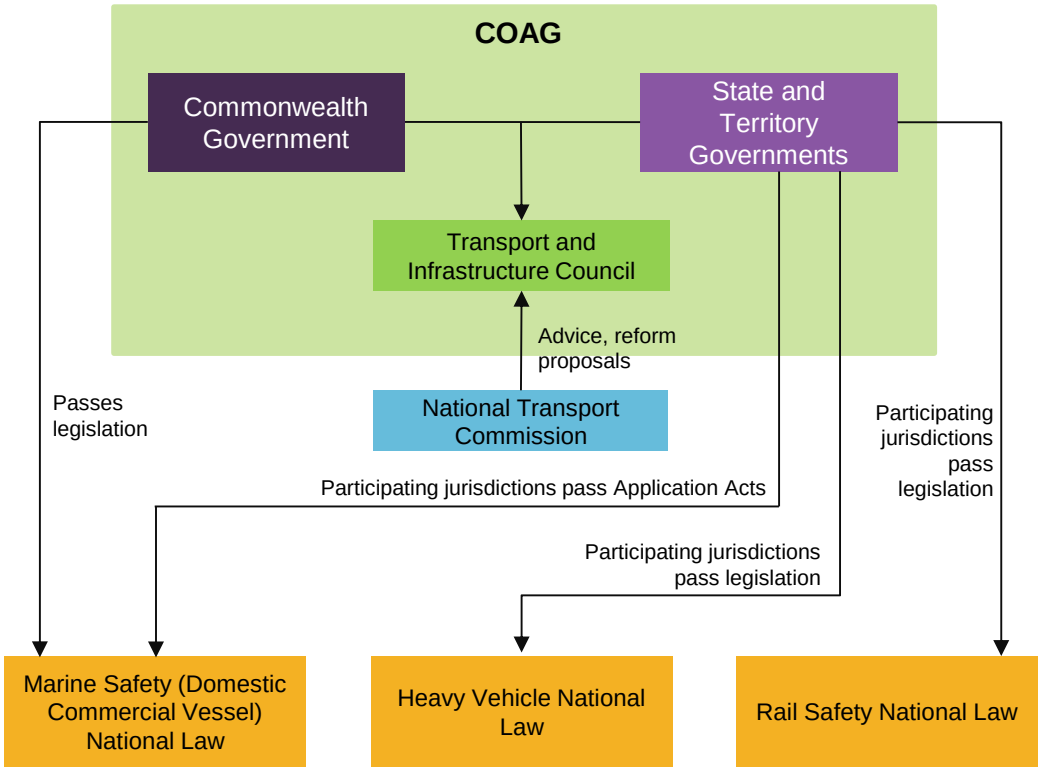
- In the regulation of *heavy vehicles*, the HVNL is relatively prescriptive, while the rail and maritime national laws reflect a more risk-based approach (chapter 7).
- In the regulation of *rail*, ONRSR operates using a 'co-regulatory' approach, where regulatory responsibility is shared between ONRSR and key parties, including governments, operators and industry groups. In contrast, the NHVR and AMSA have sole regulatory responsibilities (with some enforcement and other services provided by State and Territory Government departments through service level agreements). The co-regulatory approach is discussed further in chapter 7.

- In *maritime* regulation, AMSA's remit extends beyond the MSNL, while the functions and responsibilities of both the NHVR and ONRSR are limited to the national laws. For example, AMSA functions external to the MSNL include the provision of search and rescue services, combatting marine pollution, and various regulatory functions covering international commercial vessels under the *Navigation Act 2012* (Cwlth).

The national regulators have differing funding and cost recovery arrangements (chapter 10). In 2017-18, AMSA raised $13 million in revenue, while the NHVR raised $5 million and ONRSR raised $39 million (chapter 10, table 10.1). Governments provided $193 million to AMSA, $153 million to the NHVR, and no funding to ONRSR.

The national laws are also legislated differently, potentially giving rise to marginally different institutional dynamics (figure 3.7). Namely, that while the MSNL may be subject to similar advice from the Transport and Infrastructure Council and agreement by COAG members, it is legislated at the Commonwealth level, with States and Territories passing Application legislation where gaps in the Commonwealth's jurisdiction exist.

Figure 3.7 **The three national laws were not created in the same way**
Processes involved in heavy vehicle, rail and maritime regulation



PART II

ASSESSMENT OF THE COAG REFORMS

4 Do we have nationally consistent regulatory regimes?

Key points

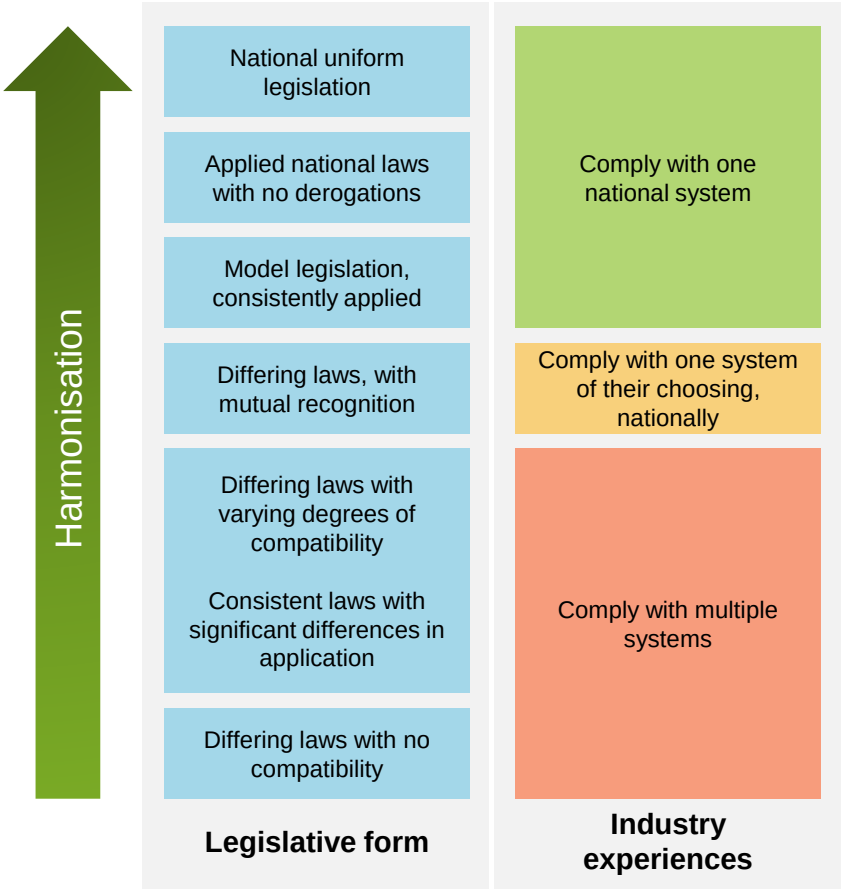
- By harmonising State and Territory regulations, the Council of Australian Governments (COAG) aimed to create a regulatory environment that facilitated interstate operations and reduced costs. Harmonisation, however, is a major and complex task unlikely to proceed quickly and without problems. Some implementation issues are expected to be temporary.
- Considerable harmonisation has been achieved. National laws and regulators were established for heavy vehicle, rail, and domestic commercial vessels. An applied law scheme was adopted for each of the three modes, with some exceptions.
- But there have been significant delays in implementation.
  - The implementation of the Heavy Vehicle National Law (HVNL) and the National Heavy Vehicle Regulator (NHVR) exceeded set timelines. While the commercial vessel (maritime) Intergovernmental Agreement did not set deadlines for completion, its timelines were changed several times during implementation. Rail reforms were achieved on time.
  - The transition towards national regulators has been slow, but not by design. The NHVR will not have full direct jurisdictional coverage until at least 2021. The Office of the National Rail Safety Regulator (ONRSR) will have full direct regulatory responsibility for the Rail Safety National Law (RSNL) in late 2019. The Australian Maritime Safety Authority (AMSA) assumed full regulatory responsibility for the Marine Safety National Law in 2018.
- Despite ostensibly being 'national' laws, there continues to be significant differences between States and Territories, especially in the HVNL.
  - Western Australia and the Northern Territory have not implemented the HVNL.
  - States and Territories derogate from the HVNL and RSNL. Some derogations are for administrative convenience, others are fundamental departures from the national laws.
  - Use of mirror legislation has led to lags of up to two years in enacting RSNL amendments.
- Even with national laws and legislative consistency, there is an inconsistent application across participating jurisdictions.
  - In practice, the extensive use of grandfathering in the maritime sector means many vessels are regulated according to old State and Territory requirements rather than the latest (national) standards.
  - Service-level agreements have led to some inconsistency in the application of the laws.
  - As part of the co-regulatory system, rail infrastructure managers operate their own safety management systems. This, however, has led to situations where above-rail operators experience inconsistent requirements when traversing different track networks, despite these networks being accredited under the RSNL.
- While consistency is valuable, it should not be pursued at the cost of safety and productivity.
- COAG members should commit to removing any significant derogations from the national law which are not based on sound evidence.

4.1 Introduction

The Council of Australian Governments (COAG) envisaged that harmonising the regulation of heavy vehicle, rail and maritime transport would make it easier for businesses to operate safely and efficiently across State and Territory borders (COAG 2009, p. 9). A national regime would provide business with a 'seamless' system of safety regulation, 'reducing costs incurred by business in complying with unnecessary and inconsistent regulation across jurisdictions' (COAG 2008, p. 4), while improving safety. But, 10 years after the COAG Agreement, has this vision of consistent national regulatory regimes been realised?

Harmonisation can take different forms with different effects (figure 4.1).

Figure 4.1 **Degrees of harmonisation**



This chapter first considers the scale of the task of harmonising safety regulation in heavy vehicle, rail, and domestic commercial vessel transport (section 4.2), and the implementation of those reforms (section 4.3). It then considers the degree to which the reforms have resulted in legislative consistency (section 4.4), and consistency in the application and administration of the law (section 4.5).

The impact of harmonisation is broader than the issues covered in this chapter. Subsequent chapters discuss the implications of the reforms for safety (chapter 5), productivity (chapter 6), and regulator operation (chapter 7), given the delays in implementing reform.

4.2 The harmonisation task in transport

Replacing varying State and Territory laws with a single national law has been a long and complex task requiring negotiation and compromise. This has been in part due to the significant differences in State and Territory regulations before 2009.

Negotiating national laws

The challenge of implementing reforms across all States and Territories is well recognised (Howes and Engele 2013; PC 2017, Supporting Paper 14, p. 4, 2017, pp. 192–194). Conditions and priorities will often vary from jurisdiction to jurisdiction. Developing a common set of regulations to meet these different circumstances can be difficult. Negotiating agreement from eight jurisdictions is rarely simple (Howes and Rao 2013, p. 2).

Agreements are tenuous and conditional

The intergovernmental agreements (IGAs) for each mode of transport are non-binding for participating jurisdictions (COAG 2011a, para. 8, 2011c, para. 8, 2011b, para. 7). Despite the COAG Guidance Principles (Department of Prime Minister and Cabinet 2016a, para. 2.7.2) and the general expectation that jurisdictions will only change the application of national laws with the prior agreement of the COAG ministerial council, for example in the heavy vehicle IGA (COAG 2011b, para. 17), jurisdictions retain the power to vary the application of the national law without significant penalty.

At every stage, developing the national regimes has depended on continuing support from States and Territories. Signing an IGA does not compel jurisdictions to enact the national laws — the Northern Territory signed the heavy vehicle IGA, but later decided to opt out.

Negotiations involving State and Territory governments are continuing, eight years after the signing of the heavy vehicle IGA. This includes pending agreements on the terms under which jurisdictions will transfer regulatory services under the Heavy Vehicle National Law (HVNL) back to the National Heavy Vehicle Regulator (NHVR). Negotiations are underway between the NHVR and the New South Wales, Victoria and Queensland governments, each at different stages with different anticipated agreement dates (NHVR 2019b).

In the case of domestic commercial vessels, COAG members continue to negotiate the resourcing of the national scheme and cost-recovery arrangements for the national regulator. When the Australian Maritime Safety Authority (AMSA) assumed full service delivery and regulatory responsibility for domestic commercial vessels in July 2018, it was decided that

the previously proposed cost-recovery measures would be delayed by three years to 2021 pending a review, with the Commonwealth providing additional funding over the period (MIAL, sub. 14, p. 3; AMSA, sub. 35, p. 15). This delay was due to a lack of agreement between governments and uncertainty about the actual costs of service delivery. The Commonwealth took over responsibility for the national regulation of domestic commercial vessel safety before settling the working arrangements.

The non-binding and high-level nature of the three IGAs has led to ongoing implementation issues in the heavy vehicle and maritime sectors (sections 4.3 and 4.4). However, the IGAs are only a starting point. Making agreements binding on States and Territories, and agreeing and finalising the details of the intended laws before signing would have taken significantly more time and negotiation. This may well have prevented the national laws being established in the first place. In other words, the pragmatic incremental approach undertaken was probably necessary to secure final agreement from the States and Territories.

Different starting points in each mode

The three modes of transport were at different stages of harmonisation before 2009 (chapter 3). Heavy vehicle and rail regulation benefited from the existence of model laws and regulations developed by the National Transport Commission (NTC) in the years before the 2009 COAG Agreement. This is despite the model laws themselves having no force, requiring the support of States and Territories to implement (NTC 2011, p. 5). While model laws did not deliver a high degree of national consistency — jurisdictions who chose to implement them could do so in a piecemeal manner — they were the foundations of the HVNL and Rail Safety National Law (RSNL).

In contrast, no model laws existed for domestic commercial vessels, and very limited cross-jurisdictional harmonisation occurred in the sector before 2009. Regulatory services for domestic commercial vessels were delivered by State and Territory maritime safety authorities providing ‘vastly different and inconsistent requirements across the country’ (MIAL, sub. 14, p. 1). Compared to heavy vehicles and rail, the regulatory environment for domestic commercial vessels varied substantially between jurisdictions.

4.3 Implementing national laws and the creation of national regulators

The implementation of national laws and the establishment of the national regulators has been far from timely and smooth, with delays affecting most performance indicators agreed by jurisdictions in the IGAs (figure 4.2). Despite the national laws being passed by host jurisdictions in 2012, full implementation in participating jurisdictions did not occur until much later — and in some cases is still not complete (figures 4.3–4.5).

Figure 4.2 **Many key performance indicators were achieved late**

Performance indicator	Agreed completion date	Actual completion date
Performance indicators and deadlines from IGA		
National law introduced into Qld Parliament	End October 2011	Mid November 2011
National law passed by Qld Parliament	End March 2012	August 2012
States and Territories introduce and pass enabling legislation	End October 2012	2013
NHVR established	December 2012	January 2013
NHVR operational	End December 2012	2014

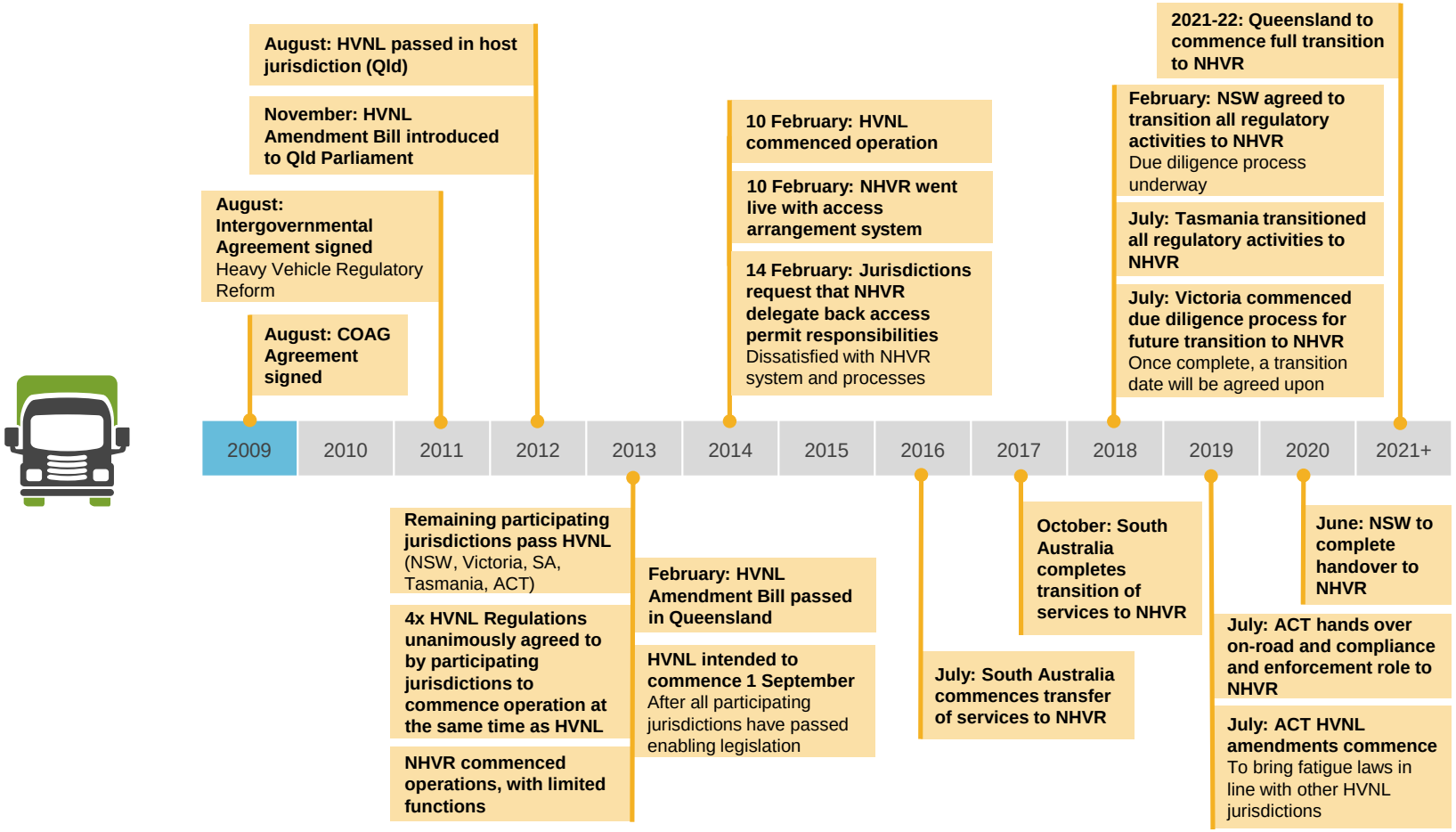
Performance indicators and deadlines from IGA		
National law and regulations drafted	November 2011	November 2011
National law introduced into SA Parliament	March 2012	March 2012
National law passed by SA Parliament	May 2012	May 2012
States and Territories pass enabling legislation	December 2012	October 2012 to February 2017
ONRSR established and operational	Beginning January 2013	Beginning January 2013
National investigation arrangements commence	Beginning January 2013	April 2013

Performance indicators and deadlines from non-IGA sources		
National System for commercial vessel safety commenced	Beginning January 2013	Beginning July 2013
A single national regulator for commercial vessel safety	Beginning January 2013	Not in full effect until July 2018
States and Territories hand over relevant data and records to AMSA	ASAP after passing of MSNL	March to June 2018
States and Territories introduce and pass Application legislation	~July 2013[b]	2012 to 2016[c]
AMSA takes over full regulatory responsibility from States and Territories	July 2017	July 2018

a Green: deadline met, Yellow: deadline partially met on time/ short overrun, Red: significant overrun. **b** Approx. 6 months after Commonwealth Act passed, similar to road and rail. **c** Excludes WA; still to introduce

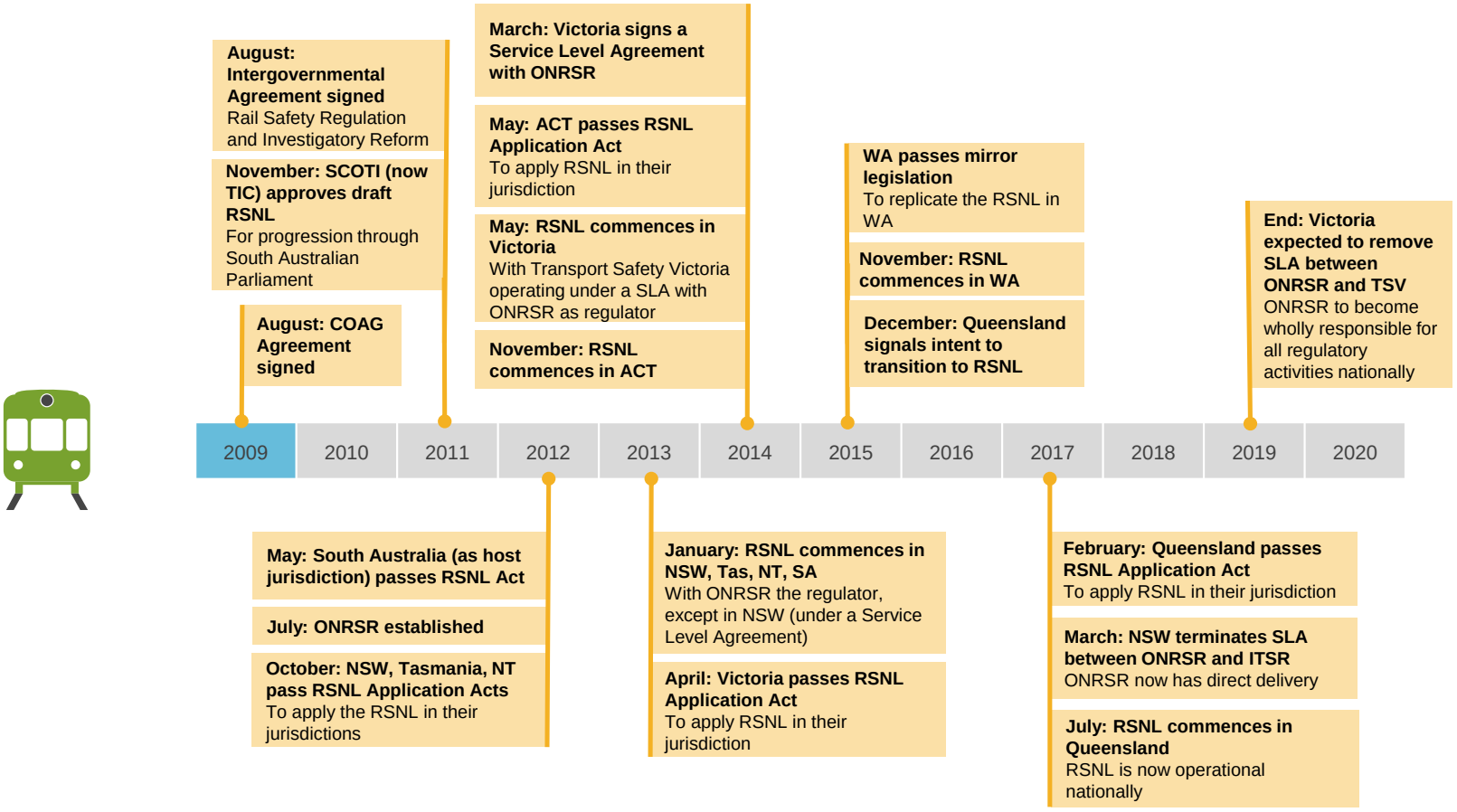
Sources: COAG (2011c, 2011b, 2011a); State and Territory national law legislation; MIAL, sub. 14, p. 2.

Figure 4.3 **A convoluted implementation of the HVNL and NHVR**



Sources: Various COAG documents, State and Territory legislative documents; NHVR (2019a, 2019b); QAO (2016).

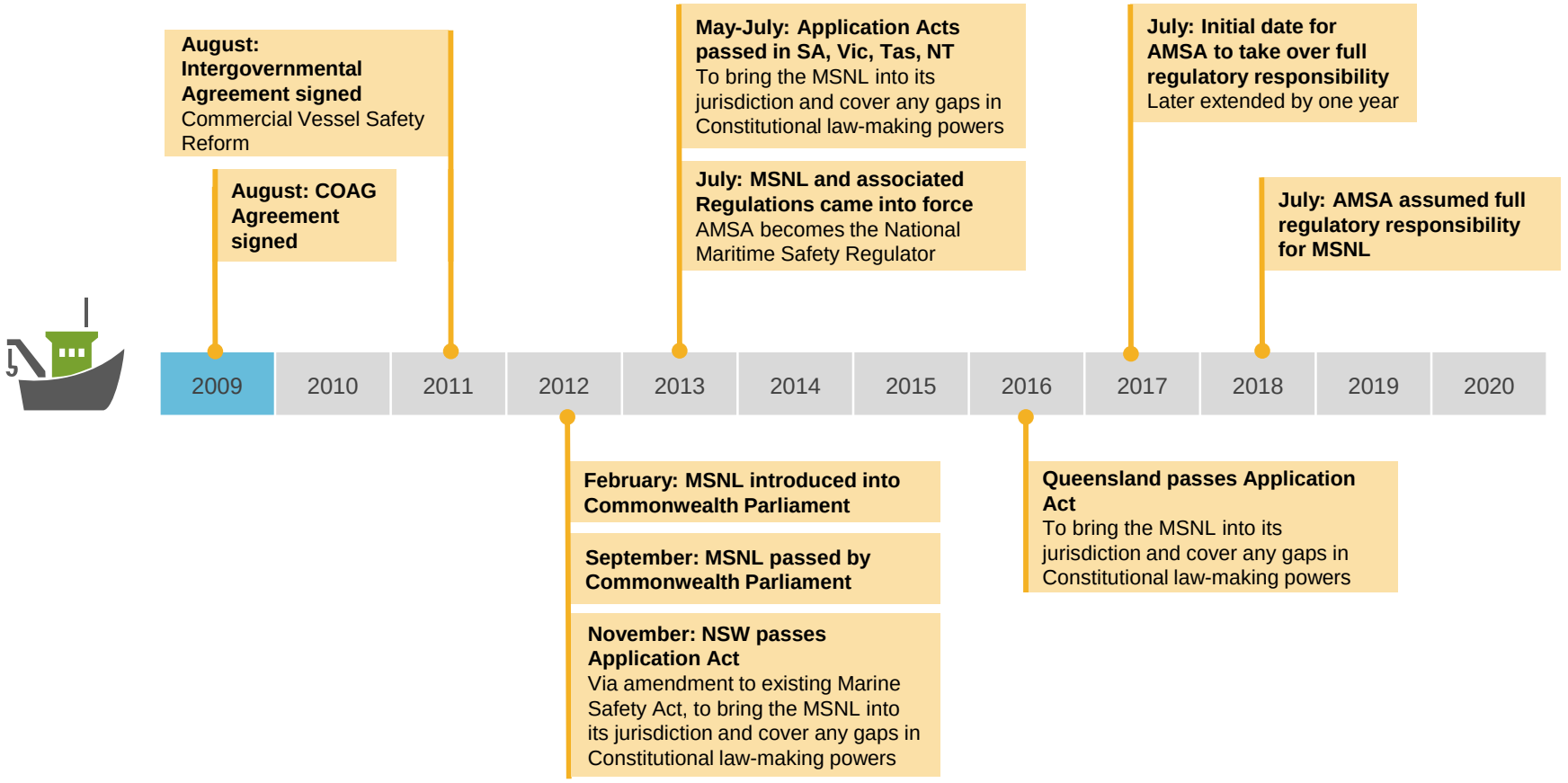
Figure 4.4 **Implementing the RSNL and establishing ONRSR[a] has been relatively smooth**



[a] Office of the National Rail Safety Regulator.

Sources: Various COAG documents, State and Territory legislative documents; ONRSR Annual Reports; Transport Safety Victoria (2018).

Figure 4.5 **Prolonged delays in implementing the Marine Safety National Law (MSNL) and establishing AMSA**



Sources: Various COAG documents, State and Territory legislative documents; MIAL (sub. 14, p. 2).

DRAFT FINDING 4.1

Implementing national transport regulation and establishing national regulators has been slower than anticipated. Both the regulation and the regulators are works-in-progress. Creating a national regulatory system is complex and time consuming, with early expectations proving to be optimistic.

Gradual transfer to national regulators

The transfer of responsibility from State and Territory regulators to national regulators has taken several years, and is still in progress for heavy vehicles.

- The process will not be complete until 2021 at the earliest, when Victoria, New South Wales and Queensland are expected to have handed over all responsibility to the NHVR.
- Full implementation of the national rail safety regulatory regime is expected to be complete by late 2019 with the termination of the last remaining Service Level Agreement between Victoria and the Office of the National Rail Safety Regulator (ONRSR).
- In the case of maritime regulation, Western Australia is still to enact an Application Act to apply the Marine Safety National Law (MSNL) in its jurisdiction, though it has agreed to in principle, with AMSA taking over regulatory responsibility for most services (AMSA 2018).

Service Level Agreements (SLAs) were used to smooth the transition from one set of regulatory arrangements to another. The need for SLAs was anticipated by COAG in the three IGAs, via a specific clause (heavy vehicle and rail), or a broad statement (commercial vessels). SLAs were entered into by jurisdictions with the national regulator in all three modes (box 4.1).

SLAs were undoubtedly useful in the early transition to a national law and national regulator. They allow for a national regime to commence before all administrative arrangements are settled. SLAs can give businesses a smoother transition to a new regulator.

However, where an SLA still exists between the national regulator and their State or Territory counterpart, the consistency of regulation may be diminished (box 4.2). The exact terms of the relevant SLAs vary between jurisdictions, but where State or Territory maintain decision-making power, there may be operational differences in how national laws are administered or enforced (section 4.5).

While the extended use of SLAs during the implementation of the national regime may have been largely due to the delays and false starts in the regulators' rollout, SLAs may prolong the time required for a national regulator to reach maturity.

Box 4.1 The national regulators have slowly acquired responsibilities

A false start for the National Heavy Vehicle Regulator

> Soon after its launch in 2014, the National Heavy Vehicle Regulator (NHVR) was overwhelmed by its new responsibilities. As described by the Queensland Audit Office (2016, p. 1).
>
> The NHVR went live with the new access arrangements on 10 February 2014, 12 months after the Amendment Bill passed. Just four days later, operators expressed their dissatisfaction with the system and processes associated with the NHVR online, one-stop-shop (portal) for access applications. As a result, the participating state and territory governments asked the NHVR to delegate responsibility for processing certain categories of applications to the relevant states and territories.

After this false start, jurisdictions were cautious about returning powers to the NHVR. Powers have been returned gradually as jurisdictions have become more confident in the capacity of the NHVR. Two Service Level Agreements (SLAs) remain, with New South Wales expected to terminate their agreements with the NHVR in 2020 and Queensland to begin the process in 2020-21 (NHVR 2019b).

The NHVR has identified the merits of SLAs, and has made arrangements for their continued use as a regulatory tool after the initial SLAs with New South Wales and Queensland are terminated. A 'Service Level Agreement reporting framework' is being developed, and SLAs have been identified as a means by which objectives may be delivered (NHVR 2018a, p. 12).

SLAs remained in rail for 6 years

Only New South Wales and Victoria entered into SLAs with the Office of the National Rail Safety Regulator (ONRSR) upon its establishment, and only one remains, between Transport Safety Victoria and ONRSR. When this is removed (expected by the end of 2019 (Transport Safety Victoria 2018)), ONRSR will be the sole Rail Safety National Law regulator, responsible for all regulatory activities under the law, with no ongoing reliance on State and Territory regulators.

A delayed start for the Australian Maritime Safety Authority

The Australian Maritime Safety Authority's (AMSA) launch as national regulator was deferred. In 2014, following a review of the national system, Commonwealth, State and Territory transport ministers agreed that AMSA should take full regulatory responsibility (including full service delivery) for the Marine Safety National Law (MSNL) from States and Territories by 1 July 2017. However, in November 2016, this deadline was extended to 1 July 2018, to better allow jurisdictions and industry to consult and prepare for the changes (MIAL, sub. 14, p. 2).

When the MSNL commenced in 2013, State and Territory marine safety agencies were delegated all service delivery functions under the national law via SLAs to minimise disruption to industry (AMSA, sub. 35, pp. 3, 6). These State and Territory agencies were intended to have an on-going role in service delivery (MIAL, sub. 14, p. 2), so while AMSA took over full regulatory responsibility for service delivery in July 2018, the States and Territories still have responsibility for delivering some services such as enforcement (for example, in South Australia (DPTI 2018) and New South Wales (NSW Government 2018)).

Box 4.2 **Not all SLAs are created equal**

The terms of an Service Level Agreement (SLA) will determine the extent of decision-making power able to be exerted by a State or Territory government, and the national regulator under an agreement.

Where SLAs allow the State and Territory authorities to wield the decision-making power (that is, as a *delegate* of the national regulator), there is a risk of an inconsistent application of the national laws, as delegates' actions and decisions are made in their own capacity, and are not the act of the delegating party (APSC 2004; Department of Finance 2016). In such situations, State and Territory authorities are able to take decisions according to their own judgements, with limited influence from the national regulator (except through guidance notes). This is likely to result in inconsistent decisions across jurisdictions for similar issues.

On the other hand, where an SLA affords the national regulator control over the decisions made and the State and Territory authority exists solely as an *agent* (or has the *authorisation*) of the national regulator (APSC 2004; Department of Finance 2017), there is a greater ability for national consistency in regulatory decisions. The national regulator would impose the same principles and guidelines upon the regulated regardless of jurisdictions, and the State and Territory agents have limited autonomy with regard to decision making.

4.4 How 'national' are the national laws?

Though the HVNL, RSNL and MSNL are 'national laws', factors including coverage, derogations and legislative lags contribute to a lack of national legislative consistency.

Coverage of the national laws

Only the RSNL and MSNL have national coverage (i.e. applies in all jurisdictions). Western Australia and the Northern Territory are not participating in the HVNL (table 4.1).

Table 4.1 **Who adopted which national law, and in what form?**

	Heavy Vehicle National Law	*Marine Safety (Domestic Commercial Vessel) National Law*	*Rail Safety National Law*
Host jurisdiction	Queensland	Commonwealth	South Australia
Non-participating jurisdictions	Western Australia, Northern Territory	..	..
Type of adoption	Mirroring (South Australia), referring (all others)	Applying[a]	Mirroring (Western Australia), referring (all others)

a Western Australia has not enacted formal legislation but has agreed to in principle. **..** Not applicable.

This means that heavy vehicle businesses operating in multiple jurisdictions, operating intra-jurisdictionally in multiple jurisdictions, or shifting their operations across borders, as

well as drivers crossing jurisdictional borders, may still be required to comply with more than one set of regulations and rules. The experiences of some operators who operate in and out of participating jurisdictions are summarised in box 4.3.

Box 4.3 The HVNL's lack of full coverage is problematic for some operators but not all

The lack of participation in the Heavy Vehicle National Law by Western Australia and the Northern Territory is problematic for many operators who cross jurisdictional boundaries:

> South Australia is the only state with a border with both non-participant jurisdictions (WA & the NT), which causes significant difficulties in relation to fatigue management compliance for drivers that cross these borders. Current rules essentially require these drivers to be compliant with both sets of fatigue laws for up to a week after the travel is complete – doubling the amount of rest time calculations that must be undertaken, adding complexity, compliance burden and the risk of an inadvertent/unintentional breach. (South Australian Freight Council, sub. 6, p. 6)

> Heavy haulage vehicle combinations differ between NHVR States — SA, NSW, and Vic — and WA. East Coast combinations brought across to operate in WA during harvest are often tandem axle trailers/dollies — 26 meters in length. These combinations often have a restricted gross combined mass (GCM) based on the state of registration. (Co-operative Bulk Handling Limited, sub. 13, p. 2)

> Differing fatigue management requirements and chain of responsibility regulations [exist]: Fatigue management under the NHVR is an element of the accreditation, managed by NHVR regimes. In Western Australia, fatigue management is an element within Main Roads WA HVA (managed by WorkSafe WA). This means that unlike the NHVR, Western Australia has a multi-party (MRWA/ WA Police/ WorkSafe WA) approach to elements of the MRWA HVA Accreditation. (Co-operative Bulk Handling Limited, sub. 13, p. 2)

Other operators are less affected:

> The impact of the non-participation by Western Australia and the Northern Territory has not caused any major complications for GTA members. (Grain Trade Australia, sub. 38, p. 7)

Box 4.4 National coverage: what does it mean for operators?

John owns a trucking business, with offices in every State and Territory. John's business carries freight all across Australia. Before the Heavy Vehicle National Law (HVNL), John had to ensure his drivers and operations complied with the requirements of eight different schemes. The HVNL was intended to reduce this compliance task to satisfying a single, nationwide system. However, because the Northern Territory and Western Australia are not participating in the HVNL, John and his drivers must still remember three sets of rules and regulations when travelling in and out of WA and the NT, especially with regards to fatigue management.

Meanwhile Malcolm and Ken run a national rail freight and fishing trawler business respectively. They too have also been affected by the introduction of national laws, but because all the States and Territories have adopted the RSNL and MSNL, they only have to familiarise themselves with one set of rules, regardless of where they are doing business.

Derogations by signatory jurisdictions

National laws are only truly national if all States and Territory governments legislate the same requirements, consistently, in their jurisdictions. The use of derogations (box 4.5) by a State or Territory means that the content of each 'national law' is not identical in every jurisdiction, leading to different powers and obligations for regulators and businesses respectively. At the extreme, a large number of derogations could be equivalent to non-participation in the national laws.

Box 4.5 Jurisdictional derogations: what are they and when are they appropriate?

Derogations occur when a State or Territory applies different regulatory requirements to those set in the national law. A jurisdiction may choose to follow its own approach on an issue, setting different requirements to the national law (these requirements may be more or less onerous than the national standard). The ability to derogate arises out of the constitutional foundations of transport regulation (chapter 3), whereby the Commonwealth does not have unilateral power to impose such laws. States and Territories must pass these laws in their jurisdictions to give effect to the national laws.

Derogations may be set out upfront, written into the host legislative instrument itself, or they may arise when jurisdictions omit or modify agreed-to provisions of the host instrument when passing them into their individual jurisdictions (via their specific 'Application Acts' or versions of the law).

Derogations may be appropriate when the circumstances of a jurisdiction mean the negotiated national laws are unlikely to achieve the intended outcomes (including increased safety, productivity, efficiency), or where the derogations are only administrative and needed to align with existing State and Territory legislation.

The NTC noted that derogations:

> … have the potential to affect the consistency with which the [national laws are] applied nationally and to confuse or impose additional regulatory burden on any operator that operates inter-jurisdictionally. (NTC 2016, p. 9)

In addition:

> Lack of harmony [between States and Territories] causes confusion and impacts drivers who regularly cross state borders in the course of their work. At all times, consideration should be given to ensuring harmony of laws across all jurisdictions. (ASBFEO, sub. 29, p. 1)

Generally, derogations result in operators being required to comply with multiple (differing) sets of rules. Industry representatives report that this situation can result in:

- increased compliance costs — managers must ensure compliance with multiple requirements
- more time and resources absorbed by compliance activities, possibly diminishing attention on risk management

- a loss of flexibility, and a reduction in efficiency and productivity (ARA, sub. 26, p. 21).

Where jurisdictions did not agree with the COAG consensus on aspects of the new national laws, they used derogations to continue their historical approach. In the context of rail:

> While all had agreed to the concept of a national law, there were some areas where agreement could not be reached at the time of establishing the national rail safety regulator. At that time derogations were agreed in the national law and also required in the respective states application law to allow alignment with other state based legislation. The intention was to resolve the national law derogations through reviews to be undertaken by ONRSR post transition. (ONRSR, sub. 21, p. 9)

Every participating jurisdiction has derogated from the HVNL for different issues, to differing degrees, while only a limited number of derogations are present in rail. In maritime, the Commission is not aware of any jurisdictional derogations from the MSNL.[9]

Derogations generally may result in increased compliance costs (chapter 6) and conflicting incentives around safety (chapter 5) for operators.

Box 4.6 Derogations: what does it mean for operators?

Cassandra owns a haulage business based in New South Wales (NSW), but has just commenced operations in other HVNL jurisdictions. Cassandra is familiar with the requirements of the HVNL, given it is the law applying in NSW. She believes that a national law means that, if she is compliant with the requirements of the HVNL in NSW, she will be compliant in other HVNL jurisdictions, such as Queensland and Victoria, where she has just commenced operations.

In NSW, Cassandra knows that if she cleans and refuels her truck three hours before the end of her 24-hour rest period, it will count as rest time. Cassandra decides to clean and refuel her truck on a journey from Newcastle to Brisbane. Soon after she crosses the border into Queensland, she is pulled over by a police officer, who requests to see her work diary. The officer informs Cassandra that she has breached the permitted work and rest hours because she should not have counted the time cleaning and refuelling her truck as rest time. Cassandra tells the officer that NSW allows her to do so. However, the provision invoked by Cassandra is a NSW derogation. Outside NSW, cleaning and refuelling a vehicle counts as work time, regardless of when it is performed. Cassandra is issued with a fine and is left confused about the operation of the so-called 'national' laws across jurisdictions.

Over 70 individual derogations exist in heavy vehicles

With almost 800 sections (plus five sets of regulations), the HVNL has been described as 'difficult to read and interpret, onerous for industry to comply with and difficult for the [NHVR] to administer' (ALGA, sub. 34, p. 10). Derogations add to the complexity of the

[9] Other artefacts may have similar results as derogations, such as the use of exemptions by marine order, which allow classes of vessels and operations to be exempted from the MSNL (discussed in chapter 7).

HVNL, with implications for how the law is applied and enforced (further discussed in section 4.5).

The NTC's recent issues paper into risk-based regulation analysed the multitude of derogations to the HVNL (NTC 2019a, Appendix B). Table 4.2 provides a high level summary. NSW has the most derogations, which usually add to the requirements in the HVNL. In other cases, derogations act to make the law more flexible and less prescriptive. Enforcement operations are the target of the most derogations across the participating jurisdictions, often creating inconsistent standards and application of HVNL enforcement powers.

However, derogations can be difficult to quantify, as derogations may have knock-on effects on other parts of legislation (box 4.7). Alternatively, the creation of new derogating sections may be required to facilitate the initial derogation.

Industry participants have noted disruptions and inefficiencies resulting from derogations to the HVNL in areas including 'vehicle maintenance and safety standards, mass management and compliance, as well as the obligations associated with noise and emissions' (VTA, sub. 23, p. 6).

Table 4.2 **Identified jurisdictional derogations to the HVNL**

	Qld	*NSW*	*Vic*	*SA*	*Tas*	*ACT*[a]	***Total***
Chapter 1: Preliminary	1	3	0	0	0	1	**5**
Chapter 1A: Safety duties	0	2	0	0	0	0	**2**
Chapter 3: Vehicle standards and safety	2	3	0	2	0	0	**7**
Chapter 4: Mass, dimension and loading	3	0	0	0	2	0	**5**
Chapter 6: Driver fatigue	0	7	1	0	0	0[b]	**8**
Chapter 7: Intelligent Access Program	0	0	0	0	0	0[b,c]	**0**
Chapter 8: Accreditation	0	3	0	0	0	0[b,c]	**3**
Chapter 9: Enforcement	4	5	2	8	2	2	**23**
Chapter 10: Sanctions and liability	0	0	0	0	2	1	**3**
Chapter 12: Administration	3	2	0	0	2	0	**7**
Chapter 13: General	0	0	0	0	0	8	**8**
Total	**13**	**25**	**3**	**10**	**8**	**12**	**71**

a NTC found no derogations, but ACT HVNL Act Schedule 1 lists a number of modifications, reflected here. **b** Previously omitted, as of 1 July 2019 fully operational, no derogations (NHVR 2019a). **c** Despite now being operational, has limited practical effect for operators compared to the previous situation.

Sources: Adapted from *Heavy Vehicle National Law (ACT) Act 2013,* Schedule 1; NTC (2019a); NHVR (2018b).

Box 4.7 Knock-on effects of derogations

Derogations to national transport laws can have knock-on effects in other parts of the law. For example, in the Heavy Vehicle National Law (HVNL), changes to section 22 of the HVNL Act in South Australia (Moving unattended heavy vehicles on road to exercise another power) make section 518 of the HVNL itself null and void (NTC 2019a, p. 65). Similarly, the addition of section 38 (Power to seize) in the Queensland HVNL Act renders section 552 of the HVNL itself null and void (NTC 2019a, p. 66). This results in an additional derogation to exist in the SA and Queensland laws, and these knock-on derogations may not be anticipated or intended by drafters.

In addition, multiple new sections may need to be created in order to facilitate a particular derogation. This may be considered to be a sole derogation, or many, but either way they add to the amount a law derogates from the national approach, undermining its integrity. For example, in relation to the HVNL mass, dimension and loading provisions, Queensland has altered sections 118 (Commissioner's consent for a mass or dimension exemption notice) and 124 (other consents). However, in altering these sections, drafters added new sections (sections 22 to 29) to the Queensland HVNL Act as a necessary consequence to facilitate these changes (NTC 2019a, p. 58). Sections 22 to 29 of the Queensland HVNL Act set out the administrative framework for the changes, including decision making, giving notice and review and appeal avenues.

Periodic safety inspection requirements

The National Heavy Vehicle Inspection Manual (NHVIM), developed and published by the NHVR, has been adopted by all HVNL jurisdictions (with additional requirements in Queensland, South Australia and Tasmania due to jurisdictional legislative requirements) to provide consistent standards and criteria for which vehicles will be inspected (NHVR 2018c). However, despite the NHVIM, State and Territories are still responsible for vehicle inspections and roadworthiness as part of their registration requirements, as these issues are outside the scope of the HVNL. This has led to varying requirements for heavy vehicle inspections across jurisdictions (table 4.3).

Inconsistencies in requirements for scheduled vehicle inspections affect vehicles according to their State or Territory of registration, and does not affect vehicles travelling through different jurisdictions. Businesses who choose to register their vehicles in a jurisdiction with no periodic inspection regime (such as Victoria or the ACT), may have a competitive advantage at the margin compared to those who are subject to periodic inspection regimes. Operators with vehicles subject to periodic inspections will have increased compliance costs, and may face conflicting incentives around safety (chapter 5). For example, a NSW-registered vehicle which operating temporarily in Victoria when the annual inspection is due must drive back to NSW to complete the inspection.

Table 4.3 **Periodic inspection requirements vary across jurisdictions**

	NSW	*Vic*	*Qld*	*SA*	*Tas*	*ACT*
Periodic inspection for heavy vehicles	✓	×	✓	✓ (only for restricted access vehicles above 42.5 tonnes)	×	×
Interval	Annually	..	Annually	Annually	..	..
Periodic inspection for buses	✓	×	✓	×	✓	✓
Interval	Every 6 months	..	Every 6 months	..	Every 6 or 12 months depending on age of vehicle	Annually
Exemptions	Vehicles participating in NHVAS maintenance module	..	Vehicles participating in NHVAS maintenance module, or vehicles operating solely within exemption areas	..	..	..

.. Not applicable.

Sources: Access Canberra (2019); NTC and NHVR (2014); Queensland Government (2018, 2019); *Road Transport (Vehicle Registration) Regulation 2017* (NSW), section 67; South Australian Government (2019); Transport for New South Wales (2015, p. 4); *Vehicle and Traffic (Driver Licensing and Vehicle Registration) Regulations 2010*, section 102.

Rail has a number of significant derogations

In 2016, a review by ONRSR 'identified 85 derogations to the RSNL', primarily contained within jurisdictions' application laws (ONRSR, sub. 21, p. 21). Though there seem to be many derogations by number in rail, there are only:

> … some major derogations within the RSNL that create differences across jurisdictions and present operational issues for multi-jurisdictional operators in turn risks and costs for ONRSR. The most significant of the derogations are around Drug and Alcohol Management and Fatigue Management. (ONRSR, sub. 21, p. 6)

Other derogations of concern to industry include data loggers, train communications, and mirror legislation in Western Australia, which, along with fatigue risk management and drug and alcohol testing, most affected their operations from a safety and productivity perspective (Bullas 2017, p. 3; ONRSR 2019, p. 8). The remaining derogations are considered by ONRSR and industry to not cause significant safety and productivity concerns (ONRSR, sub. 21, p. 21). These derogations may result in increased compliance costs (chapter 6) and conflicting incentives around safety (chapter 5) for operators.

Outer work limits in Queensland and NSW

Queensland and New South Wales mandate outer work limits as an additional legislative fatigue management requirement for train drivers. These limits are contained in the RSNL itself, via Schedule 2 of the Rail Safety National Law National Regulations 2012, and not jurisdictions' application laws (ONRSR, sub. 21, p. 16), and were part of Queensland and NSW law prior to the introduction of the RSNL (though not implemented in Queensland) (ONRSR 2018, p. 5). These limits operate as a 'legislative override' to the co-regulatory risk-based accreditation process that rail workers must satisfy under the RSNL.

Some in industry have indicated that this derogation to the RSNL is unnecessary, ineffective, undermining both the ability of the RSNL to deliver regulatory consistency and what could be achieved with a risk-based regulatory approach (ARA, sub. 26, p. 23, Pacific National, sub. 24, p. 7). Others are of the view that the prescribed hours came directly from commissions of inquiry, and:

> … attempts to undermine prescribed outer limits of work hours and rests in a manner contrary to the conclusions of the evidence-based review are littered with assumptions and conclusions without presenting any corroborating evidence grounded in science or fact. (Rail, Tram and Bus Union, sub. 10, p. 8)

The outer work limits provide for differing requirements relating to maximum shift and minimum break lengths, maximum shifts and hours in any 14 day period, as well as the maximum time allowed when travelling to home depots. These requirements differ significantly between the two derogating jurisdictions (table 4.4), leading to further inconsistency with the RSNL.

The existence of differing requirements in Queensland and New South Wales affects drivers crossing in and out of these and other jurisdictions, as well as drivers crossing between Queensland and NSW since the two outer work limit regimes differ. The regime affects up to a quarter of rail operators in Australia — in January 2018, 44 of 186 accredited operators operated both within and outside of NSW and/or Queensland (ONRSR 2018, p. 7).

Drivers must ensure they fulfil the requirements of each jurisdiction. Given the differences, this may require changes in driver rostering depending on the configuration of drivers, train type and journey (ONRSR 2018, p. 7), leading to additional compliance costs (chapter 6).

> This increases RTO [rail transport operator] compliance costs by creating an additional internal management burden given the need to ensure compliance with the multiple requirements. (ARA, sub. 26, p. 24)

> [C]hanging over train crews when outer limits of service are reached, irrespective of the location of a train on the network, results in staff driving back and forth on roads between depots and locomotives; creating needless road safety risks and added operating costs. (FORG, sub. 8, p. 6)

In addition:

> [b]y creating the need to change crews whenever outer limits of service are reached, irrespective of the location of a train, outer limits of service can significantly heighten a rail operators' risk profile. (Deloitte Access Economics 2018, p. v)

Table 4.4 **Outer work limit requirements vary[a,b]**

		Max. shift length: 2 person (both qualified)	*Max. shift length: 2 person (other)*	*Max. shift length: 1 person*	*Min. continuous break (shift ends at home depot)*	*Min. continuous break (shift ends away from home depot)*[c]	*Max. shifts/hours over any 14 day period*
Freight train drivers	NSW	12	11	9, plus min. 30 minute break between 3rd and 5th hour of each shift	11	7	12 shifts, but no more than 6 shifts can be 12 hour shifts
	Qld	12	..	9	12	8	12 shifts, but in any case, no more than 132 hours
Passenger train drivers (suburban)	NSW	12	11	9	11	7	Single drivers: 12 shifts 2 drivers: 12 shifts, but no more than 6 shifts can be 12 hour shifts
	Qld	9, with max. 8 hours of driving during any shift	..	9, with max. 8 hours of driving during any shift	..	..	12 shifts, but in any case, no more than 132 hours
Passenger train drivers (non-suburban)	NSW	12	11	10	11	7	Single drivers: 12 shifts 2 drivers: 12 shifts, but no more than 6 shifts can be 12 hour shifts
	Qld	12	..	9	12	8	12 shifts, but in any case, no more than 132 hours
Emergencies	Regulations do not apply in accidents, emergencies, urgent circumstances approved by ONRSR, or other unforeseeable circumstances necessary to avoid serious dislocation of train services, provided that driver(s) indicate their fitness to work extended hours						

a In both NSW and Queensland, the length of a shift is defined as the time between sign on and sign off. In NSW, shifts longer than 11 hours, but less than 12 hours are considered to be 12 hour shifts. **b** In Queensland, a break is defined as the time between sign off and the next sign on. **c** The break is taken away from the home depot. **..** Not applicable.

Source: Schedule 2 of the Rail Safety National Law National Regulations 2012.

Drug and alcohol testing differs in NSW

The RSNL requires operators to have in place 'an appropriate drug and alcohol management plan and to manage fatigue', and individual States and Territories may have differences in the approaches to deliver such safety outcomes (ONRSR, sub. 21, p. 21). NSW imposes a differing drug and alcohol management and testing regime for rail transport operators, which is 'more prescriptive and different to the rest of Australia' (ONRSR, sub. 21, p. 15).

Under the RSNL, Rail Transport Operators (RTOs) are required to prepare and implement a risk-based Drug and Alcohol Management Program (DAMP), which includes the operator's policies and procedures, details of drug and alcohol testing regimes, as well as general information and education to workers. For operators doing business in New South Wales, additional requirements apply in relation to their DAMP, specified in the NSW regulations (Rail Safety (Adoption of National Law) Regulation 2018).

- Annual random testing of at least 25 per cent of rail safety workers (commercial operators only), consisting of a preliminary breath test or urine sample.
- Mandatory post-incident testing following a NSW prescribed incident.
- Testing must be conducted by a person authorised by ONRSR and engaged by the operator.

This additional NSW-specific requirement has resulted in some challenges for ONRSR:

> Although the law requires urine testing to be undertaken for drug testing in NSW the positive results from this cannot be used by the Regulator to progress a prosecution under the RSNL without further evidence of impairment. (ONRSR, sub. 21, p. 15)

Having to comply with multiple different sets of drug and alcohol requirements when operating in and out of New South Wales has caused problems for businesses:

> Currently, a New South Wales (NSW) version of the law means two different sets of drug and alcohol requirements exist. According to ONRSR, there are 186 accredited rail operators in Australia. Of those, 53 are currently required to comply with the two different sets of drug and alcohol requirements. This has cost, compliance and productivity impacts for the industry and limits the flexibility for rail transport operators to manage their drug and alcohol risks according to the scenario being addressed. (ARA 2018, p. 4)

Several stakeholders have raised this issue (box 4.8).

The NSW derogations were intended to be temporary in nature, subject to review three to four years after the commencement of ONRSR. However, attempts to remove these derogations since 2017 have been unsuccessful — a national approach involving the removal of such derogations from the RSNL could not be agreed by the Transport and Infrastructure Council (ONRSR, sub. 21, pp. 6, 15).

Box 4.8 Industry: the NSW drug and alcohol testing requirements should be removed

A range of industry bodies have been vocal in their support of removing the NSW drug and alcohol testing requirements, in favour of national consistency:

> Whilst Arc supports a nationally consistent drug and alcohol policy, Arc does not support adoption of the variations required by New South Wales. Arc is of the view that states adopting modified policies goes against the spirit of national regulation and limits the benefits that can be achieved by having a national regulator. (Arc Infrastructure, sub. 17, p. 6)

> The NSW specific drug and alcohol requirements add compliance costs and negatively affect productivity for the industry by limiting an RTO's flexibility to manage their drug and alcohol risks. (ARA, sub. 26, p. 22)

> [r]emoval of this [drug and alcohol] inconsistency would simplify the requirement for inclusion in an operators Safety Management System, allow for adaptability and scalability and reduce the regulatory burden. (ONRSR, sub. 21, p. 15).

> The ARA considers that removing prescriptive elements in NSW and QLD and establishing a nationally consistent risk-based approach to drug and alcohol and fatigue management will generate cost savings for both industry and government. It will allow RTOs working in NSW and QLD to manage their operations to target identified risks and provide clarity around expectations and approaches. (ARA, sub. 26, p. 21)

Data loggers in NSW

The RSNL does not mandate the use of train safety recordings (or data loggers), but does impose protections for their disclosure in certain events. In New South Wales, rolling stock operating on a New South Wales rail network are to be fitted with a data logger that operates to continuously record data, such as train speed, distance, time, braking, throttle, safety devices, headlight operation and horn operation, during the operation and movement of the rolling stock (ITSR 2011, p. 4), 'unless there is an alternative course of action which achieves the same or better standard of safety in railway operations' (ITSR 2011, p. 2). These requirements are imposed via the Rail Safety Compliance Code – Data Loggers ('the Code'), which is technically non-binding (it does not have the same legal force as the RSNL), but failure to abide by the Code can be used as evidence to show a contravention of the RSNL.

The Code was produced by the Independent Transport Safety Regulator (ITSR) in 2011 'to provide railway operators with a set of minimum requirements for data loggers that are fitted in rolling stock operating in NSW', with respect to the 'storage, access and use of data in the event of any accident or incident or for monitoring, inspection and maintenance purposes' (ITSR 2011, p. 1). It continues to have effect despite the introduction of the RSNL, via the NSW regulations.

The requirement to install data loggers affects not only operators of rolling stock who operate solely within New South Wales, but also those operating across NSW and other jurisdictions. This imposes additional compliance costs (chapter 6), compared to operators who do not operate on NSW track at all.

Train communications requirements in NSW

The RSNL only requires that a rail operator establish and maintain communications systems so as to ensure the safety of the operator's railway operation. Since the RSNL is largely non-prescriptive, it does not specify or mandate specific characteristics or functionalities for train communications systems, though a communication system of some kind is required. However, in New South Wales, the Rail Safety (Adoption of National Law) Regulation 2018 specifies particular requirements for such systems, with penalties for operators and rail infrastructure managers who do not comply. Each train on the New South Wales rail network must be fitted with a compliant radio communications system and a backup means of communication. Radio communications systems must:

- enable the driver to verbally communicate with any network control officer responsible for the area in which the train is operating
- be working at all times during the train's operation
- be capable of receiving and transmitting emergency calls
- be fitted with an emergency call priority button
- be capable of transmitting emergency communication in a form which would allow any responsible network control officer to transmit the communication to other trains in the area.

Given the specific requirements of New South Wales, operators with trains operating at least in part on the NSW rail network, may be required to install an additional NSW-compliant communications system. Existing communications systems, though RSNL compliant, may not meet the requirements of the NSW regulations. Such operators would be subject to additional compliance costs (chapter 6) to meet the NSW-specific requirements for their trains, even if they only enter NSW periodically.

Mirror legislation in Western Australia

While all other jurisdictions apply the RSNL as hosted by South Australia as their own, Western Australia takes a different approach, essentially replicating the law as an instrument of its own jurisdiction, leading to different long term outcomes (box 4.10). Due to this legislative approach, coupled with the fact that the WA provisions are rarely up to date (discussed below), there will always be two different versions of the RSNL at any given time that operators must comply with. For this reason, ONRSR considers these legislative differences to be Western Australian derogations to the law, affecting the rail industry (ONRSR, sub. 21, p. 21), which should be removed:

> … the removal of the mirror law in WA would, remove derogations and reduce the administrative burden on operators who operate in Western Australia and other jurisdictions as well as on ONRSR and the WA Government who would no longer be required to draft and progress legislation through their own parliament. (ONRSR, sub. 21, p. 31)

As the number of amendments to the RSNL continues to increase, there will be an increasing number of derogations between the RSNL and the WA version of the law due to the use of mirror legislation unless the WA Parliament more rapidly adopts the changes into its own legislation.

Removing derogations is a balancing act

In establishing new national regimes, it is expected that derogations will result from the negotiation process. Reaching agreement between eight separate jurisdictions to agree on a single set of laws may not always be possible. Derogations in these circumstances act as a negotiating tool to encourage jurisdictions to join a national regulatory regime, and are often preferable to a lack of agreement or participation in a national scheme. Depending on the jurisdiction's concerns, such derogations may provide greater or lesser requirements and flexibility for particular parts of the national law.

Nevertheless, derogations put in place at the infancy of a national regime need not be ingrained. Derogations hinder national consistency, and steps should be taken to review and remove them where appropriate, informed by evidence of efficacy. However, some stakeholders have noted a lack of progress in dealing with derogations:

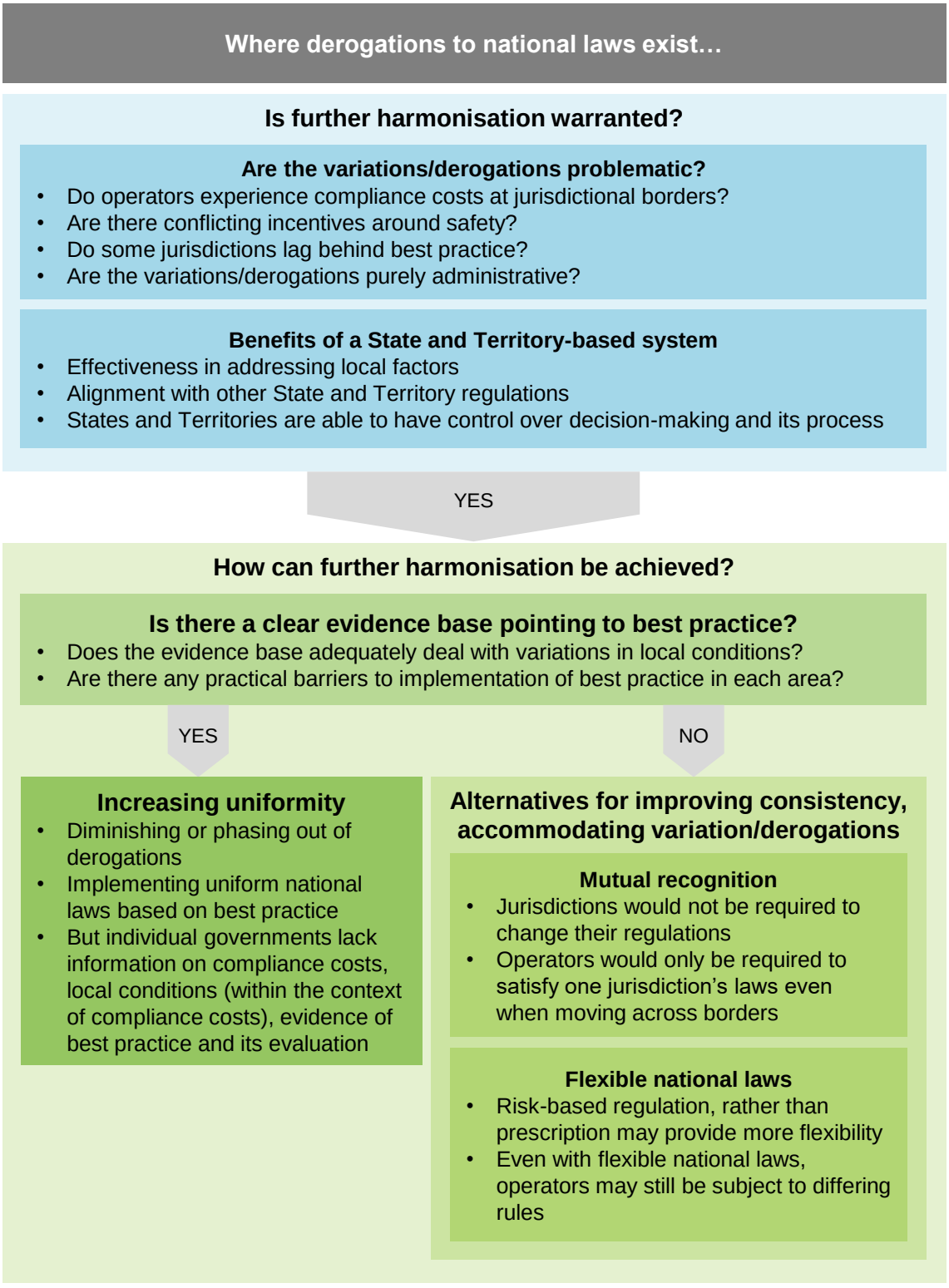
> … there will need to be a change of 'mind-sets' and a significant improvement in the spirit of goodwill between the jurisdictions if we are to achieve a greater 'harmonisation' of the Law. (VTA, sub. 23, p. 6)

While simply removing derogations would ensure national consistency, other factors should be considered before taking such action (figure 4.6).

Not all derogations are problematic, particularly where they do not alter the operation or application of the national laws. These may include derogations for administrative reasons, such as to preserve the operation of related state laws (for example, State and Territory Road Transport Acts and Police Powers Acts in heavy vehicles) and their interaction with the national laws in question. For this reason, a large number of derogations may be less significant than it seems. ONRSR notes that:

> At that time [2016] industry identified only five of the 85 derogations were of major safety and productivity concern to them. (sub. 21, p. 21)

Figure 4.6 **Issues to consider when considering further harmonisation**



In determining whether to remove or retain a particular derogation, governments must consider whether the derogation in question reflects evidence-based best practice, and whether the value of the derogation is greater than any costs imposed upon industry.

For example, local conditions or experience may justify adjustments to national requirements. State transport regulation reflects historical experience. In New South Wales, fatigue management rules were changed in response to the findings of major public inquiries into fatal accidents, and historical accident statistics (NSW Department of Transport and Roads and Traffic Authority 2000, pp. 2–3), and the NSW-specific data logging requirements were introduced in response to recommendations of the Special Commission of Inquiry into the Waterfall Rail Accident (ITSR 2011, p. 1). Nevertheless, these derogations may now be dated or even impractical. In the case of NSW derogations to the RSNL's drug and alcohol testing requirements:

> … given the remoteness of some parts of the NSW rail network, implementation of the NSW provisions is not always reasonable or practicable. Conducting testing to an evidentiary standard in remote areas of NSW is particularly challenging. In contrast, the RSNL Regulations (outside NSW) do not prescribe policies, procedures or testing methods; consistent with the broader regulatory intent, it enables operators to choose the most appropriate testing regime to target identified risks. (ARA, sub. 26, p. 21)

Where State and Territory Governments insist on derogations to the national laws, they should be able to point to evidence supporting that derogation. This process is key, not only to ensure national consistency; it is also important for governments to ensure that the regulations operating in their jurisdictions remain relevant and effective. This evidence base may include the effectiveness of particular policies in achieving their intended outcomes, for example, increased safety. In order to do this, existing data collection and analysis processes may need to be reviewed and better targeted at the task at hand. Collaboration and cooperation between State and Territory Governments with other data collection bodies such as regulators, the Bureau of Infrastructure, Transport of Regional Economics (BITRE) and the NTC will likely be required.

Though nationally uniform regulation is often desirable, where there is no clear evidence base pointing to best practice, or where best practice cannot feasibly be implemented in each jurisdiction, alternatives exist that still progress legislative harmonisation while acknowledging and accommodating the need for jurisdictional variation. Mutual recognition (box 4.9) or more flexible (risk-based, rather than prescriptive) national laws (chapter 2) may be suitable options.

Box 4.9 **Mutual recognition**

Mutual recognition is a means by which governments can achieve further harmonisation, towards the goal of national consistency. Mutual recognition involves a jurisdiction recognising compliance with regulations applicable in other jurisdictions. Those compliant in one participating jurisdiction are deemed to be compliant with the regulations in all participating jurisdictions. This can lead to reduced compliance costs for those operating across borders. New compliance costs may arise in ascertaining equivalence of, and compliance with, the recognised regimes of other jurisdictions.

Through mutual recognition, individual jurisdictions are able to develop and maintain their own laws based on their own political priorities and jurisdictional-specific concerns, without having to move towards a single common national law.

Mutual recognition has been used in many contexts within Australia, including for goods and occupational registration, as well as between Australia and other countries, for example the *Trans-Tasman Mutual Recognition Act* 1997. These mutual recognition schemes have led to widespread benefits for the jurisdictions involved.

Sources: PC (2008, Supplement to Research Report, 2015).

From stakeholder submissions, this chapter has outlined a number of key derogations which fundamentally affect day-to-day operations, in heavy vehicles and rail. Subsequent chapters will consider whether these derogations should be removed or retained, based on the available evidence. Considerations include potential safety outcomes (chapter 5); community expectations and evidence-based methods of achieving them, as well as potential changes in costs for operators (compliance, administration) (chapter 6).

DRAFT FINDING 4.2

There are many derogations by jurisdictions to the national laws. There are over 70 derogations from the Heavy Vehicle National Law and over 80 derogations from the Rail Safety National Law. Some derogations create unnecessary costs and complexity for industry and regulators. These derogations are contrary to the objectives of the Council of Australian Government's harmonisation reforms.

DRAFT RECOMMENDATION 4.1

The Transport Infrastructure Council should request that the National Transport Commission undertake a review of significant derogations from the Heavy Vehicle National Law and the Rail Safety National Law, with the aim of reducing regulatory inconsistency.

The Council of Australian Governments should commit to altering or removing derogations, or altering the national laws, to achieve best practice regulation.

Ongoing inconsistencies due to legislative lags

Where national laws are implemented, some jurisdictions may choose not to adopt them outright. Usually this occurs when there are concerns about jurisdictional sovereignty and Parliamentary supremacy (that is, the expectation that Parliaments enact laws as agreed by their minister at a Ministerial Council) (NTC 2019c, p. 114). For example, a mirror approach could be used in place of an applied laws approach (box 4.10).

In the short term, a mirror approach leads to an identical result to an applied laws approach, where the host law is replicated directly into a model instrument. However, nearly all legislative instruments will require periodic amendment. This is particularly true for the HVNL, given its prescriptive nature. Where a host Act (such as the HVNL, RSNL or MSNL) is amended by the host jurisdiction, no additional steps are required by applying jurisdictions to enact the changes in their jurisdiction. Mirroring jurisdictions, however, must complete an additional step of passing an equivalent amendment through their own parliaments. During these periods, the amending legislation may introduce new derogations or otherwise affect the way in which the changes are implemented in the jurisdiction.

In principle, the passing of amending legislation by mirroring jurisdictions serves to keep their legislation up to date with the host, preserving national consistency as well as relevance and efficiency. However, in practice, this is not always the case. Inconsistencies can also exist due to the way in which national laws were given effect in States and Territories, the time required to pass State or Territory legislation, and the possibility that the legislation will be amended.

Western Australia has tended not to adopt the legislation of other jurisdictions as in force from time to time, and instead prefers to enact 'mirror legislation' when participating in national regulatory regimes (for example, the RSNL), which is kept up to date via amendments when the host legislation is amended (Parliamentary Counsel's Committee 2018). South Australia has chosen to use the mirror law to implement the HVNL. Figure 4.7 demonstrates the differences between the two approaches (applied laws and mirror laws).

Box 4.10 The applied laws and mirror approaches to harmonisation

To achieve harmonisation without the use of national uniform legislation, jurisdictions can implement an applied laws, or mirror law approach.

Applied laws approach

The *applied laws approach* (or template legislation, referring legislation) is employed in heavy vehicles, rail and maritime, whereby one jurisdiction acts as 'host jurisdiction' to enact a law that is then referred to and applied by other jurisdictions as their law (PC 2008, p. 19, Supplement to Research Report). Legislation can be applied 'as in force from time to time' to allow future amendments in the host law to automatically flow through to applying jurisdictions, ensuring that all participating jurisdictions have up to date, consistent laws at any given time.

Applied laws are most effective when host legislation is applied by jurisdictions 'as in force from time to time', and without amendment. Otherwise, laws could become inconsistent across jurisdictions over time. Individual jurisdictions would have to pass each legislative change through their respective Parliaments, instead of it being passed once by the host jurisdiction's Parliament and automatically applying to all applying jurisdictions. The result is a time consuming process, vulnerable to procedural delays and inaction of individual Parliaments in deciding whether to apply the amendments. Changes would rarely be passed in unison, leading to staggered adoption and change over time (PC 2008, p. 19, Supplement to Research Report). This is clearly exhibited in transport, with participating jurisdictions taking up to several years to apply the host laws. Staggered adoptions of host laws can result in a lack of national consistency in the interim, but will resolve once all participating jurisdictions have successfully and identically passed the host laws.

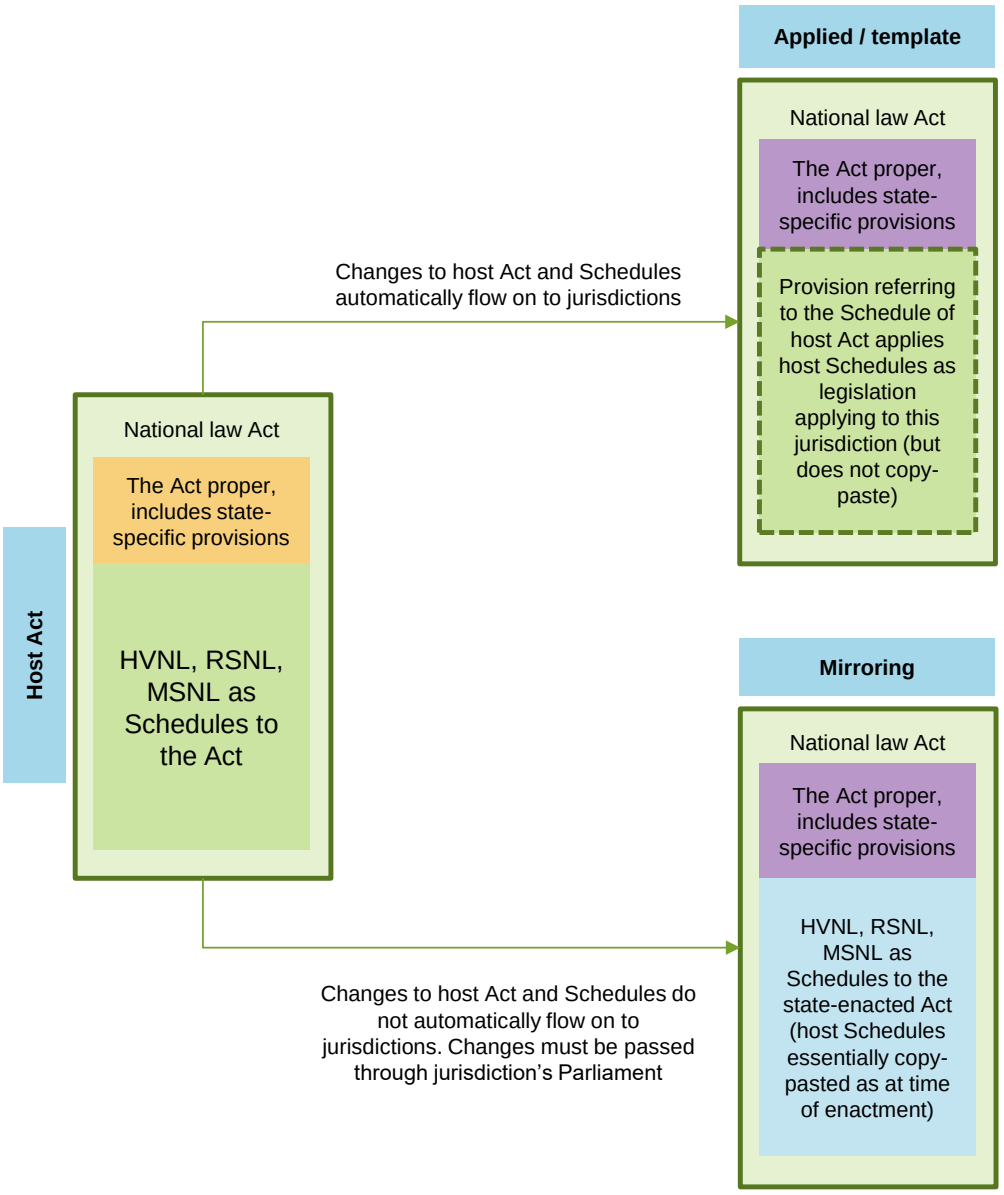
Through the applied laws approach, either the Commonwealth or a State or Territory may act as 'host' jurisdiction. Generally, a State or Territory will act as host for legislation on matters that are generally within State legislative powers, and the Commonwealth will host legislation on matters within their general legislative powers, and applied in the States for residual matters (Parliamentary Counsel's Committee 2018, p. 2). This is consistent with the situation across all three modes — heavy vehicles and rail have State hosts (Queensland and South Australia respectively), while the Commonwealth hosts the marine safety national law with States and Territories required to apply it to their jurisdictions to cover any gaps in legislative powers.

Mirror law approach

Contrary to the applied laws approach, the *mirror law approach* involves laws being enacted in full in each individual jurisdiction as a copy, or 'mirror' of the host law (essentially a copy-paste into a new legislative instrument). The mirrored laws are laws of the individual State and Territory in isolation, and any changes to the host laws do not automatically flow into the mirrored laws. States and Territories are unable to modify the legislative instruments of others — an applied laws approach allows modification by reference, where the actual legislative instrument of each participating jurisdiction is unchanged.

States and Territories are able to maintain greater control over the laws in force in their jurisdictions through a mirror law approach, as any changes to the host law must be passed in the usual way through Parliament in the mirroring jurisdiction. Any amendments determined by a mirror jurisdiction as being undesirable or not beneficial to their jurisdiction, will not be passed through into the mirrored law. Therefore, while the host law and applied laws remain consistent with each other, any mirror laws may not be, and may even be contradictory to the host law, where fundamental legislative provisions are not passed through.

Figure 4.7 **Applied laws and mirroring lead to different results in the long term**



Western Australia's decision to use mirror legislation to implement the RSNL has caused lags in implementing legislative amendments to the law. Time delays in the legislative process may render any amendments to be out of date and the law inconsistent. Due to Western Australia's mirror approach in rail, their application of RSNL amendments are 'routinely delayed', taking up to two years to pass Western Australian Parliament (NTC 2018, p. 5). This procedural lag has been acknowledged by Western Australia:

> The RSNL (WA) commenced in WA in 2015 and the legislative amendment packages developed by the RSNLMAG since then are yet to be included in the RSNL (WA), due to competing legislative priorities. WA acknowledges that the delays in updating the RSNL (WA) have

> resulted in inconsistencies between the national law and WA law. (Minister for Transport, Planning (WA), sub. 43, p. 9)

Such legislative lags have resulted in ONRSR and industry consistently working under different legislation in Western Australia compared to the rest of the country (NTC 2018, p. 5). The existence of these mirror law-related derogations causes inconsistencies in the move to a single set of legislation, and to one set of procedures applying to particular safety issues for national operators' safety management systems. It also presents difficulties for ONRSR in ensuring safety management systems are applied appropriately across all jurisdictions (ONRSR, sub. 21, p. 27). Having such a long period of inconsistent regimes has major safety and productivity impacts for operators (chapters 5 to 7).

In the time between the amendments being passed and Western Australia's implementation of them into state law, derogations exist between the two sets of provisions, which affect both operators and businesses as well as the regulator.

> Since the introduction of the Rail Safety Law (WA) there have been four amendment packages progressed through the SA Parliament and these are yet to be incorporated into the WA mirror law resulting in a further 28 derogations and the increasing impact on ONRSR and industry. (ONRSR, sub. 21, p. 21) … This has resulted in a number of differences in the law being applied in WA and being reflected in rail transport operators' safety management systems. For those undertaking business across the WA border the complexities and burden is even greater. (ONRSR, sub. 21, p. 6)

Box 4.11 Legislative lags: what does it mean for operators?

Rebecca operates a rail freight business, which predominantly operates on routes to and from Western Australia (WA) and South Australia (SA). Before the introduction of the Rail Safety National Law (RSNL), Rebecca had to ensure that her drivers were aware of and complied with a change in safety requirements when crossing the border. With the introduction of the RSNL, Rebecca believed that life would be simpler – her WA to SA route would be covered by the same rules and regulations, no longer requiring cross-border changes. However, Rebecca and her drivers often see no practical change from the introduction of the RSNL, as every time there is a change in the RSNL, WA lags behind in implementing the changed law, due to its mirror legislation approach. Sometimes, Rebecca and her crew will be operating on a new law in SA for up to two years before the same change is in place in WA. For this time period, Rebecca and her crew must still navigate two differing legislative schemes.

Where a jurisdiction agrees to pass the amendments in full using mirror legislation, the lags generated due to the mirroring process are wasted. The end result in these cases would be identical to that of an applying jurisdiction, but with an unnecessary time delay. A legislative delay may be more acceptable where the amendment at hand is a real concern to the jurisdiction in question, and amendments to the amendment may be required to facilitate those concerns. However, this would lead to derogations (see above) between the mirror and host laws, which goes against national consistency. In addition, derogations arise from the

time lags themselves, where the mirroring jurisdiction continuously plays catch-up to a differing set of laws and regulations.

It may be the case that allowing a jurisdiction to adopt a mirroring approach as opposed to an applied laws approach was an act of compromise to ensure full participation of jurisdictions in the national scheme. Despite its flaws, a mirroring approach usually provides a greater degree of national consistency, especially in the short term, than a situation where a jurisdiction not signing up to the national laws.

4.5 National consistency of application and operation

Consistent application of the national laws was an explicit intention of COAG, evident in the intended outputs of the domestic commercial vessel IGA in particular. A law that is national on paper, by name and coverage, but not national in its application, cannot be said to be consistent. Differing thresholds and interpretations of key terms across jurisdictions hinder the ability for a law to facilitate seamless transition across borders by the regulated; the issue of familiarising oneself with the nuances between each State and/or Territory's version of the law would remain, despite the existence of a national law. Inconsistent application also means that otherwise identical operators are treated differently and have different experiences depending on where they operate, despite being subject to the same national laws.

A range of factors contribute to the national laws being applied inconsistently across participating jurisdictions. The main impediments to this include the reliance on grandfathering, the use of SLAs, differing laws and derogations affecting enforcement, and differing experiences for particular types of operators.

Inconsistent application due to grandfathering for vessels

While State and Territory derogations have proven to be significant and detrimental for a national road and rail regime, for maritime operations it is generally grandfathering that causes concerns.

Intended as a transitional tool to facilitate the phase-in of new national requirements, grandfathering arrangements allow certain vessels and operators to continue operating under old (State and Territory) regulations rather than under new regulations. The need for some grandfathering to facilitate transition to a consistent national standard was not unanimously supported by States and Territories (Queensland DTMR, sub. 28, p. 3).

The use of grandfathering has varied across the three modes.

- Grandfathering provisions were used to some degree in harmonising heavy vehicle laws. Powers allowing the NHVR to introduce transitional arrangements including grandfathering are written into the HVNL, and some grandfathering of mass and

dimension regulations in particular existed during the early stages of implementation (Higginson 2015, p. 18). The bulk of these transitional and grandfathering arrangements have since been removed, leaving a largely uniform application of the national laws and regulations, with the exception of state and industry-specific exemptions.

- No grandfathering is present in the RSNL, largely because a set of model laws were operating to varying degrees before the introduction of the RSNL (chapter 3).
- A substantial number of maritime vessels and individuals remain subject to State and Territory-based standards and requirements in place at the introduction of the MSNL in 2013. In particular, grandfathering is rife in the MSNL for vessel standards, survey requirements, requirements for certificates of competency and crewing requirements.

The use of grandfathering is itself a clear impediment to national consistency, affecting both operators' compliance costs (chapter 6), as well as safety outcomes (chapter 5). However, the ongoing, extended use of grandfathering — beyond usage of a transitionary nature, has resulted in prolonged inconsistency.

Grandfathering of domestic commercial vessels is widespread

The MSNL's explanatory memorandum expressly anticipated the facilitation of grandfathering arrangements for the purpose of smoothing the transition to the new national scheme, and:

> [t]he national system was designed so that no existing operators would be negatively impacted by the reform. It was intended to provide greater opportunity for national movement for existing operators and crew, and to provide a truly national system for new entrants, without significantly affecting existing operators who simply wished to continue operating in the same manner as they did before the reform. (AMSA, sub. 35, p. 7)

Three different avenues for grandfathering exist for domestic commercial vessels. In respect of certificates of survey, the following instruments contain provision for grandfathering:

- Marine Safety (Domestic Commercial Vessel) National Law Regulation 2013
- Marine Order 503 (Certificates of survey – national law) 2018
- Exemption 02 – Marine Safety (Certificates of survey).

Similar arrangements apply for certificates of operation and competency.

The number of grandfathering provisions was expected to fall over time. However, this has not been the case. The legislative instruments above effectively allow for the indefinite grandfathering of applicable vessels and standards. The National Law Regulation and the relevant Marine Orders themselves are set to sunset in 2023 under the requirements of the *Legislation Act 2003* (Cwlth), however, this is primarily to facilitate their review to ensure that they remain 'fit-for-purpose, necessary and relevant' (Department of Prime Minister and Cabinet 2016b, p. 1). The National Regulation and Marine Orders can be remade without significant changes if desired, thus restarting the 10 year sun-setting period.

Where grandfathering provisions are contained in exemptions to the MSNL, these exemptions tend to specify duration periods (usually about one or two years). However, AMSA can renew exemptions at their expiry date, with or without amendment. For example, Exemption 02 relating to certificates of survey was introduced on 1 July 2013, and has been renewed four times in the years since. Similarly, Exemption 03 (certificates of operation) has been renewed three times since July 2013. There is no clear limits on the number of times an exemption can be renewed.

While there are ways for the regulation and other legislative instruments themselves to sunset as a whole, there are no mechanisms in place for the specific grandfathering provisions contained within these instruments to expire, or to sun-set independent of the remaining regulatory scheme. Such provisions would allow for an improvement in national consistency over a shorter period of time, while still allowing for transition.

Therefore, due to the nature of maritime vessels in particular (namely their long service life), grandfathered vessels would be covered until they cease operating or the legislation is changed. This would allow for decades-old vessels to avoid being covered by the newest legislation, instead remaining covered by State and Territory legislation that is otherwise no longer applicable (and likely repealed). Until the last of the grandfathered vessels retire from service, the MSNL will not be a nationally consistent law; old, repealed or no longer applicable State and Territory legislation will continue to have relevance and must continually be referred to. This results in two classes of vessels and two classes of regulation, as well as a maintenance of the 'inconsistencies of the previous state and territory regimes that the National System was aiming to address' (MIAL, sub. 14, p. 4).

The specific forms of grandfathering still in place for domestic commercial vessels have potentially serious implications for safety (chapter 5). Several stakeholders have noted the need to limit grandfathering for the sake of national consistency. However, there are concerns as to how it can be effectively removed:

> Due to commitments made to industry prior to the commencement of the transition, there is little capacity for AMSA as the regulator to alter this approach. (MIAL, sub. 14, p. 4)

In deciding whether to remove grandfathering in its entirety (or in part), consideration must be had to the resulting safety implications (chapter 5).

Box 4.12 Grandfathering: what does it mean for operators?

Max is a third generation commercial fisherman with a modest fleet. Prior to the introduction of the MSNL, Max and his operations were covered under the state marine safety law. The law covered the particular requirements associated with vessel survey; vessel design, construction, ongoing condition and maintenance. Max is aware that the requirements in his jurisdiction are more lenient than those in neighbouring jurisdictions, and as such, Max has a competitive advantage over many of his interstate competitors.

The introduction of the MSNL resulted in consistent, nation-wide requirements for vessels and crew (including survey). Moving to a consistent regime would eliminate Max's current competitive advantage, as the same (higher) standards and requirements would apply to businesses and vessels regardless of which state they are operating from. However, Max's vessels and those of his main interstate competitors are grandfathered under the MSNL, due in part to their age. This means that they are all able to continue operating as usual, subject to the pre-existing state laws. Despite the existence of a 'national law', Max continues to have a competitive advantage over interstate competitors, because he is able to continue operating under a more lenient regime, with fewer compliance costs.

DRAFT FINDING 4.3

Grandfathering was intended to smooth the transition to the Marine Safety National Law. However, open-ended grandfathering maintains the inconsistencies of previous State and Territory regimes, delays the adoption of new safety standards, complicates enforcement and discourages investment in new vessels and equipment.

SLAs and the application of the national laws

On paper, heavy vehicle, rail safety and domestic commercial vessel safety regulation is the exclusive responsibility of the national regulators but, in practice, enforcement and other functions have often been retained by State and Territory agencies. The national regulators have used SLAs to share functions with State and Territory agencies (section 4.3). In the early days of reform, this reliance was sensible, giving the national regulators time to develop their capabilities and smoothing the transition to national regulation. However, it is now open to question whether this approach is still valid.

As SLAs are stand-alone contracts between the national regulator and a State or Territory agency, each agreement is unique. Some jurisdictions have chosen not to enter into any SLAs. Other jurisdictions have signed SLAs with one, two or all three national regulators. This mix of arrangements creates confusion about the division of responsibilities between national and State and Territory regulators.

The use of SLAs can also produce inconsistent decision making. As discussed in section 4.3, State and Territory agencies under an SLA may be agents (having authorisation) or delegates of the national regulator. As a delegate, a State or Territory regulator is likely to use its

discretion to make decisions tailored to local needs. Such decisions may create inconsistencies in the application of the national law from jurisdiction to jurisdiction. This is less likely to occur with a single decision maker.

One way to minimise the risks created by using multiple State and Territory agencies to enforce the national law would be to re-negotiate SLAs to ensure that State and Territory regulators act under the direction of the national regulators, to ensure consistent decisions across jurisdictions.

DRAFT RECOMMENDATION 4.2

The national regulators should phase-out Service Level Agreements (SLAs) with State and Territory agencies by absorbing these functions at the earliest opportunity.

Where there is a business case to use SLAs with third parties, those parties should act under the direction of the national regulators to ensure consistent decisions across jurisdictions.

Do SLAs cause inconsistent enforcement?

The HVNL is not enforced solely by the NHVR; a range of heavy vehicle enforcement bodies exist besides the national regulator, each with its own enforcement approaches, priorities and powers (NTC 2019b, p. 34). These bodies include authorised officers under the HVNL, State and Territory road authorities, and police. These bodies enforce the HVNL through 'the extensive use of SLAs', leading to 'inconsistent application and enforcement of the HVNL' (ALGA, sub. 34, p. 10). Industry is concerned by the limited role that the NHVR plays in enforcing the law it is supposed to oversee and implement, resulting in inconsistency for businesses (box 4.13).

In rail, State and Territory police forces have an important role in enforcing the RSNL:

> ONRSR has effective MOUs in place with various police departments in Australia. ONRSR work with the police in determining the appropriate party to lead a prosecution and also have arrangements in place with police agencies to provide assistance with evidentiary breath analysis of rail safety workers where required. (ONRSR, sub. 21, p. 42)

While 'AMSA now administers all functions involved in the operation of the national system for domestic commercial vessel safety. This includes … performing all operational and enforcement functions' (AMSA, sub. 35, p. 6), various States have entered into agreements with AMSA to continue working in partnership for compliance and enforcement activities (DPTI 2018; NSW Government 2018).

However, the arrangements for compliance and enforcement in rail and domestic commercial vessels do not appear to be a point of concern to industry, unlike in heavy vehicles.

Box 4.13 Several stakeholders commented on the NHVR's role in enforcing the HVNL

NatRoad stated that an increased role for the NHVR would result in a more consistent and effective enforcement regime:

> NatRoad members are very concerned that enforcement of the HVNL is not consistent and is in the hands of too many agencies. The NHVR at present has a limited role in enforcement (Tasmania, South Australia and the ACT have vested their enforcement responsibilities in the NHVR) with State agencies and the Police having a greater role. NatRoad would like to see fundamental enforcement reform, as outlined in the submission to the NTC. That reform would vest more responsibility in the NHVR and enable greater levels of justice in the application of the law through a tribunal system and greater and more consistent levels of education amongst operatives. This is an area where role clarity is poor and the trust and confidence that is required in the enforcement of the HVNL and related laws is low. The transfer of State-based enforcement to the NHVR must be accelerated. (sub. 7, p. 14)

The South Australian Freight Council also raised the issue of differences between NHVR compliance officers and police officers:

> There are also related issues with consistency of enforcement. NHVR compliance officers and all sworn police officers are considered 'authorised officers' for the purposes of the law. NHVR and specialist heavy vehicle branch police officers are trained to a high standard, and have the inbuilt experience benefit of operating with the law every day. General duties police officers do not- while they may have had some training, they are not specialists and road interceptions of heavy vehicles likely constitute only a small portion of their work duties. Reports from industry members indicate that these officers are more likely to charge for technical (non-safety related) breaches, and may interpret the law incorrectly. (sub. 6, p. 6)
>
> The land transport industry is national - there should be as little state level regulation as possible, and no state level compliance and enforcement beyond that provided by police. All derogations from that principle cause additional regulatory burden, increase costs and lower business productivity. (sub. 6, p. 6)

The Australian Logistics Council raised the issue of enforcement responsibilities among heavy vehicle regulators, noting that:

> 'work needs to be done to … [f]inalise the transfer of enforcement officers from jurisdictional regulators to the NHVR'. (sub. 12, p. 5)

The existence of SLAs should not lead to differing enforcement regimes across jurisdictions. SLAs should only affect the relationship between the national and State and Territory regulators, in determining the responsibilities of each party. As far as the regulated are concerned, they should not experience any variation in their experiences due to the presence of SLAs in a jurisdiction.

The effect of derogations on enforcement consistency

As noted in section 4.4, there are over 70 derogations to the HVNL, and of those, 23 are contained within the enforcement provisions in chapter 9 of the law (table 4.2).

All participating jurisdictions have enforcement-related derogations, some of which are relatively minor and procedural. For example, the alteration of section 576(3) (Clearance certificates) in the South Australian version of the HVNL relates to the SA-specific definition and classing of police officers, and has no practical effect on the application of the provision itself. Likewise, the addition of two sections to the Queensland application Act

(sections 35 and 37), serve to preserve the operation of State legislation, namely the *Police Powers and Responsibilities Act 2000* (Qld).

However, the vast majority of HVNL enforcement-related derogations are not procedural or administrative but fundamentally alter the operation of the provisions. The many derogations to chapter 9 of the HVNL broadly include additions, omissions and alterations, which lead to:

- inconsistent application of enforcement powers (the result of any jurisdictional derogation in the area)
- greater enforcement powers for authorised officers (and police) — for example, the addition of section 21(1) (Authority to use force) in Tasmania, in conjunction with section 21(2)
- the creation of new offences — for example, the alteration of section 21 (Offence to sell or dispose of heavy vehicle in respect of which vehicle defect notice is in force) in South Australia
- the creation of a scenario that is not addressed by the HVNL — for example, an alteration of section 556 (Return of seized things or samples) in Victoria, despite not affecting the overall operation of the section itself
- inconsistent application of natural justice requirements under the HVNL — for example, the addition to section 9 (Use of certificates in assessing compensation section 613(1) of the HVNL) in Victoria
- direct inconsistency with the HVNL — for example, the addition of section 38 (Power to seize) in Queensland, which renders section 552 of the HVNL null and void
- non-police authorised officers having different powers — for example, the addition of section 39 (Power to require production of driver licence) in Queensland.

Inconsistencies for above-rail operators

Below-rail track owners and rail infrastructure managers (RIMs) must ensure that their infrastructure and networks meet the requirements of the RSNL through co-regulation with ONRSR. Through this, below-track operators are compliant under a single regulatory regime. However, above-rail operators face inconsistency within this consistent co-regulatory regime.

Since each State and Territory has its own engineering standards for trains and track infrastructure, above-rail operators in practice face many different regimes. There are thirteen RIMs operating different networks in Australia (PwC 2018, p. iv), with differences in signalling equipment, rail access conditions, rolling stock standards, recognition of qualifications and technical specifications.

Multiple approvals from track owners and RIMs are required for cross-border (and even cross-track) routes and activities. In the three main rail freight corridors, operators may need

to negotiate up to six different access regimes (PwC 2018, p. 6). Even though they are accredited in one jurisdiction for a track, there is no guarantee that the operator's accreditation will flow on to other tracks in the same jurisdiction or otherwise, which may in some cases prevent businesses from operating across tracks and jurisdictions.

> While this is outside the direct control of ONRSR, network rules applied across different networks, or even within single networks, have not been harmonised by the RIMs [Rail Infrastructure Managers]. (ONRSR, sub. 21, p. 6)

Box 4.14 summarises some of industry's key concerns.

Box 4.14 Multiple approvals from track owners and rail infrastructure managers inconvenience operators

Above rail operators are often required to gain multiple approvals from a range of bodies in order to operate on differing networks, despite being certified by ONRSR at a national level.

> We have different systems and rules which not only vary across different networks but on different sections of the same network despite having the one RIM [rail infrastructure manager]. (Pacific National, sub. 24, p. 5)

> [More] than 600 rail routes across Australia require a myriad of different operating codes and standards for running a freight train. 'During long-haul interstate or trans-continental trips, train drivers will travel on multiple rail networks, each having a raft of different codes, standards and communication protocols that must be adhered to. This is an area in our industry ripe for simplification, modernisation and harmonisation'. (FORG, sub. 8. p. 6)

> Australia's rail supply chain transport infrastructure and its operation has suffered the adverse effects of inconsistencies between different State and Territory jurisdictionally based decision making. Historically, there is a relatively small annual tonnage that moves interstate by rail. However, on the occasions (such as when regional droughts occur) when demand for interstate movements occur the industry is required to deal with a lack of harmonisation of standards and multiple interfaces between different state systems. (GTA, sub. 38, p. 7)

> The most significant driver of inconsistency of rail regulatory regimes is the disparity of procedures and methods employed by regulators in the development and approval of access undertakings and also in the operation of the negotiate-arbitrate framework. The rail industry has engineering standards, operating and environmental conditions, legacies and inherited asset conditions which are substantially different across networks in contrast to the more uniform nature of other regulated sectors of the economy. (Aurizon, sub. 30, p. 14)

In some cases, operators are prevented from being able to operate easily in other jurisdictions:

> Prescriptive engineering standards vary between different jurisdictions leading to captive locomotive and rollingstock assets which cannot be operated in other jurisdictions without costly and inefficient modifications or administrative waivers. (Pacific National, sub. 24, p. 3)

Box 4.15 **Differing track standards: what does this mean for operators?**

Sophie is an above rail operator, operating routes on various networks with different owners. Where Sophie's operations are confined within one track system, things are simple; she only has to deal with one set of operating codes, standards and procedures. However, things are more difficult where Sophie's operations span multiple track owners' assets. Each track system is subject to differing codes, standards and procedures, despite all being accredited, and she must comply with all these differing requirements as her train crosses in and out of them. This may require a train to stop at the junction between the different track sections to make the necessary changes, preventing a smooth and seamless journey.

DRAFT FINDING 4.4

Despite having one national safety law and one national safety regulator, rail operators face differing standards, operating codes and procedures, set by rail network owners. Differences across networks create costs and delays for above-rail operators.

4.6 Pursuing further consistency

The national transport reforms have resulted in both national laws and regulators within each of heavy vehicle, rail, and maritime transport. However, it is clear that for each regulatory regime, there remains some level of inconsistency in legislative form and application. From this starting point, the question of whether or how to pursue further national consistency is not straightforward. For instance, any derogations to the national laws that have significant implications for safety or productivity should be reconsidered in light of the latest available evidence. Some such evidence is considered in this report where it relates to the safety implications of derogations (chapter 5). More generally, governments should consider whether derogations are supported by evidence.

A nationally consistent regulatory regime was intended by COAG 'to reduce excessive compliance costs on business, restrictions on competition and distortions in the allocation of resources in the economy' (COAG 2008, p. 3), in addition to increased productivity and efficiency, improved safety outcomes, and a more effective regulatory regime. However, a nationally consistent regulatory regime for heavy vehicles, rail safety and domestic commercial vessels has not been fully realised, and harmonisation efforts are ongoing. This affects the ability to assess the effects of the national laws and the harmonisation efforts.

5 Has harmonisation of transport regulation improved safety?

Key points

- Safety is critical in all three modes of transport.
  - Heavy vehicles share the road with other users and are involved in a significant number of crashes causing death or serious injury.
  - Rail transport has very few serious injuries from accidents. There are some areas of risk, including a significant number of fatalities due to intentional self-harm.
  - The evidence on maritime safety is poor, with a high likelihood of underreporting. There appears to be a relatively high rate of serious injury in the fishing sector.
- To date, the national transport reforms do not appear to have had a significant impact on safety.
  - On key measures, the long-term trends in all three sectors have changed little over the last decade. There have been fewer major heavy vehicle crashes, particularly among articulated trucks. This suggests that increasing access for larger vehicles over recent years has not come at the cost of safety.
  - Level crossings remain a major safety issue for rail transport, despite a focus by the regulator on measures to reduce these risks. States, Territory and local governments have also implemented measures to improve level crossing safety.
- Reforms have led to positive developments in safety regulation that are propitious for improving safety in the future.
  - Progress has been achieved in areas such as chain of responsibility and fatigue management (which would, however, benefit from additional flexibility). State and Territory governments should seek to improve general road users' understanding of driving safely in the vicinity of heavy vehicles through education and enforcement measures.
  - The coregulatory model appears to work well in rail, although more progress is needed in addressing derogations in fatigue management and in safety at level crossings.
  - In the maritime sector, vessel surveying has moved to a more risk-based model, although continued grandfathering of vessel survey requirements is an impediment to improving safety.

5.1 Introduction

Improving safety was one of the key aims of the 2009 Council of Australia Governments (COAG) reforms. As discussed in chapter 2, regulation is just one factor affecting safety

outcomes. Other factors include the state of crucial infrastructure, growing volumes of freight, technology changes, changes to industry practices, and the behaviour of transport operators and third parties. With so many factors involved, it is difficult to isolate the impact of regulatory changes on safety. The staggered roll-out of the national laws and the existence of derogations in critical safety areas rules out a simple 'before/after' analysis of the COAG reforms.

The most important measure of safety performance is fatalities. By this measure, the heavy vehicle and rail sectors have improved their safety performance over the last decade (figure 5.1). By contrast, the maritime sector appears to have made little if any progress over the same period — although recorded fatalities have remained relatively low.

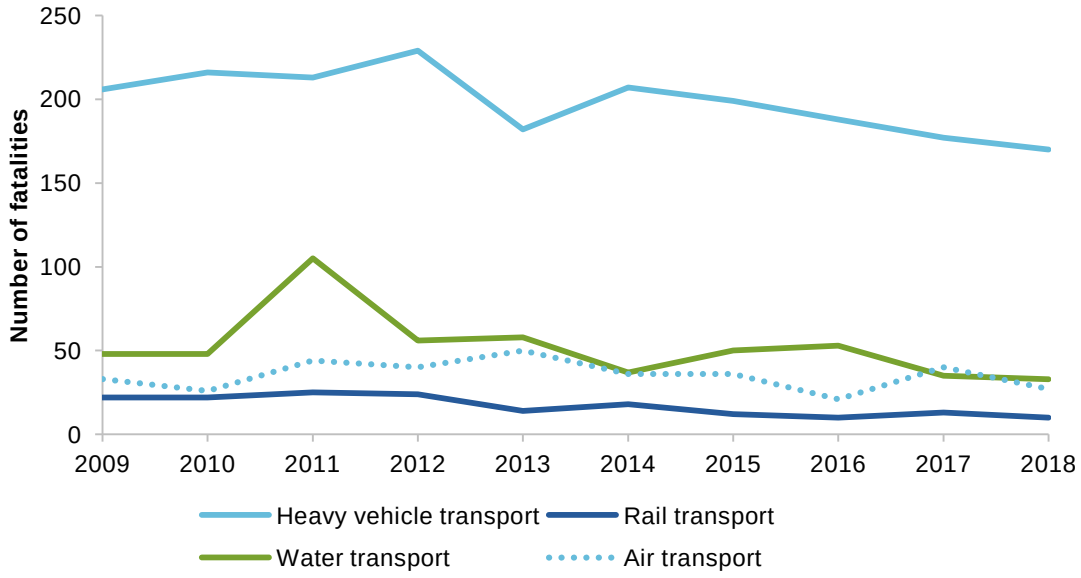
Despite the overall positive trend, figure 5.1 shows that the absolute number of recorded fatalities is highest in the heavy vehicle sector. This is unsurprising, given that heavy vehicles share roads with the general public and the number of heavy vehicles is steadily rising, whereas rail and maritime transport typically operate in more self-contained environments.

However, evidence of fewer rail and maritime fatalities does not imply that regulation is less important in these sectors. As noted in chapter 2, the number of safety incidents alone does not provide a complete picture of the risks associated with a particular mode of transport. Nor does it describe the extent to which regulation may play a role in reducing systemic risks and modifying behaviours.

In all three sectors, there is no evidence that the shift to national regulation has produced a step change in safety. This conclusion does not mean that the regulatory changes launched in 2011 may not, over time, deliver better safety outcomes.

The remainder of this chapter considers whether transport safety has improved in recent years with respect to heavy vehicles (section 5.2), rail (section 5.3), domestic commercial vessels (section 5.4) and overall workplace safety (section 5.5). Where possible, this includes both an empirical element and a qualitative assessment of the changes to safety regulation brought by harmonisation. In this way, the chapter seeks to establish to what extent the COAG reforms have led to effective safety regulation and safety outcomes or instances where the impact has been limited or negative.

Figure 5.1 **Number of fatalities by mode of transport[a]**
2009–2018



[a] Includes all maritime transport deaths, and does not distinguish those involving domestic commercial vessels. As such, this likely overestimates the fatal incidents relevant to the Marine Safety National Law (MSNL).

Source: ABS (*Causes of Death, Australia, 2018*, Cat. no. 3303.0).

5.2 Has heavy vehicle transport become safer?

As noted at the beginning of this chapter, assessing the impact of the COAG reforms on safety outcomes relies on both quantitative and qualitative analysis. There may be several reasons why clear empirical links cannot be established between occurrence data and policy settings, even where policies are both well-targeted and effective. For example, it may be difficult to isolate the impact of a policy from other factors. A policy change may contribute to better safety in the longer term, and its benefit may not be immediately observable.

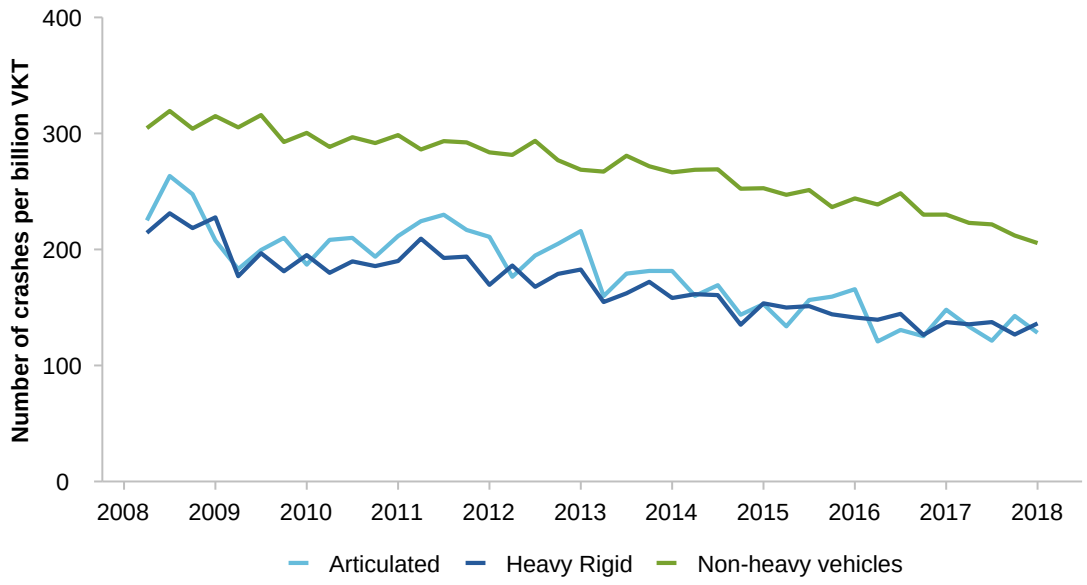
More than any other mode of transport, heavy vehicle safety is a significant public safety issue. The Bureau of Infrastructure, Transport, and Regional Economies (BITRE) reports that about 60 per cent of persons killed in heavy vehicle crashes in 2016 were light vehicle occupants, while another 20 per cent were 'vulnerable road users' (for example, cyclists, motorcyclists or pedestrians) (BITRE 2016a, p. 1).

There have been significant improvements in heavy vehicle safety over the last decade. As shown in figure 5.2, the rate of heavy vehicle crashes involving injury or death (per billion vehicle kilometres travelled) fell by about 40 per cent between 2008 and 2018. This rate of decline has been similar for both heavy rigid and articulated vehicles, as well as for

non-heavy vehicles, indicating that the overall downward trend in heavy vehicle crashes is likely attributable to factors affecting all vehicle types. This may include improvements in road infrastructure and maintenance, better driver education and training, increased or better targeting of road rules enforcement, and improvements in vehicle design, reliability and safety features such as anti-lock braking systems.

Figure 5.2 **Heavy vehicle crash rates have fallen per distance travelled[a]**

Crashes involving injury or death per billion vehicle kilometres travelled (VKT)



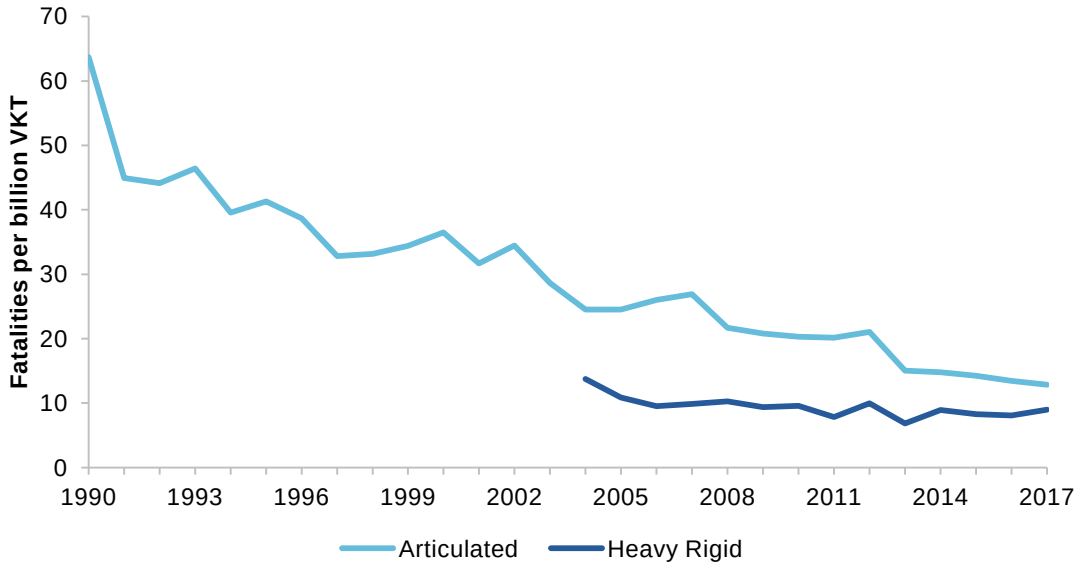
a 'Heavy rigid' refers to motor vehicles greater than 4.5 tonnes Gross Vehicle Mass constructed with a load carrying area or fitted with special purpose equipment. 'Articulated' refers to motor vehicles constructed primarily for load carrying, consisting of a prime mover that has no significant load carrying area but with a turntable device which can be linked to one or more trailers. Non-heavy vehicles refers to all road vehicles that are not classified as either an articulated or heavy rigid vehicle. Crashes (fatal and non-fatal) are expressed as crashes per billion vehicle kilometres travelled from 1 January 2008 to 31 December 2017 (quarterly data). Data excludes ACT.

Source: Commission estimates based on the National Crash Database and VKT estimates (BITRE unpublished).

Despite similarities in the rate of crashes involving injury or death, larger articulated trucks have been more commonly involved in a fatal crash than smaller (rigid) trucks or road vehicles. Data indicate this continues to be the case, although the rate of articulated truck-related fatalities has declined substantially and consistently over at least the last 25 years (figure 5.3). Heavy rigid trucks are responsible for fewer crashes per kilometre driven, but this rate has increased slightly over the past five years.

Figure 5.3 **Truck-related fatalities have fallen per distance travelled[a,b]**

Number of fatalities per billion vehicle km travelled (VKT)



a For context, the proportion of the freight task undertaken by rigid trucks has been constant since the late 1990s. In that time, the composition of the articulated truck fleet has changed significantly. **b** Fatality rates calculated from calendar year estimates for fatalities and financial year estimates for kilometres travelled.

Sources: Commission estimates based on BITRE (2016b, 2017); BITRE VKT estimates (unpublished).

DRAFT FINDING 5.1

There have been significant improvements in heavy vehicle safety over the past decade, with the number of heavy vehicle crashes involving injury or death per kilometre travelled decreasing by about 40 per cent between 2008 and 2018. The fall in crash rates is consistent with longer term trends and is likely to be due to factors affecting all vehicle types such as improvements in road infrastructure and safer vehicle design.

Can we attribute the changes in heavy vehicles safety outcomes to the Heavy Vehicle National Law?

Attributing changes in heavy vehicle safety outcomes to the Heavy Vehicle National Law (HVNL) is not a straightforward task. A heavy vehicle crash may be due to many different factors unrelated to regulation. In an attempt to isolate the impact of the reforms on heavy vehicle safety the Commission has compared:

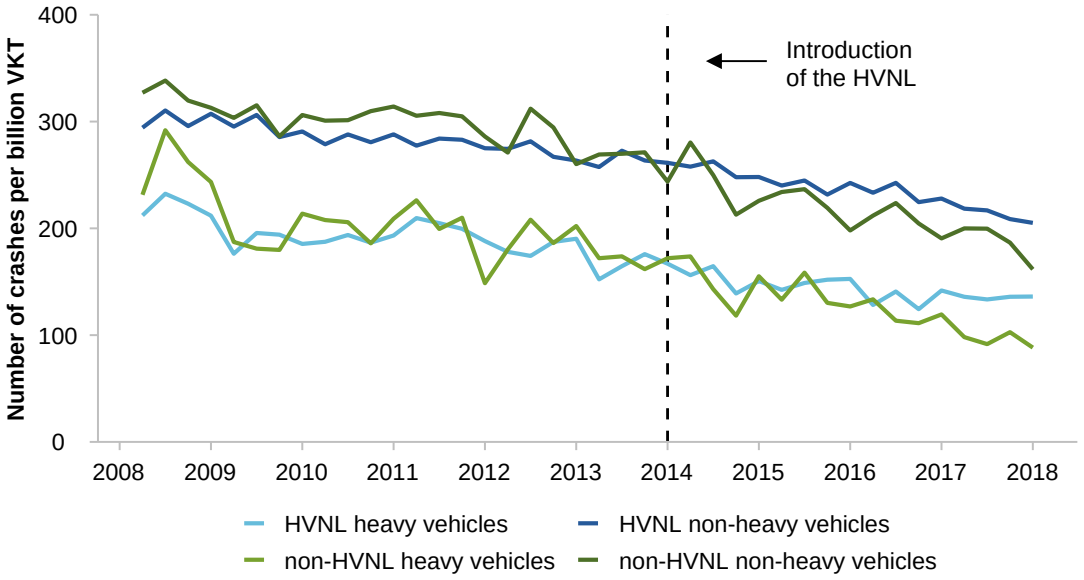
- HVNL and non-HVNL states — making use of the fact that Western Australia and the Northern Territory did not sign up to the HVNL (figure 5.4)

- heavy and non-heavy vehicles in HVNL states.[10]

In both instances, there is insufficient evidence to suggest that adopting the HVNL had a significant impact on heavy vehicle safety outcomes. It is possible that adopting the HVNL did have positive effects but parallel regulatory changes in non-HVNL states may have had similar effects as well, masking the impact of the HVNL on safety. Equally, in HVNL states, there have been changes to road safety (such as education programs and changes in police enforcement) that may have asymmetrically affected heavy and non-heavy vehicles. The Commission will publish further details of its analysis in a technical appendix on its website in December 2019.

Figure 5.4 **The HVNL does not appear to have significantly affected heavy vehicle safety outcomes[a,b]**

Crashes involving injury or death per billion vehicle kilometres travelled (VKT)



a Crashes (fatal and non-fatal) are expressed as crashes per billion vehicle kilometres travelled from 1 January 2008 to 31 December 2017 (quarterly data). Non-heavy vehicles include all vehicles excluding articulated and heavy rigid trucks. Data for ACT not included. The Commission is aware that a quality assurance process is underway for WA crash statistics before 2012. **b** The HVNL commenced on 10 February 2014 in NSW, Vic, Qld, SA, and Tas.

Sources: Commission estimates based on the National Crash Database and BITRE VKT estimates (unpublished).

10 The Commission undertook a difference-in-difference empirical approach. Main results control for year-quarter time periods, time-invariant differences between states, state-specific linear time trends, vehicle kilometres travelled and state population.

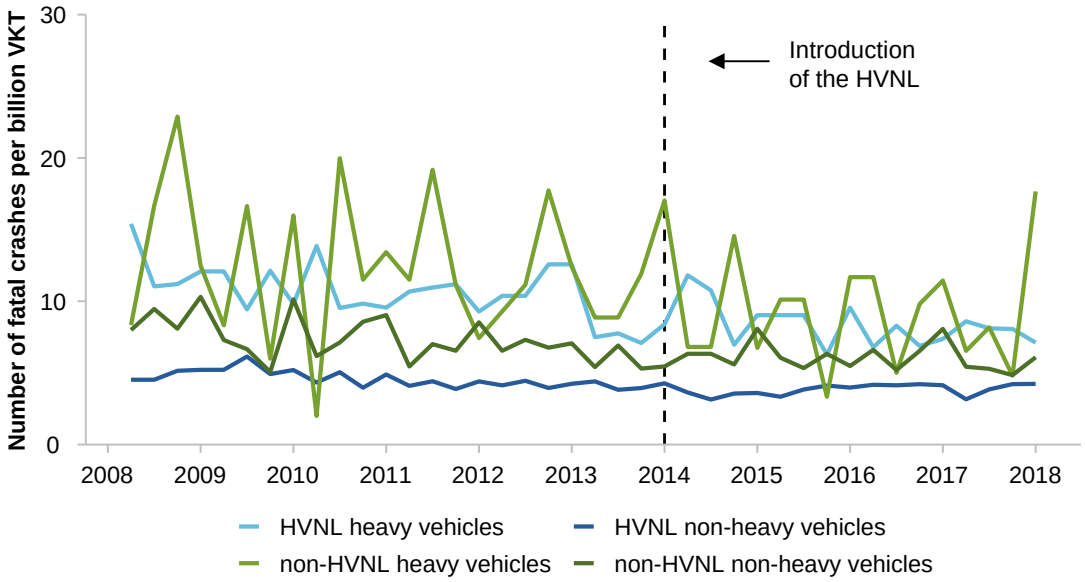
To determine the mechanisms by which the reforms may have affected safety the Commission examined:

- crashes by heavy vehicle types — for example articulated and heavy rigid trucks
- crashes involving fatality (figure 5.5).

In all instances there is insufficient evidence to suggest the COAG reforms had a significant impact on heavy vehicle safety.[11] While these results suggest the safety benefits forecast in the regulatory impact statements have not been realised, the Commission's analysis suggests that the reforms, which were largely focused on improving heavy vehicle productivity, have not reversed the positive safety trend.

Figure 5.5 **No significant impact on fatal heavy vehicle crashes[a,b]**

Crashes involving death per billion vehicle kilometres travelled (VKT)



a Fatal crashes are expressed as crashes per billion VKT from 1 January 2008 to 31 December 2017 (quarterly data). Non-heavy vehicles include all vehicles excluding articulated and heavy rigid trucks. Data for ACT not included. The Commission is aware that a quality assurance process is underway for WA crash statistics before 2012. **b** The HVNL commenced on 10 February 2014 in NSW, Vic, Qld, SA and Tas.

Sources: Commission estimates based on the National Crash Database and BITRE VKT estimates (unpublished).

11 Results are preliminary and may be subject to change. The Commission is aware that crash statistics in certain states (notably WA) are being reviewed for quality assurance purposes and may be updated in future circulations of the National Crash Database. The Commission will publish further details of its analysis in a technical appendix on its website in December 2019.

Other road users are often at fault

Where heavy vehicles are involved in fatal road incidents, evidence suggests that other road users are legally at fault in many cases. For example, BITRE has reported that 'available Australian evidence suggests that in approximately 80 per cent of fatal multiple-vehicle crashes involving heavy trucks, fault is not assigned to the heavy truck' (2016a, p. 1).

More recent data from the National Transport Insurer (2019, p. 23) (covering heavy vehicle insurance claims greater than $50 000) suggests that among multi-vehicle incidents in 2017 which did not involve a fatality, the heavy vehicle driver was at fault 65 per cent of the time. For fatal multi-vehicle crashes, the other driver was at fault 83 per cent of the time. These data indicate that road safety outcomes could be improved by addressing some behaviours outside of the commercial transport industry, and that greater focus on improving general road users' behaviours around heavy vehicles is warranted.

DRAFT FINDING 5.2

Most multi-vehicle fatal crashes involving a heavy vehicle are not the fault of the heavy vehicle driver — in 2017, the driver of the other vehicle was at fault 83 per cent of the time. For serious, non-fatal, multi-vehicle crashes involving a heavy vehicle, the heavy vehicle driver was at fault 65 per cent of the time (2017).

DRAFT RECOMMENDATION 5.1

State and Territory governments should seek to improve general road users' understanding of driving safely in the vicinity of heavy vehicles through education and enforcement measures.

Developments in heavy vehicle safety policy

This subsection considers some of the key safety reforms from the COAG reform process for heavy vehicle safety, and considers to what extent they may have made structural or systemic improvements to safety risk factors.

Chain of responsibility

Chain of responsibility (CoR) laws apply safety responsibilities to parties within the supply chain beyond the driver (for example, to transport operators or clients). The laws aim to hold these parties accountable for breaches or safety incidents where they have influenced non-compliance.

CoR was a component of the original National Heavy Vehicle Law framework. Before an amendment to the law in 2018, CoR laws were prescriptive, imposing different duties on different parties that sometimes did not include the most responsible party (NTC 2015a, pp. 4–5). Under the new law, CoR is based on a non-transferable duty of care, which requires all parties in the supply chain to do whatever is 'reasonably practicable' to ensure safe and compliant driving.

Assessment of Chain of Responsibility

CoR laws not only recognise that safety outcomes are influenced by many factors, but that driver behaviour can be influenced significantly by external factors such as unreasonable schedules and incentives to bend the rules, take risks and cut corners to secure a freight contract with a low ball bid. Both the introduction and amendment of CoR laws appear to have extended legal accountability to parties up the chain such as contracting businesses for freight services. This is likely to have positive implications for improving safety outcomes.

Several stakeholders have noted the potential importance of CoR laws to achieving better safety outcomes. However, due to its recent inclusion in the HVNL, there is little evidence yet of the effectiveness of CoR laws (Freight and Logistics Council of WA, sub 22, p. 4; Roads Australia, sub. 11, p. 3). While CoR laws are a legal mechanism to shift the focus of enforcement up the supply chain, it has not yet demonstrated a change in regulatory focus and accountability beyond the driver and transport operator (Freight and Logistics Council of WA, sub. 22, p. 4).

Moving away from prescriptive CoR standards towards a principles-based regime appears to have involved some trade-off between compliance burden and certainty. For example, according to the National Farmers Federation:

> Many farmers and industry associations sought clear guidance from NHVR on what they needed to do to comply with the changes. The response was that users should take a 'common sense' approach to interpreting the requirements. The implication of this advice was it would only be through post-regulatory prosecution that farmers (and other users) would have a clear idea as to what action (or lack of action) constituted a breach. (sub. 36, p. 3)

The needs of industry stakeholders for clarity on compliance has been partly filled by industry bodies. For example, Grain Trade Australia has run practical workshops on how to comply with CoR regulations (sub. 38, p. 6).

Generally, there are likely to be gains in both efficiency and safety by moving towards regulatory regimes that place less emphasis on direct enforcement, and allow businesses to take more responsibility for managing safety (chapter 9).

Heavy vehicle operator accreditation

Accreditation is designed to provide structure and oversight to an operator's safety management, and, in return, allow operators some regulatory concessions and flexibility. Around 20 per cent of operators are estimated to be accredited (Fellows Medlock and Associates 2018, p. 20).

Multiple accreditation schemes for heavy vehicles

As discussed in chapter 3, the National Heavy Vehicle Accreditation Scheme (NHVAS) was established to recognise operators with robust safety and other management systems in 1999. State and Territory road transport authorities handed administration of the NHVAS to the National Heavy Vehicle Regulator (NHVR) in 2014.

The NHVAS is not the only accreditation scheme for heavy vehicle operators: Trucksafe is operated by the Australian Trucking Association, and the Western Australia Heavy Vehicle Accreditation scheme (WAHVA) operates in Western Australia (box 5.1). The nature of compliance and concessions associated with accreditation varies between the three major schemes. Participation in the NHVAS and TruckSafe is voluntary, whilst accreditation under the WAHVA is compulsory for operators wishing to use Restricted Access Vehicles in Western Australia.[12]

Participation in the NHVAS provides heavy vehicle operators with regulatory concessions designed to boost operator and industry productivity (such as higher mass limits or more flexible fatigue requirements). These concessions are not available to participants in other schemes. In return for regulatory concessions under the NHVAS, operators' safety management systems are subject to greater scrutiny. In this way, accreditation schemes provide a risk-based framework for allowing greater regulatory flexibility where operators can demonstrate the use of safe practices and systems.

Accreditation is likely to have commercial benefits for carriers competing for clients — particularly comprehensive schemes such as TruckSafe, which covers a range of mandatory modules allowing members to show they have safety systems in place. However, for the NHVAS, regulatory concessions were some of the major attractions of accreditation:

> The larger companies were clearly motivated by the available regulatory benefits. This meant that they belonged to the NHVAS because access to higher mass limits, maintenance concessions and longer driving hours provided potentially very significant commercial benefits. (Fellows Medlock and Associates 2018, p. 35)

[12] Restricted Access Vehicles can only operate on approved roads in Western Australia. These roads are approved by Main Roads, an agency of the Government of Western Australia.

Box 5.1 Accreditation under the NHVAS, TruckSafe, and WAHVA

National Heavy Vehicle Accreditation Scheme

The National Heavy Vehicle Accreditation Scheme (NHVAS) is administered by the NHVR. Accreditation is available nationally and is optional. Heavy vehicle operators can apply for accreditation under any of the available NHVAS modules, each of which provides some form of regulatory concession.

These module are: Mass Management (allowing operation at concessional mass limits greater than national general limits); Maintenance Management (allowing concession from annual inspections, subject to State Government decision); Basic Fatigue Management (allowing more flexible work and rest hours); and Advanced Fatigue Management (allowing greater flexibility in hours).

TruckSafe

TruckSafe is an industry-based scheme, developed and managed by the Australian Trucking Association. Accreditation is available nationally, and is based on a set of minimum standards with seven compulsory core modules: Management; Risk Management; Responsibilities; Speed Risk Management; Fatigue Risk Management; Mass, Dimension, Loading and Restraint; and Vehicle Standards (including maintenance), and one voluntary module (Animal Welfare). TruckSafe purports to assure accredited members that they have met Chain of Responsibility requirements.

TruckSafe accreditation does not provide any unique regulatory concessions.

Western Australia Heavy Vehicle Accreditation Scheme

The Western Australia Heavy Vehicle Accreditation scheme (WAHVA) is a state based scheme administered by Main Roads. Accreditation is compulsory for any operators wishing to use Restricted Access Vehicles in WA.

WAHVA involves three mandatory modules which operators are required to incorporate into their daily work practices: Fatigue (based on WA Occupational Safety and Health Regulations); Maintenance; and Dimension and Loading.

Mass Management is an optional module which is only required if an operator wishes to operate within the Accredited Mass Management Scheme which provides three concessional mass levels for operators that have proven loading controls.

Sources: Main Roads WA (2019); NHVR (2019); TruckSafe (2019).

While there appears to be significant overlap between the accreditation schemes, no mutual recognition is in place between the schemes. This has led to a situation where operators are accredited to multiple schemes, with multiple compliance costs. Fellows Medlock and Associates reported that 82 per cent of TruckSafe members[13] were also accredited to the NHVAS, and that:

> One operator with around 70 vehicles estimated that it cost in the order of $3,000 per truck per year in resourcing, membership fees and audit and compliance costs to belong to WAHVA, TruckSafe and the NHVAS. (2018, p. 36)

[13] TruckSafe had 212 members as of 9 October 2017 (Fellows Medlock and Associates 2018, p. 24).

There does not appear to be a single approach to accreditation scheme design that could be considered best practice. Some programs are specific to particular areas of operation, while others are broader in scope. In principle, if operators have implemented risk management systems that meet the standards of each accrediting body, those standards could reasonably be audited by one accrediting body and recognised by others. As such, there appears to be an argument for better coordination of the various heavy vehicle schemes. To this end, processes are underway to implement recommendations from the Medlock review (including an NHVR working group set to provide further recommendations to State and Territory governments), although the timeline for this process is unclear (Australian Trucking Association, sub. 32, p. 28).

Recommendations from the Medlock review included developing a common set of principles for accreditation schemes and ensuring that the regulatory concessions of the NHVAS are available via other accrediting bodies.

DRAFT FINDING 5.3

The lack of effective mutual recognition of heavy vehicle accreditation between Western Australia and the jurisdictions that have adopted the Heavy Vehicle National Law is counter to the objectives of the harmonisation agenda and does not promote safety. Operators bear the costs of meeting the requirements of different jurisdictions.

Driver fatigue management

Fatigue is a significant safety issue: it is associated with roughly one in ten major heavy vehicle crashes (NTARC 2019, p. 17). Fatigue is also the main cause of fatal single-vehicle crashes involving heavy vehicles, and is an issue drivers themselves highlight as a major risk (NTC 2019b, p. 16). All jurisdictions across Australia have some form of fatigue management regulation in place for heavy vehicles, though this differs in application between Western Australia, the Northern Territory, and the HVNL jurisdictions (box 5.2).

Assessment of fatigue management reforms

Under the HVNL, fatigue is managed primarily through the general safety duties (including those imposed by the 2018 CoR laws), and the limits on work and rest hours (NTC 2019b, p. 30). As discussed in chapter 3, some aspects of fatigue management predate the COAG reforms. The policy framework was effectively already set by the National Heavy Vehicle Driver Fatigue Reform in 2008, which was subsumed into the HVNL in 2013. It should also be noted that some states have used derogations to retain past fatigue management regulations in addition to the HVNL (chapter 4). As such, it is difficult to isolate the effect of the HVNL's introduction on fatigue-related safety outcomes.

Box 5.2 Fatigue management for heavy vehicles across Australia

Heavy Vehicle National Law (HVNL) jurisdictions

The HVNL includes a number fatigue-related provisions which require that:

- a person must not drive a fatigue-regulated heavy vehicle on a road while impaired by fatigue
- managing driver fatigue is a responsibility shared by all parties in the chain of responsibility
- parties must take all reasonable steps to make sure a person does not drive a fatigue-regulated heavy vehicle while impaired by fatigue. (NTC 2019b, p. 17)

At the same time, more direct fatigue management provisions in the HVNL include:

- safety duties (primary and fatigue-specific) and accountability under the chain of responsibility
- maximum work and minimum rest hours
- work diaries and record keeping
- fatigue management accreditation schemes — Basic Fatigue Management and Advanced Fatigue Management. (NTC 2019b, p. 17)

Western Australia

Fatigue management in Western Australia is regulated under state-based Occupational Health and Safety legislation:

> Driver fatigue in WA is regulated under the *Occupational Safety and Health Act 1984*, with fatigue management requirements set out in the Occupational Safety and Health Regulations 1996 and the Code of Practice for Fatigue Management for Commercial Vehicle Drivers.
>
> The fatigue management regulations and code of practice were developed in consultation with industry and tailored to suit the unique operating environment within WA. Commercial vehicle driver fatigue was recognised as an Occupational Safety and Health matter that was to be managed at every point in the supply chain and not limited to the driver of the heavy vehicle. Commercial vehicle driver requirements apply to both heavy vehicle and passenger hire and reward (omnibus) drivers, provided certain work time requirements are met. (WA Department of Transport, sub. 43, p. 4)

Northern Territory

In the Northern Territory, fatigue management is set out in WHS legislation.

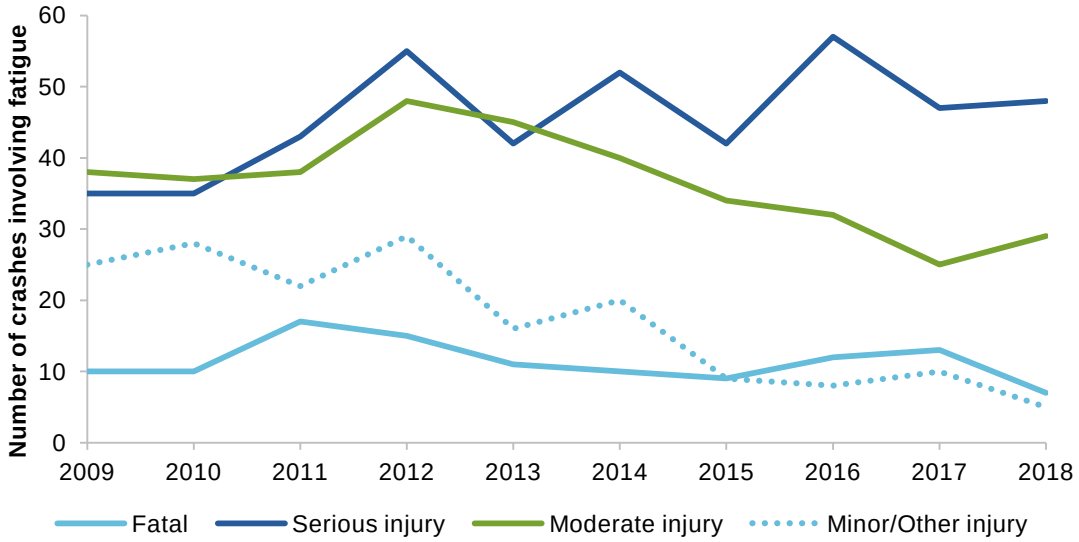
> The Northern Territory uses a performance-based system that focuses on outcomes, not processes. The WHS Act sets out general principles, including duties of care. The WHS Regulations capture the level of performance that has to be achieved to meet the obligations in the WHS Act.
>
> Codes of practice in the Northern Territory provide practical detail on at least one way of achieving the outcome or performance level in the legislation. The Road transport code of practice is not mandatory, but it gives operators key principles to apply to fatigue management in the workplace. These include that drivers must:
>
> - be in a fit state to undertake the task
> - be fit to complete the task
> - undertake minimum periods of rest.
>
> Importantly, drivers must monitor their own work performance and take regular rest breaks so they don't work when tired. The principles also include operator responsibilities such as providing suitable vehicles and giving drivers support to help them meet their obligations. (NTC 2019b, pp. 25–26)

There is some evidence that fatigue–related safety outcomes have improved in recent years. The NTI's National Truck Accident Research Centre (NTARC) reports that among major

heavy vehicle insurance claims, 9.8 per cent involved fatigue in 2017 (compared to 20 per cent in 2007) (NTARC 2019, p. 17). The NTARC noted that the sharp decline in fatigue-related losses between 2007 and 2009 corresponded with the introduction of standardised work diaries in several states in September 2018 (p. 14). Data for New South Wales show volatility in fatigue outcomes since 2009, with fatal outcomes remaining stable (figure 5.6).

Figure 5.6 **Fatigue-related injury has fluctuated in NSW[a,b]**

Number of heavy vehicle crashes involving fatigue, by injury type, 2009–18



a These data may include instances where a non-heavy vehicle driver was fatigued. **b** Serious injury means a person was identified in a police report and matched to a health record indicating a hospital stay due to injuries sustained in the crash, or is identified as an icare (Lifetime Care) participant. Moderate injury means a person was identified in a police report and matched to a health record that indicates that they were treated at an emergency department but were not admitted for a hospital stay, or was matched to a Compulsory Third Party (CTP) claim indicating a moderate or higher injury. Minor injury means a person was identified as sustaining an injury in a police report and was not matched to a health record that indicated the level of injury severity, or was matched to a minor injury CTP claim.

Source: NSW Centre for Road Safety Crash profile data (Transport for New South Wales 2019).

Toward better practice fatigue management

At the time of writing, the National Transport Commission (NTC) is undertaking a review into fatigue management in the HVNL, with a view to completing consultation in early 2020 and a Regulatory Impact Statement in late 2020 (2019b). In its issues paper, the NTC noted that:

> The HVNL doesn't have the flexibility to accommodate sophisticated fatigue management systems and practices, even though they may be more effective. Operators with these systems are still bound by the prescriptive controls in the HVNL. (NTC 2019b, p. 8)

From consultations with industry, the Commission understands that operators are increasingly using fatigue monitoring technology (to detect physical signs of fatigue), with back-to-base monitoring and oversight. If technology can accurately detect fatigue, and the associated management solutions can act effectively on this information, such systems are likely to achieve a higher standard of fatigue management than a diary system.

Not all operators can afford new fatigue management technology. The incentive to take up technology-enabled systems for fatigue management may be limited, given that an operator would still need to comply with the HVNL. In principle, if a technology-enabled system is proven to provide a superior safety outcome, the NHVR should be free to allow carriers to use it instead of existing prescriptive measures. This form of flexibility would require legislative change.

Other, broader concerns about the prescriptive nature of fatigue management have been raised by several inquiry participants (for example Natroad, sub. 7; Rail Tram and Bus Union, sub. 10; Australian Trucking Association, sub. 32; South Australian Freight Council, sub. 6).

Anecdotal evidence from heavy vehicle operators suggests that prescriptive fatigue management can have perverse effects, potentially exposing drivers to greater risks when complying with the rules (for example, a scheduled rest stop may force drivers to travel at night on rural and remote routes where there is an increased likelihood of collision with wildlife). There is also some frustration around requirements to maintain work diaries.

Restrictions on working hours are unavoidably blunt tools for tackling fatigue. While a limit on working hours is sensible, there is inevitably debate on the actual limit. The regulator already has discretion to permit more flexible arrangements where an operator can show that safety will be maintained. For example, Basic Fatigue Management Accreditation under the NHVAS allows operators to work extended hours. Advanced Fatigue Management Accreditation goes further, allowing operators to propose its own work and rest hours, supported by an in-house fatigue management system.

Subject to advice from the NTC review into driver fatigue management, governments should amend the HVNL to allow the NHVR to more easily provide regulatory concessions from prescribed aspects of fatigue management regulation, where they are satisfied that more effective systems of fatigue management are being used. Alternatively, the NHVR should make use of its existing powers by amending its accreditation schemes to recognise technology-enabled management systems, and/or accredited management systems. However, some outer limits on hours of operation should remain.

The potential movement toward more flexible regulation is discussed further in chapter 9.

DRAFT RECOMMENDATION 5.2

The Council of Australian Governments should amend the Heavy Vehicle National Law to give the National Heavy Vehicle Regulator (NHVR) greater scope to provide concessions from prescribed aspects of fatigue management regulation, where the NHVR is satisfied that more effective systems of fatigue management are in place, such as technology-enabled management systems, and/or accredited management systems.

Driver fatigue laws should continue to set outer limits on driving hours.

Technical maintenance standards

Maintenance is an important factor in limiting road crashes due to mechanical failure. As noted by the NTI:

> While mechanical failure is not one of the largest contributors to NTI's large losses, it has consistently been the primary causal factor in around 1 in every 20 large losses. (NTI 2019, p. 13)

The maintenance of heavy vehicles is enforced in a number of ways, including: scheduled inspections required by State and Territory authorities; operator accreditation (via specific modules on maintenance); unscheduled roadside stops by the NHVR compliance officers; unscheduled roadside stops by police officers; and checks undertaken at heavy vehicle safety stations.

The different forms of technical checks are not completely substitutable, although there is significant overlap in what is covered. Scheduled inspections are generally more suitable when an in-depth check is required. Roadside checks are more useful for checking journey-specific aspects, such as weight, load restraints and the general condition of trailers. On the other hand, accreditation involves operators implementing their own approved systems for technical maintenance, subject to audit. As discussed above, some forms of accreditation are already treated as an alternative to requirements for scheduled annual inspections.

Compliance costs vary across different forms of maintenance checks. Scheduled inspections are the most detailed and, therefore, the most time consuming. However, roadside stops are unpredictable both in terms of when they may occur and how long they may take. Moreover, roadside stops occur mid-journey, meaning that they are more likely to add complications for drivers in terms of scheduling and fatigue management.

The cost and practicality of administering different forms of maintenance checks also varies. Accreditation places greater responsibility for safety management with operators themselves. On the other hand, roadside checks can be logistically challenging for regulators:

> It's very difficult to police long stretches of roads in rural and remote areas that see little traffic. Yet the road toll is higher in rural and remote areas than in urban areas. The density of traffic in inner urban areas is another challenge. It makes interception for roadside enforcement purposes unsafe or impractical at times. (NTC 2019a, p. 17)

Jurisdictional differences in technical maintenance enforcement

As discussed in chapter 4, roadworthiness requirements vary across states and territories, including between HVNL jurisdictions. A uniform heavy vehicle roadworthiness scheme was proposed by the NTC and NHVR in 2015, but the proposal to implement mandatory scheduled inspections was rejected by Victoria and Western Australia (NTC 2015b). As a result, heavy vehicles are only required to undergo annual inspections if registered in New South Wales, Queensland, or in South Australia (for particular classes of vehicles). Periodic inspections are not required in Victoria, Tasmania, or the ACT.

In addition, roadside enforcement also differs across jurisdictions. For example, data from the NHVR show that, in 2018, 25 000 heavy vehicles were intercepted and checked at the roadside by NHVR compliance officers, with about 12 000 in Victoria, 2300 in Queensland, 7800 in South Australia, and 2400 in Tasmania.

The use of permanent roadside weigh stations also varies between jurisdictions. There are nine Heavy Vehicle Safety Stations in New South Wales, each located on major supply routes, where heavy vehicles are weighed and checked. The weigh station infrastructure tends to predate the NHVR, and, as such, varies between jurisdictions.

Overall, maintenance checks are more stringent in New South Wales than in neighbouring HVNL jurisdictions: not only in terms of scheduled inspections of heavy vehicles registered in New South Wales, but also roadside intercepts of vehicles travelling through New South Wales and the use of permanent weigh stations. This is consistent with anecdotal evidence the Commission has received from stakeholders, including heavy vehicle drivers and operators.

Are interjurisdictional differences justified on safety grounds?

Testing the effectiveness of different approaches is not straightforward. The approach taken in New South Wales must be viewed in the context of supply chains that cross state borders: where New South Wales has a relatively large share of interstate freight activity due to the size of its population; and where New South Wales may be used as a through-state in a national network. If Victoria lacks annual scheduled inspections, and does not to have weigh stations, this gives New South Wales more reason to maintain a stricter regime of roadside stops. In this way, some of the burden of maintenance checking is shifted from less stringent to more stringent jurisdictions.

Inter-jurisdictional comparison of safety data is also challenging, as safety outcomes in a particular state or territory are likely to include vehicles registered in other jurisdictions (and potentially subject to different annual inspection regimes). There are also likely to be significant spill-over effects between jurisdictions, particularly as roadside checks in one state or territory would capture heavy vehicles from neighbouring jurisdictions, thereby ensuring compliance for those neighbouring jurisdictions.

Evidence is available on compliance activity at permanent weigh stations in New South Wales (figure 5.7). This shows that vehicles registered in different jurisdictions and inspected while

travelling in New South Wales had small differences in compliance rates. For more serious offences, non-compliance rates ranged between 0.5 and 1.4 per cent; for all offences, between 9 and 12.8 per cent.

However, the data do not point to a significant effect of scheduled inspections. For example, heavy vehicles registered in Queensland had higher rates of major defects than vehicles registered in Victoria, despite Victoria not requiring annual vehicle inspections. Similarly, despite having the most stringent inspection regime, New South Wales-registered heavy vehicles had higher defect rates across all offences than vehicles registered in Queensland. However, these data may overstate the maintenance levels of non-New South Wales heavy vehicles if operators choose to use better-maintained vehicles for interstate trips (particularly through New South Wales).

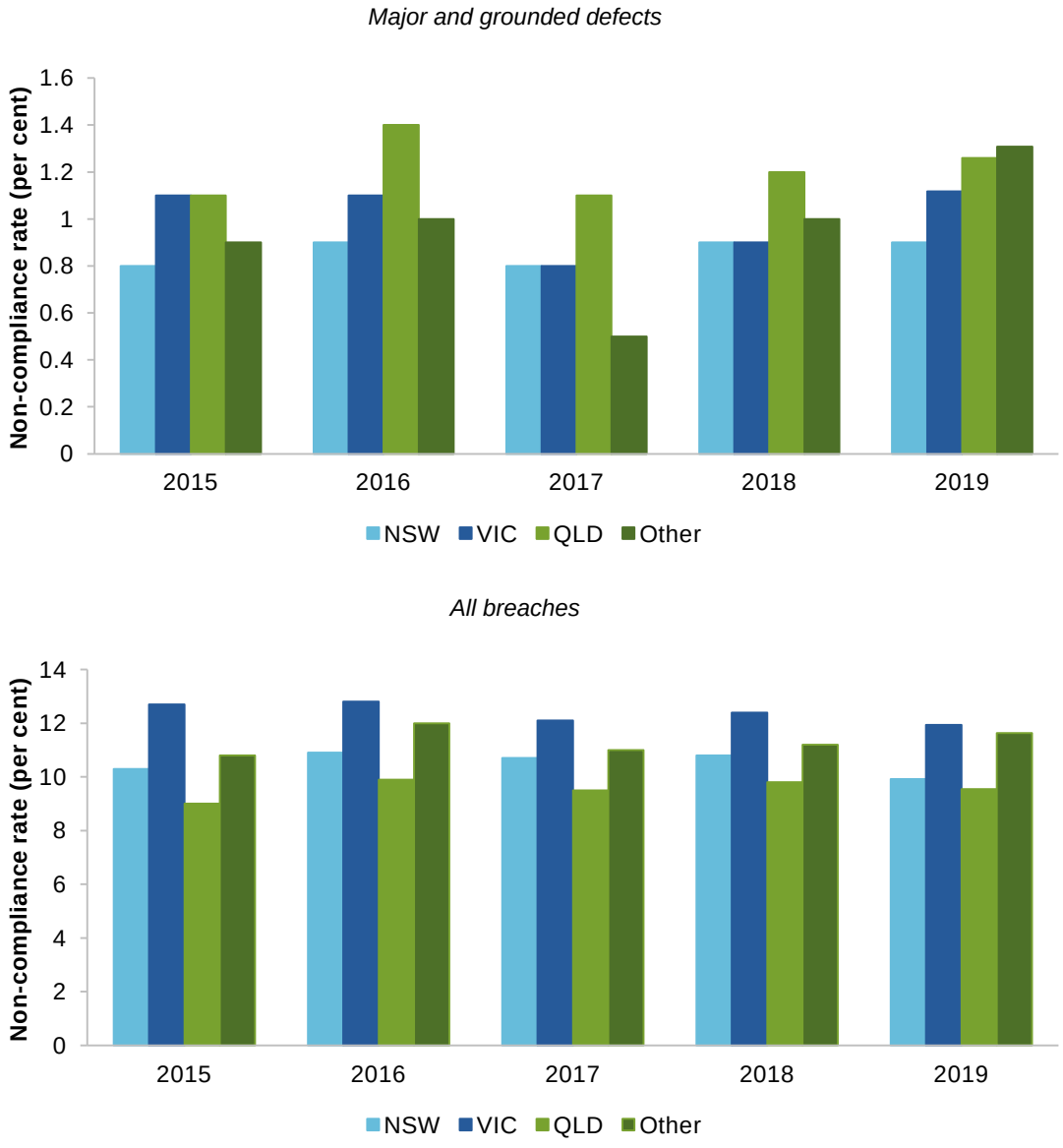
A way forward on technical maintenance

The NTC is reviewing 'Effective Enforcement' as part of its review into the HVNL. However, not all aspects of technical maintenance enforcement are within the scope of the HVNL, given that inspection regimes are decided by State and Territory governments, and State regulators continue to act as delegates of the NHVR, essentially allowing jurisdiction-specific decisions on the application of the HVNL (chapter 4). The gains in both efficiency and safety outcomes from improving technical maintenance enforcement would be far greater if all relevant tools were under review, across all HVNL jurisdictions. This would be possible if governments are open to changing their approaches to scheduled and unscheduled inspection, potentially including the increased provision of permanent checkpoints, subject to evidence-based findings of the NTC review.

If improvements to the enforcement of technical maintenance were to result in uniform approaches to scheduled inspections, this would have the added advantage of allowing for national registrations to be implemented as per chapter 2 of the HVNL. In the longer term, there are likely to be benefits in reducing the reliance on of direct enforcement. There are potential efficiency gains from allowing operators to take more responsibility for safety management, albeit still with sufficient oversight, as is the case with accreditation.

Figure 5.7 **Non-compliance rates for checks at NSW Heavy Vehicle Safety Stations, by jurisdiction of vehicle registration**

Per cent of heavy vehicles that issued with an offence at Heavy Vehicle Safety Stations in NSW, by jurisdiction of registration, 2015–2019[a,b]



a Includes data for first two quarters of 2019. Other includes SA, WA, Tas, NT and ACT. **b** While these data are not broken down by offence type, a breakdown of defect fault types for the second quarter of 2019 indicates that the vast majority of all defects are related to maintenance issues. For example, defects related to brakes accounted for more than 20 per cent of all defects. (NSW RMS 2019, p. 8)

Sources: NSW RMS (2018, 2019).

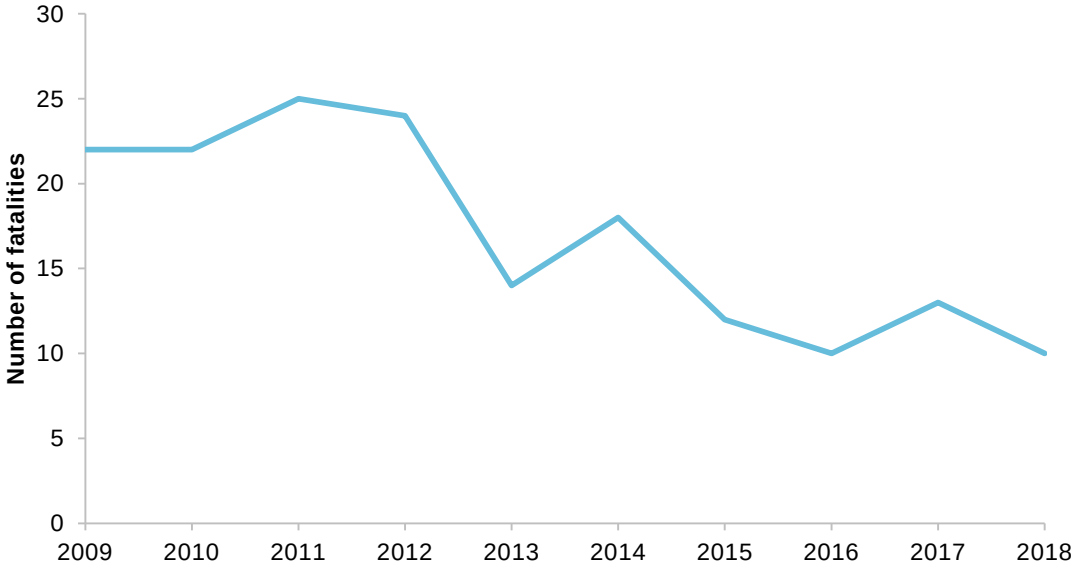
5.3 Is rail transport becoming safer?

The number of fatalities associated with rail transport has been declining (figure 5.8) over the last decade. Rail-related fatalities have fallen by 50 per cent over the decade to 2018, from 22 fatalities in 2009 to 10 in 2018. This trend reflects the aggregate results for passengers, rail workers and the general public.

While fatalities are a useful measure (especially for cross-modal comparison), they paint an incomplete picture of the nature of risk in the rail industry. The nature of rail transport and infrastructure, in particular the relatively isolated nature of rail corridors, means that overall safety risks in rail transport are lower than in the heavy vehicle sector. However, the risk of serious injury or fatality increases where rail operations interact with the general public (for example, at railway crossings) or rail transport workers.

Even where risks are low, when an incident does occur the scale of the impact may be significant, particularly if large numbers of passengers are involved (such as the Granville rail disaster in 1977 which killed 83 people). This is reflected in table 5.1, which shows that passengers accounted for the largest proportion of rail-related serious injuries in 2017-18. Data also show that rail faces a unique challenge with trespassing and suspected intentional self-harm being the leading cause of fatalities.

Figure 5.8 **Fatalities involving rail transport**[a]
2009–2018



[a] Excludes suspected suicides.

Source: ABS (*Causes of Death, Australia, 2018*, Cat. no. 3303.0).

Table 5.1 **Rail-related serious injuries and fatalities, 2017–18**[a]

Date	*Passenger*		*Public*		*Worker*		*Trespasser/suicide*	
	Fatalities	*Serious Injuries*	*Fatalities*	*Serious Injuries*	*Fatalities*	*Serious Injuries*	*Fatalities*	*Serious Injuries*
2017-18	4	49	5	10	0	14	95	29

a These data have been national since the 1 July 2017, when Queensland transferred regulatory responsibility for rail safety to the Office of the Rail Safety Regulator (ONRSR).

Source: ONRSR (2018c).

Can we attribute the decline in fatalities to the Rail Safety National Law?

Figure 5.9 examines rail fatality rates in Australia, the United Kingdom and the United States from 2011 to 2018. To allow for comparisons over time, taking into account variations in the Office of the Rail Safety Regulator (ONRSR)'s geographic and operational coverage and changes in rail activity, the figure shows rail-related fatalities per million train kilometres travelled based on ONRSR's area of operation. While there appears to have been a decline in the fatality rate following the introduction of the Rail Safety National Law (RSNL), this cannot be directly attributed to the RSNL or ONRSR.

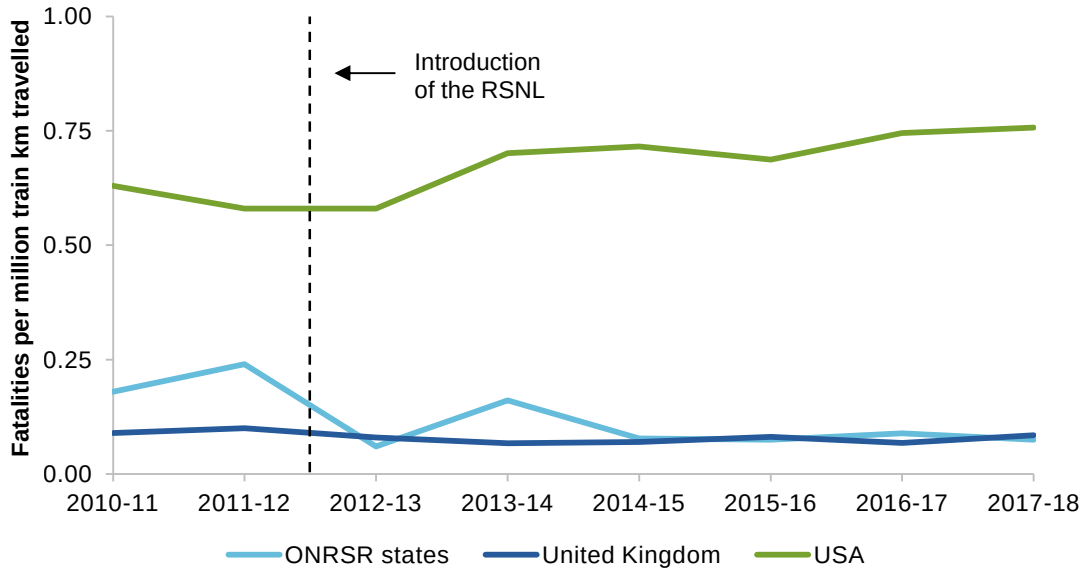
As with the heavy vehicle sector, attributing changes in safety outcomes to the introduction of the RSNL is not an easy task. Transport is inherently risky, and many factors within and outside the scope of regulation may affect safety outcomes (for example, overall rail activity or trespassing). With respect to regulation, many of the elements of the RSNL had already been adopted by the states and Northern Territory through the model law (chapter 3) — as such, the regulatory environment may not have changed significantly for many operators. Other complicating factors are the relatively recent introduction of the RSNL, as well as the delays in certain states introducing the national law and delays to ONRSR taking over regulatory responsibilities in certain jurisdictions.

Finally, the nature of safety incidents — with low numbers of collisions or accidents, but where a single incident may nonetheless lead to multiple fatalities and injuries — makes it difficult to draw reliable conclusions based on fatality or incident data alone.

Inquiry participants have indicated, however, that safety outcomes are improving. For example, Arc infrastructure noted that 'whilst rail safety outcomes have improved since the implementation of the national regime in Western Australia, those improvements are not necessarily attributable to nationalisation.' (sub. 17, p. 6)

Figure 5.9 **Rail related fatalities have fallen[a,b]**

Fatalities per million train kilometres (km) travelled, July 2010 to June 2018



a Excludes suspected suicides. **b** ONRSR commenced operations on 20 January 2013. NSW, SA, Tas, and NT data are for full period; Vic and ACT data is from 1 July 2014 onwards; WA data is from 2 November 2015 onwards, and Qld data is from 1 July 2017 onwards. Data excludes local Vic operators regulated under state legislation for the whole reporting period. The comparison is most valid for the United Kingdom because of its comparatively high rail safety performance

Sources: ONRSR (2013, 2014, 2015, 2016, 2017, 2018c).

Developments in rail safety policy

This subsection considers some of the key safety reforms that have emerged from the COAG reform process for rail safety, and considers to what extent they may have improved safety.

Industry drug and alcohol testing

Under the RSNL, it is an offence for a rail safety worker to undertake rail safety work if there is any presence of alcohol or a prescribed drug in their system.[14] Rail transport operators are required to have a Drug and Alcohol Management Program in place, which includes drug and alcohol testing.

From 1 July 2019, there has been mandatory post-incident drug and alcohol testing for rail safety workers for prescribed incidents. These incidents include an accident or incident that

14 The RSNL identifies a rail safety worker (s.4) as any individual who has carried out, is carrying out, or is about to carry out rail safety work (s.8(1)), which includes tasks such as driving, maintaining or modifying rolling stock or rail infrastructure.

has caused death, serious injury or significant property damage or a collision at a level crossing between rolling stock and either a road vehicle or a person.

The RSNL also provides for testing of rail safety workers by ONRSR for the presence of a drug or alcohol. Under the ONRSR testing regime, there are a number of offences relating to:

- the presence of illicit drugs or alcohol
- the refusal of a rail safety worker to submit to a drug or alcohol test
- attempts to interfere or tamper with drug or alcohol test samples.

Overall, there is a low number of positive drug or alcohol test results in the rail industry (table 5.2).

Table 5.2 **Rail industry drug and alcohol testing, 2017-18**

Test type	*Number of tests — ONRSR testing*	*% positive — ONRSR testing*	*Number of tests — Industry testing*	*% positive — Industry testing*
Drug	794	0	43 608	0.383
Alcohol	1 171	0	473 931	0.025

Source: ONRSR (2018a, p. 63).

New South Wales drug and alcohol testing requirements

As discussed in chapter 4, rail transport operators in New South Wales are subject to additional requirements for drug and alcohol testing under the RSNL. These include:

- annual random drug or alcohol testing of at least 25 per cent of rail safety workers
- mandatory post-incident testing for rail safety workers involved in a New South Wales prescribed incident within 3 hours immediately after the incident
- testing has to be completed to an evidentiary standard by a person authorised by ONRSR.

While derogations with respect to drug and alcohol testing may result in a lack of consistency between jurisdictions, it may be the case that drug and alcohol issues will differ between regions, and perhaps change over time.

Fatigue

Fatigue can affect the performance of rail transport workers in many ways, including through slowed reaction time, decreased problem-solving and decision making capability, and a greater likelihood of errors due to inattention or distractions. However, ONRSR notes that 'the causal link between fatigue and rail incidents is complex and involves multiple factors' (ONRSR 2019a, p. 12). For example, while breath and saliva testing can be used to test for

the presence of drugs or alcohol, and thereby infer possible impairment, there is no equivalent objective measure of fatigue, or of the extent of impairment due to fatigue.

Under the RSNL, rail safety workers must not undertake duties in relation to a rail transport operator's railway operations while impaired by fatigue or if they may become so impaired. Similar obligations also apply to rail transport operators. In addition, the RSNL requires accredited rail transport operators to prepare and implement a safety management system which includes a fatigue risk management program.

Derogations in rail fatigue

New South Wales and Queensland have additional requirements for managing fatigue. Rail transport operators in these states must comply with prescribed outer limits for hours of work and rest for train drivers (box 5.3).

Box 5.3 **Prescribed hours for train drivers in New South Wales and Queensland**

The *Rail Safety National Law National Regulations 2012* (Schedule 2) sets out specific fatigue management requirements (including outer limits of work and rest requirements) for rail transport operations in New South Wales and Queensland.

Broadly, these provisions prescribe the 'outer limits' of rail safety work for train drivers relating to:

- maximum shift lengths depending on the type of train driven (freight or passenger) and whether it is a single person or two person operation
- minimum break lengths between shifts
- maximum numbers of shifts, and the length in hours of those shifts, within any 14 day period
- requirements in relation to the maximum amount of time allowed between signing on for a shift and reaching the home depot or barracks when travel is involved in getting to the home depot or barracks.

However, the fatigue regulations applying in New South Wales and Queensland are not identical. For example, for a single person suburban passenger rail operation, the maximum shift length in New South Wales is 9 hours. In Queensland, the maximum shift length for this type of operation is also 9 hours — however, the maximum time that a driver can drive a train is 8 hours.

Source: ONRSR (2018b).

In 2018, ONRSR undertook a review of the fatigue risk management requirements under the RSNL, including the specific regulations in New South Wales and Queensland. In its Consultation Paper for that review, ONRSR stated that:

> No evidence was presented that prescribed outer limits for train drivers provided safer outcomes than a risk based framework and no submissions presented scientific evidence for the basis of the current outer limits. No evidence was presented that fatigue is not being adequately managed under the existing framework either. (2019a, p. 26)

This view was also expressed by the Australasian Railway Association in their submission to the inquiry:

> The industry is not aware of any strong evidence that supports the safety case that prescribed hours of work for train drivers in NSW and Qld is an effective tool to manage fatigue. (sub. 26, p. 23)

ONRSR did not recommended any changes to the way in which fatigue is regulated under the RSNL, but noted in its submission to this inquiry:

> ONRSR does not believe that mandated hours in legislation are required to safely manage fatigue under a risk based approach, recognising however that the management of rail safety workers hours are an essential part of managing fatigue. There was no conclusive evidence that prescribed hours were more or less safe than a risk-based approach. In view of this from a safety perspective and given that it is unlikely that a change to remove mandated hours will gain the required unanimous agreement by members of [the Transport and Infrastructure Council] a recommendation for change was not made by ONRSR. (sub 21, p. 16)

ONRSR proposes to undertake another review of the fatigue provisions within five years (2018b, p. 20). ONRSR also intends to produce guidance materials on fatigue risk management under the RSNL to support operators. However, future reviews undertaken by ONRSR may again be limited in their influence if conclusive evidence is not available. In addition, ONRSR's ability to address inter-jurisdictional differences in fatigue management would also require a commitment from State and Territory governments to act on evidence-based recommendations.

Moreover, it may be valuable for ONRSR and State and Territory governments to focus on removing inconsistencies in fatigue management as they apply to freight routes that traverse multiple jurisdictions (and multiple rail tracks). The Commission is aware that, in some cases, a single journey may encounter different fatigue management requirements at different sections of track, due to jurisdictional derogations or requirements of rail infrastructure managers. This will also affect future infrastructure, including the Inland Rail project, where operators will encounter different fatigue management requirements in Victoria (no prescribed outer limit on hours), New South Wales (9 hour maximum shift), and Queensland (9 hour shift with 8 hours driving).

DRAFT RECOMMENDATION 5.3

The Council of Australian Governments should commission an independent review of the fatigue management laws applying in the rail sector to examine the scope for further harmonisation. This could be included in the broader review into derogations proposed by this inquiry (draft recommendation 4.1).

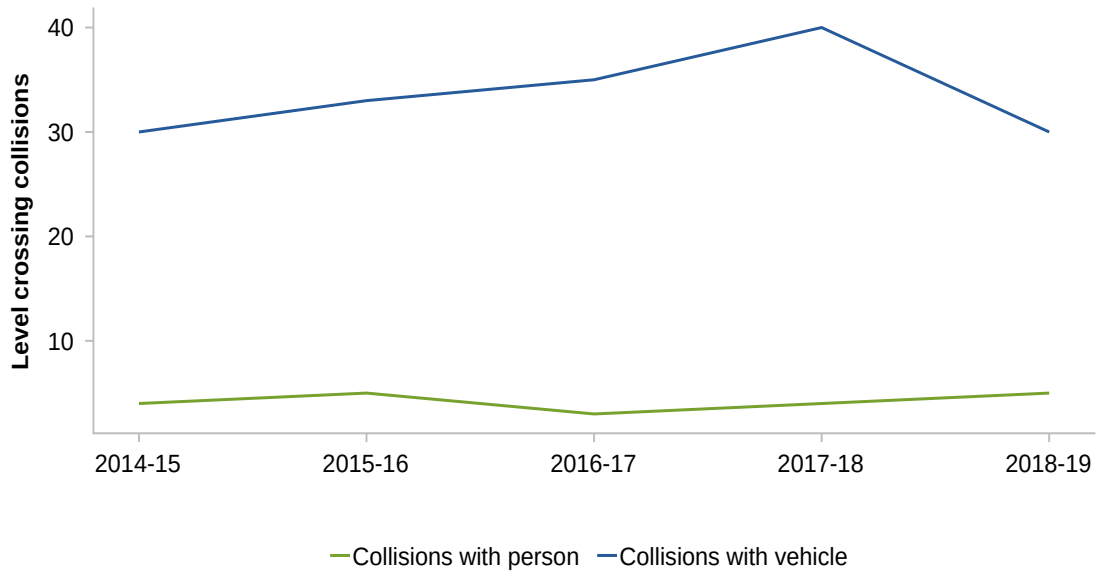
Level crossing safety

Level crossings represent a unique and significant safety risk for the rail sector. Excluding trespass and suicide, accidents at railway crossings account for the largest number of railway-related fatalities involving members of the public. This is unsurprising, given that level crossings are the main way that members of the general public navigate across a rail corridor, be it as pedestrians or passengers in a motor vehicle.

Most level crossing collisions involve a train or rolling stock colliding with a road vehicle (figure 5.10).[15] In 2018-19, there were 30 such occurrences, compared with 5 level crossing collisions with a person or pedestrian during the same period.

The Australian Transport Safety Bureau has recommended that state and territories ensure unnecessary railway crossings are eliminated (ATSB 2008). State and Territory governments have recognised the risks associated with level crossings, and have taken steps to minimise these risks (box 5.4). In addition, between 2008 and 2010, the Australian Government provided funding for the installation of boom gates and other safety measures at 300 high risk rail level crossing sites across Australia (Australian Government 2009, p. 5).

Figure 5.10 **Level crossing collisions**
2014-15 to 2018-19



a This chart includes data for Queensland and Western Australia from before they transferred regulator responsibility to ONRSR. (2 Nov 2015 for WA and 1 July 2017 for Qld). Data exclude local Vic operators regulated under state legislation for the whole reporting period.

Source: Commission estimates based on ONRSR (unpublished).

15 Past research indicates that light passenger vehicles are most commonly affected, although heavy vehicles may be overrepresented in collision statistics. See, for example, ATSB (2004, p. 2).

Box 5.4 Level crossing removals in Australia

Level crossing removal is also known as grade separation — this generally involves either lowering the rail track below the road level (for example, through a tunnel or underpass) raising the rail track above the rail ('sky-rail') or closing the level crossing.

Most Australian jurisdictions have programs in place to improve safety at railway crossings, which include the removal of level crossings.

- The Victorian Government established the Level Crossing Removal Project in 2015, tasked with removing 50 of Melbourne's most dangerous and congested level crossings over eight years. This target was later increased to 75 level crossings, 30 of which have been removed as of September 2019.
- In July 2019, the South Australia Government completed the Oaklands Crossing Grade Separation Project, which removed a level crossing 12.8km south of Adelaide on the Seaford rail line at the intersection of Morphett and Diagonal Roads.
- The Western Australian Government has a Level Crossing Removal Project, which will remove up to six level crossings on the Transperth rail network along the Midland and Armadale lines.
- In 2013-14, the Queensland Department of Transport and Main Roads funded the removal of two level crossings at Robinson Road in Geebung and Telegraph Road in Bracken Ridge to increase road system efficiency and improve safety. Both of these removals involved constructing a road overpass.

Sources: DPTI (2019); Metronet Western Australia (2019); QLD TMR (2014); Vic LXRP (2019).

Interface agreements

Interface agreements are one of the main ways in which level crossing safety is managed under the RSNL. The law requires rail transport operators (RTOs) and/or road managers (typically local councils) to enter into an agreement to coordinate their management of safety risks at interfaces (ONRSR 2019b). Interfaces include level crossings and other areas where a railway crosses a public or private road or footpath (including by a bridge, tunnel, overpass or underpass).

Parties to an interface agreement are required to identify and assess any risks to safety that may arise from railway operations at an interface, and determine measures to manage those risks. These requirements were predicted to lead to a 15 per cent reduction in rail/road accidents between 2008 and 2020 (NTC 2007). This reduction appears to have been achieved: in 2018-19, there were 30 railway crossing collisions (figure 5.10), which is over 50 per cent fewer than those reported by the ATSB in 2008 (64 collisions) (ATSB 2012, pp. 21, 24). However, given the other measures governments have introduced to improve level crossing safety (as discussed above), the Commission is not able to attribute any or all of this improvement in safety outcomes to interface agreements.

Inquiry participants have raised concerns about the process of negotiating interface agreements (box 5.5). While the RSNL requires interface agreements, it does not specify which party to the agreement should bear the costs of managing safety risks. Inquiry

participants have also raised concerns about the time taken to complete an interface agreement, citing one cause as a lack of understanding by road managers, including local governments, of their obligations under the RSNL.

Box 5.5 Stakeholder concerns about interface agreements

The Municipal Association of Victoria raised concerns about how risks are allocation in interface agreements.

> Councils have encountered issues in negotiating interface agreements and recognise the potential of the legislation to transfer risk and existing maintenance responsibilities of rail operators to the council, without authority for councils to influence decisions. (sub. 15, p. 12)

The Australasian Railway Association and Arc raised concerns about local council resourcing and capacity.

> While the RSNL suggests road managers should investigate risks with rail operators, it is the RTOs that ultimately own the risk and hence have an incentive to resolve these interface issues. In contrast it can be challenging to get the road manager to engage in these issues, particularly local councils and local land owners who may not realise what their obligations are and are unlikely to understand what is required in an interface agreement. (ARA, sub. 26, p. 36)
>
> Arc has engaged in educational processes with local governments, but a lack of resources and high staff turnover within local government mean that information is often not retained by some local governments. This creates challenges in meeting safety interface agreement obligations and increases costs for both local government and Arc. (Arc, sub. 17, p. 12)

INFORMATION REQUEST 5.1

The Commission is seeking additional information about the operation and effectiveness of the Rail Safety National Law in relation to interface agreements, including:

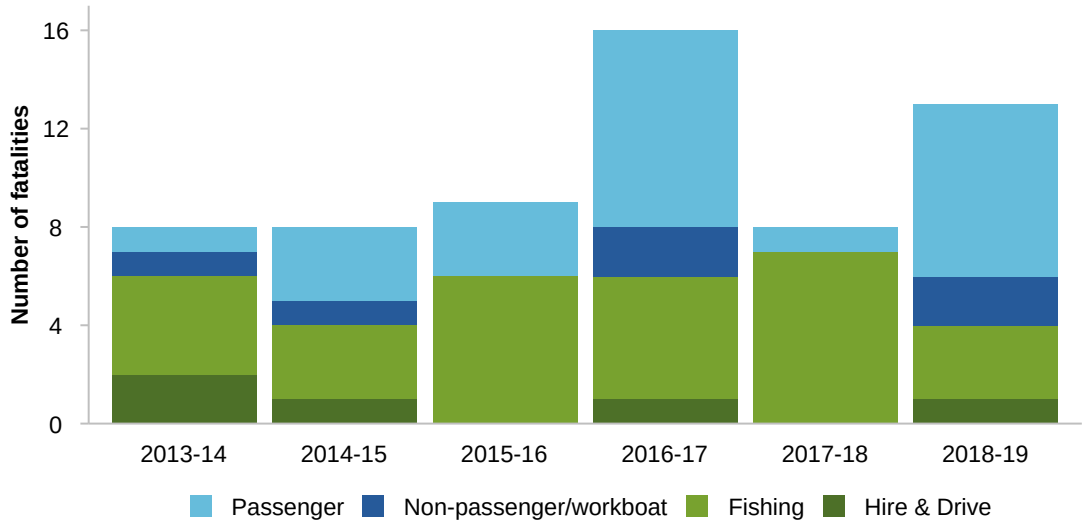
- *the extent to which interface agreements are contributing to better safety outcomes*
- *options that could improve the negotiation process, and the extent to which risks are appropriately shared between road managers and rail operators.*

5.4 Are domestic commercial vessels becoming safer?

Compared to other modes of transport, the number of fatalities associated with domestic commercial vessels is low. Data provided by the Australian Maritime Safety Authority (AMSA) show that there were 62 fatalities associated with domestic commercial vessels since the introduction of the Marine Safety National Law (MSNL) on 1 July 2013 to June 2019. Of these, about 45 per cent were associated with fishing vessels, and 35 per cent were associated with passenger vessels (figure 5.11).

As with the other transport modes, many factors affect safety outcomes for domestic commercial vessels, including: the vessel's area of operations (distance from the nearest port or safe haven); the experience, qualifications and health and fitness of the vessel crew; the maintenance history of the vessel; and weather conditions. However, the domestic maritime industry covers a range of different industries and operating models. This makes it difficult to reach general conclusions about safety, as observed outcomes may be a feature of either maritime transport or a particular maritime activity (such as fishing or snorkelling), or both.

Figure 5.11 **Fatalities associated with domestic commercial vessels[a]**
July 2013 to June 2019



[a] Some fatalities reported are unlikely to be avoided through safety regulation directly under AMSA's remit. For example, the Commission estimates that about 20 per cent of all reported fatalities are associated with heart attack or unknown illness, while another 20 per cent are associated with scuba diving and snorkelling.

Source: Commission estimates based on AMSA (unpublished)

Further, because the number of reported maritime incidents is low, data will be skewed if an incident occurs involving a large passenger vessel. One such incident can cause dramatic spikes in fatality statistics. Conversely, if large passenger vessels are not involved in an incident, the figures may appear low over the relevant period. Finally, the Commission has

not received time series data for fatalities predating the MSNL, so a comparison of contemporary and historical outcomes is not possible.

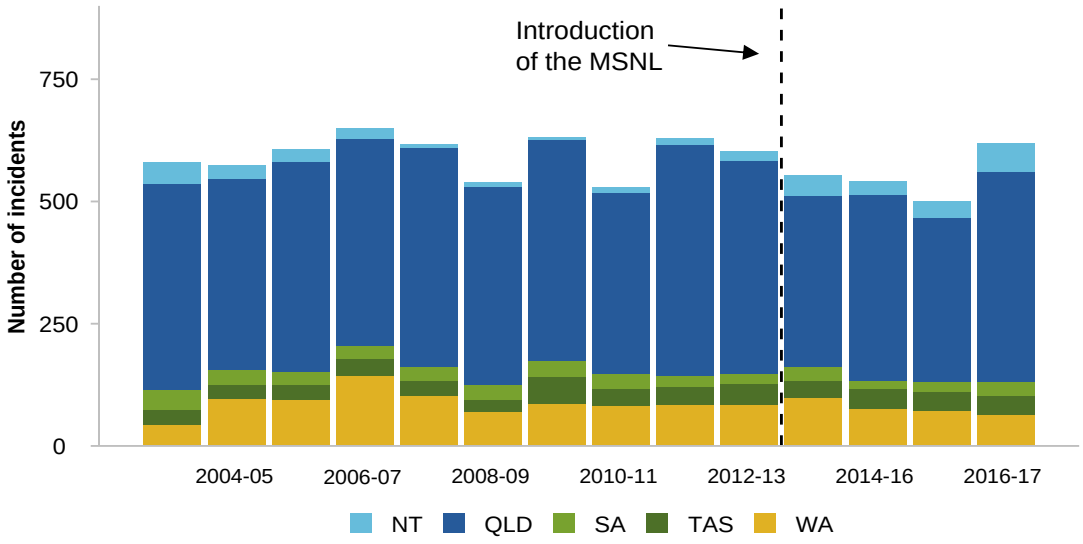
Maritime incidence data reflect the diversity of the commercial fleet

Due to the low occurrence of fatal maritime incidences, and the fact that such figures may not capture the full extent of the impact of the national laws on safety, the Commission has examined a broader range of safety incident reports over the period 2004-05 to 2016-17 (figure 5.12). The data show no change in incident rates after the introduction of the MSNL on 1 July 2013.

There is variation in the types of incidents reported (table 5.3), with collisions and vessel groundings being the most common. As many factors can affect maritime incidents, these data do not paint a complete picture of overall safety risks. For example, collisions may be caused by poor visibility due to weather conditions, not having a crew member to act as a look-out, excessive speed or navigational error. Drawing a link between safety incidents and safety outcomes is also complicated due to a large number of incidents appearing to result in no injuries.

Figure 5.12 **There has been no significant change in the reporting of safety incidents under the MSNL[a,b]**

Number of maritime incidents, July 2003 - June 2017



a Data have not been provided for NSW and Vic. **b** AMSA estimates from August 2016 indicate that there were 6859 vessels registered in Qld, compared with 7411 registered in SA, WA, Tas and NT collectively. There were a further 9130 and 1725 vessels registered in NSW and Vic respectively.

Source: Commission estimates based on AMSA (unpublished).

Table 5.3 **Reported maritime accidents**
July 2004 – June 2017

Incident type	*Number of accidents*	*Percentage of total accidents*
Capsizing	303	3.6
Collision — other [a]	1 440	16.9
Collision of vessels	1 398	16.4
Diving or snorkelling incident	19	0.2
Explosion	21	0.2
Falls within vessel	366	4.3
Fire	383	4.5
Flooding	48	0.6
Grounding intentional	73	0.9
Grounding unintentional	1 366	16.0
Hit by propeller or vessel	23	0.3
Loss of stability	14	0.2
Loss or presumed loss of a vessel	56	0.7
Onboard crushing or pinching	151	1.8
Onboard incident — other	1 135	13.3
Other	412	4.8
Other incident caused by an operating vessel	109	1.3
Parasailing incident	57	0.7
Person overboard	380	4.5
Sinking	156	1.8
Structural or mechanical failure	564	6.6
Unknown	53	0.6

a 'Collision — other' includes collisions with wharf, fixed objects, animals, submerged and floating objects. Mechanical and structure failures not separately reported before 2017.

Source: Commission estimates based on AMSA (unpublished).

There is a lack of reliable maritime safety data

The publicly available information regarding safety outcomes among domestic commercial vessels is sparse. This likely reflects several factors, including that:

- the domestic commercial vessel fleet covers several industries, ranging from hire-and-drive to fishing. In this sense, it is not straightforward for maritime industries themselves to keep a complete set of safety data, nor for bodies such as SafeWork Australia to publish data specific to domestic commercial vessels
- research bodies such as BITRE report extensively on road safety but not maritime safety. BITRE's publication of maritime statistics is limited to economic statistics related to

freight shipping. The NTC does not appear to have published any documents directly focused on domestic commercial vessels in recent years

- maritime transport operators are required to report maritime safety incidents to the relevant regulator (i.e. AMSA as of 2018, and State or Territory regulators before that). No national statistics on domestic commercial vessels were compiled before AMSA became the national regulator, as such vessels were under State and Territory jurisdiction
- under-reporting of safety incidents by operators is likely. For example, AMSA have noted in their submission that a 'challenge for AMSA is strengthening the incident reporting culture in the domestic commercial vessel fleet' (sub. 35, p. 8).

The Commission considers that the published safety data for the domestic commercial vessel industry, including by AMSA as the national regulator, are insufficient. For example, from 2017-18, AMSA has included in its annual report some statistics on domestic maritime safety outcomes but reporting is limited to the latest figures, and does not include data on injuries or fatalities in years before 2017-18.

Safety data are necessary to provide a basis for comparison between outcomes under the national regulator and previous State and Territory regulators, and to provide accountability for the national system overall.

Analysis of safety data could add significant value for industry through research and policy development. Among the three modes of transport at the focus of this inquiry, maritime transport appears to be the least well-served by public research agencies aside from the regulator itself. There is likely to be value in having agencies outside of the national regulator conducting research into maritime safety.

DRAFT RECOMMENDATION 5.4

The Australian Maritime Safety Authority should improve:

- incident reporting by owners of domestic commercial vessels
- its public disclosure of safety incidents by increasing the depth and detail of reported incidents.

Reporting should include a state-by-state and vessel-type breakdown of fatalities and injuries.

The Australian Government should request and fund the Australian Transport Safety Bureau to conduct investigations and publish research on safety incidents and accidents among domestic commercial vessels.

Developments in maritime safety policy

This subsection considers some of the key safety issues that have emerged from the COAG reform process for maritime safety, and considers to what extent they may have made structural or systemic improvements to safety risk factors.

There were no major reforms announced as part of the transition to the MSNL. However, since the introduction of the national system, stakeholders have raised concerns about the impact on safety of changes to the vessel survey regime, and the grandfathering of pre-MSNL regulations for certain domestic commercial vessels.

Vessel survey and administrative databases

Vessel survey is a process whereby a qualified surveyor inspects a vessel to ensure that it has been built and maintained to the required design, construction and equipment standards or specifications. Unless an exemption applies, all domestic commercial vessels are required to have a certificate of survey under the national law.

A new survey regime for domestic commercial vessels commenced on 1 July 2018, through changes to Marine Order 503 (AMSA 2018b). Before this date, domestic commercial vessels were required to undergo annual vessel surveys (except where grandfathering or an exemption applied).

Changes to the survey regime included:

- reducing periodic survey requirements for the majority of domestic commercial vessels (up to once every five years) based on an assessment of their safety risk
- expanding the category of vessels exempt from surveys (such as vessels fewer than 12 metres in length or human powered vessels)
- providing more flexibility in the timing of surveys, to ensure that vessel maintenance activities can be better aligned with surveys.

The changes to the vessel survey regime followed a streamlining review of the national system in 2014, which identified various issues with the previous survey arrangements. For example, survey requirements were not well aligned with risks; high risk vessels were not accurately and consistently identified; and survey requirements were not in line with new technologies and operational needs.

Vessel surveying provides an important opportunity for structural or mechanical issues to be detected by AMSA. While certain vessels will be surveyed less frequently, the changes overall appear to be in line with AMSA taking a risk-based approach to regulation. Properly executed, these changes have the potential to reduce the regulatory burden for much of the domestic maritime sector, without increasing safety risks.

There are concerns about how AMSA has determined the risk profile of particular types of vessels. In its submission to the Senate inquiry into the performance of AMSA, the International Institute of Marine Surveying stated that:

> [it] is puzzled, concerned and perplexed that on one hand AMSA claims to have not received a full set of vessel data from the States and Territories, but on the other hand have been able to presumably risk assess the fleet and as a result of their findings massively reduce safety inspections as a result. In our view this simply doesn't stack up and whilst the short-term gain may be in dollars for vessel owners the longer-term risks to passengers and crews are evident and not pleasant. (International Institute of Marine Surveying 2019, p. 3)

It is too soon for the Commission to assess the impact of the survey reforms on safety outcomes.

INFORMATION REQUEST 5.2

The Commission is seeking additional information about the operation of the vessel survey regime, including:

- *the appropriateness of the existing survey requirements for each vessel category*
- *any serious impacts on safety outcomes following the changes to the vessel survey regime.*

Maritime industry data

In the *2011 Intergovernmental Agreement on Commercial Vessel Safety Reform*, COAG identified the development of a national database of commercial vessels as one of its key intended outputs. It was envisaged that this database would link 'ownership, vessel details, inspection and survey history, incidents and operators to provide better data as a basis for improved risk management and compliance monitoring'(COAG 2011, p. 6).

The Commission understands that there were significant inconsistencies in the ways, and extent to which, each state and territory collected and stored information about their maritime fleet. AMSA has stated in its submission that:

> A key issue for AMSA in developing and maintaining a national database is that there was previously no consistent methodology for capturing records or data for domestic commercial vessels. Prior to AMSA taking on service delivery, some jurisdictions ran decentralised paper-based record management systems, while other jurisdictions maintained electronic files. It has also become apparent that not all required records may have been captured accurately, comprehensively or at all, regardless of the methodology used. (sub 35, p. 7)

AMSA's lack of comprehensive data about the domestic commercial vessel fleet raises concerns about its ability to accurately determine the risk-profile of particular types of vessels. This lack of data will also frustrate future efforts to assess the impact of the vessel survey reforms on safety outcomes.

The exact approach that AMSA should take to building its database more quickly will depend on various factors (for example, what information AMSA is missing). AMSA should be able to use its vessel inspection regime, in addition to the surveying regime, in order to increase the number of data-gathering interactions with vessels in a given year. This will likely be most effective for obtaining information about the size and demographics of the domestic commercial vessel fleet. This information should be linked to any certificates, approvals or exemptions in place for a particular vessel, and to the vessel operator's compliance history.

A full census of vessels would offer complete information, but may be unnecessarily costly, given the potentially large number of small, low-risk vessels that qualify as domestic commercial vessels (for example, kayaks for hire). The appropriateness of AMSA's remit with respect to various classes of domestic commercial vessels is discussed in chapter 7 (draft recommendation 7.4).

Grandfathering

Many of the regulations applying to domestic commercial vessels before the introduction of the MSNL on 1 July 2013 have been 'grandfathered', without an explicit expiry date. Grandfathering allows a pre-existing rule to continue to apply in certain situations, while a new rule is applied to new or future cases. Many grandfathered provisions apply to a particular vessel, rather than an operator, which means that grandfathering can continue even if a vessel is sold. However, a vessel may lose its grandfathered status if its area of operations is changed or if it is modified to such an extent that it is deemed to be a new vessel.

As discussed in chapter 4, grandfathering was introduced to smooth the transfer of domestic commercial vessel safety regulation from the State and Territory regimes to the national system. Grandfathering also served to limit the immediate investment by operators to bring their vessels into line with new vessel construction and stability standards, as well as other safety and equipment requirements under the MSNL.

However, stakeholders have raised concerns about the impact of grandfathering under the MSNL on safety outcomes (box 5.6).

Box 5.6 Grandfathering presents potential risks to safety

AMSA have suggested that grandfathering poses various safety risks:

> Over the six years since the commencement of the National System, incidents — including fatalities — have highlighted problems with some of the vessel standards, survey and crewing arrangements that have been grandfathered to align with pre-national system vessel standards, and that, in some cases, the grandfathered arrangements pose risks to safety, property and the environment.
>
> State and Territory coroners have recommended the removal of grandfathering for domestic commercial vessels, especially fishing vessels which tend to be older, subject to more exemptions historically, and operate in higher risk conditions and operations. AMSA's view is that incident data warrants a reconsideration of the grandfathering arrangements inherited with the national system, with a view to winding back those aspects which are unsafe.
>
> AMSA has ended some grandfathering arrangements for carriage of safety equipment, operational requirements and periodic survey requirements for most vessels. However there remains a large section of vessels that entered commercial service before the national system commenced that are still permitted to comply with the crewing, construction and design requirements that applied on 30 June 2013. Importantly, many of these vessels were not required to have a survey certificate or undergo a routine survey inspection regime – not only do these arrangements create an uneven playing field, but create safety risks as vessel modifications that affect the operation of the vessel go undetected. AMSA considers that continuation of these arrangements into the future, indefinitely, is out of step with community expectations of the commercial vessel sector.
>
> AMSA acknowledges that the grandfathering arrangements were a central principle of the National Law agreed by policy makers and changes may have significant cost impacts, particularly for owners and operators of older vessels. Nonetheless, we consider that preserving grandfathering arrangements, in their current state, is not sustainable and that current grandfathering arrangements need to be addressed for the safety of persons on board these vessels. (p. 10, sub. 35 AMSA)

In relation to an inquest into the death of three fishermen in 2015, the Western Australian coroner recommended that:

> … AMSA, as the National Regulator of the National Law, should give consideration to establishing a transitional approach to ending the grandfathering of safety standards for existing vessels. Compliance with current standards in regard to vessel operations and safety equipment should be given priority. (Coroner's Court of Western Australia 2018)

Grandfathering of vessel survey

Grandfathering under the MSNL applies mainly to certificates of operation (for example, grandfathering of crewing requirements) and certificates of survey. However, grandfathering does not provide immunity from the general safety duties in the MSNL, or from relevant workplace health and safety laws. As such, the grandfathering of vessel survey requirements is likely to be of greatest concern.

Vessel surveying provides an important opportunity for structural/mechanical issues to be detected by AMSA. However, grandfathering of vessel survey requirements means that certain vessels are not required to be regularly surveyed, and may continue to operate without being surveyed indefinitely. The Regulation Impact Statement (RIS) for the 2018 reforms to the vessel survey regime estimated that about 6000 vessels were operating under grandfathered arrangements, with the vast majority of these vessels operating in Queensland.

The RIS predicted that 'the problem will become more significant (in terms of safety outcomes) over time as the grandfathered fleet ages' (AMSA 2017, p. 16).

Grandfathering arrangements should be phased out

A range of participants have noted the impact of grandfathering arrangements on safety standards and national consistency under the MSNL, with some calling for an end to grandfathering arrangements. For example:

The Queensland Department of Main Roads submitted that:

> While Queensland was initially supportive of adopting some grandfathering provisions … it is now six years since the enactment of the National Law and we are seemingly no closer to a consistent national standard. (sub. 28, p. 4)

The Maritime Union of Australia proposed that:

> … the Commission recommend to the Australian Government that grandfathering provisions be phased out, with the understanding that the current arrangements are a threat to crew and public safety. (sub. 37, p. 45)

The Commission agrees that grandfathering should be phased out, as the risks associated with poorly maintained and operated grandfathered vessels will only increase over time. A transition period will allow vessel owners to plan for the change and reduce the associated financial impacts.

DRAFT RECOMMENDATION 5.5

The Council of Australian Governments (COAG) and the Australian Maritime Safety Authority (AMSA) should begin to wind up the grandfathering of safety regulations under the Marine Safety National Law (MSNL), with priority given to ending grandfathered exemptions from vessel survey requirements. AMSA should not maintain grandfathering of survey requirements through marine orders or exemptions

COAG and AMSA should review all other grandfathering provisions under the MSNL. Unless found to be justified through a transparent, public cost–benefit assessment, all grandfathering provisions should be phased out within the next 5 years.

5.5 Workplace safety in heavy vehicle, rail and maritime transport

As previously discussed, transport presents safety risks to all sectors of society, including those employed in the transport sector. The safety of transport works is regulated by the national laws, and by State and Territory work health and safety (WHS) laws (box 5.7).

Box 5.7 Work health and safety law in Australia

Work health and safety (WHS) legislation in Australia aims to prevent injury and disease to persons in the workplace. In July 2008, COAG formally committed to the harmonisation of WHS laws by signing an Intergovernmental Agreement for Regulatory and Operational Reform in Occupational Health and Safety. This process led to the development of a single set of model laws, which were enacted in 2012 by all states and territories except Victoria and Western Australia.

WHS encourage safety by imposing a duty on 'persons conducting a business or undertaking' (PCBU) to provide a safe place of work for workers and other persons, so that they are not put at risk from work carried out as part of the conduct of the business or undertaking. In the non-harmonised jurisdictions this duty is primarily upon the employer and not the broader category of 'PCBU'.

Despite some differences even in the harmonised legislation, the basic provisions are essentially the same. The content of the legislation is comprehensive and the following provisions appear in each:

- duties to provide a safe and healthy workplace for all workers and other people who attend the workplace
- requirements to train workers to work in a safe and competent manner
- requirements to take steps to prevent injury, illness and disease
- requirements to consult with employees and their representatives over WHS matters.

Source: Safe Work Australia (2018).

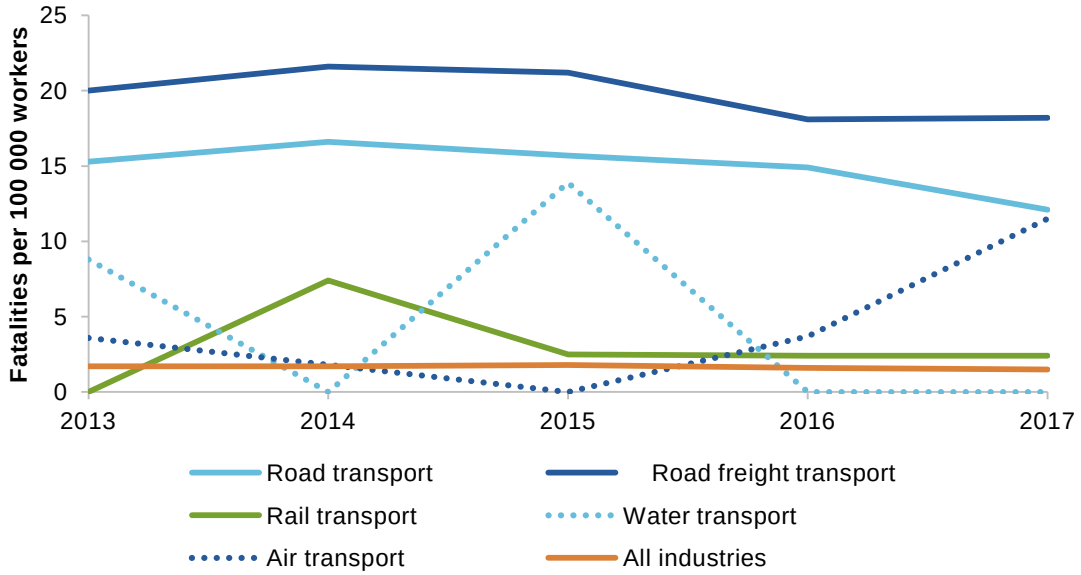
Data from SafeWork Australia, the national policy body for WHS law, show that adverse safety outcomes for transport workers are higher than workers in other industries (figure 5.13). Safety risks are particularly high for people working in the road transport industry: the road freight transport sub-industry recorded a rate of 20.2 fatalities per 100 000 workers in 2017, compared with an average of 2.4 fatalities per 100 000 rail transport workers and 1.8 fatalities per 100 000 workers across all industries.

While separate data for the fishing industry are not available, the Commission has heard from inquiry participants that workers in this industry face high safety risks.

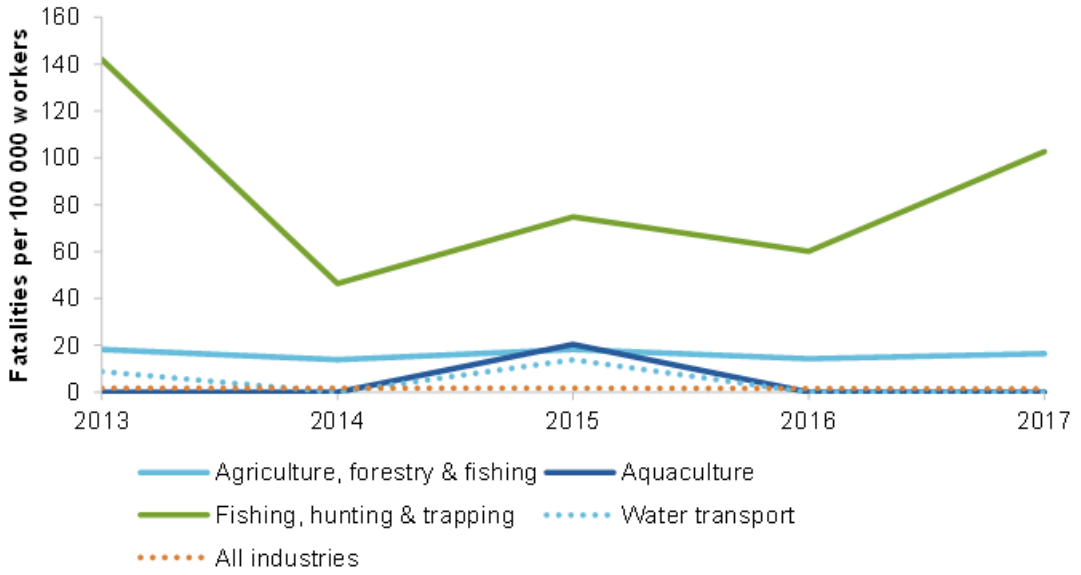
Figure 5.13 **Fatalities per worker by industry**

Fatalities per 100 000 workers, 2013-2017

Selected transport industries, all industries



Selected maritime industries, all industries



Source: Safe Work Australia (2019).

Overlap between WHS laws and the national laws

Transport safety regulation and WHS regulation often tackle similar issues. Inquiry participants indicated that the jurisdictional lines between transport safety and WHS regulation depends partly on the conduct of regulators on the ground. For example, the Australian Rail Track Corporation stated that the degree of prescription in ONRSR's approach:

> … creates uncertainty in the role of ONRSR in WHS investigations which creates a further limitation in respect of the ability for ONRSR to work with industry. (sub. 31, pp. 6–7)

The transport national laws were drafted with the aim of minimising overlap with WHS laws. For example, operators are not liable to be punished twice if they commit an act that breaches both the HVNL and WHS laws. However, inquiry participants have expressed a desire for further clarity. For example, AMSA noted that:

> While the COAG intergovernmental agreement specifically stated that occupational, health and safety regulation was outside the scope of the national system — and would operate in conjunction with the National Laws — the delineation of responsibilities and obligations between AMSA and WHS regulatory authorities is unclear. There is a need for greater clarity, education and awareness on the role of AMSA and co-regulators, particularly the important role that state and territory work health and safety regulators play in ensuring that domestic commercial vessels (that are workplaces) are safe. (sub. 35, p. 5)

Having clear dividing lines between one safety regime and another is important to avoid confusing overlaps in regulation or enforcement, or to avoid gaps in regulatory coverage. Some confusion may be inevitable in the transition to a new regulatory regime.

INFORMATION REQUEST 5.3

The Commission is seeking additional information about the situations where greater clarity is required between the operational jurisdiction of national transport regulators and workplace health and safety regulators and overlaps in their responsibilities. What options for rectification would be desirable?

6 Have the COAG reforms raised productivity?

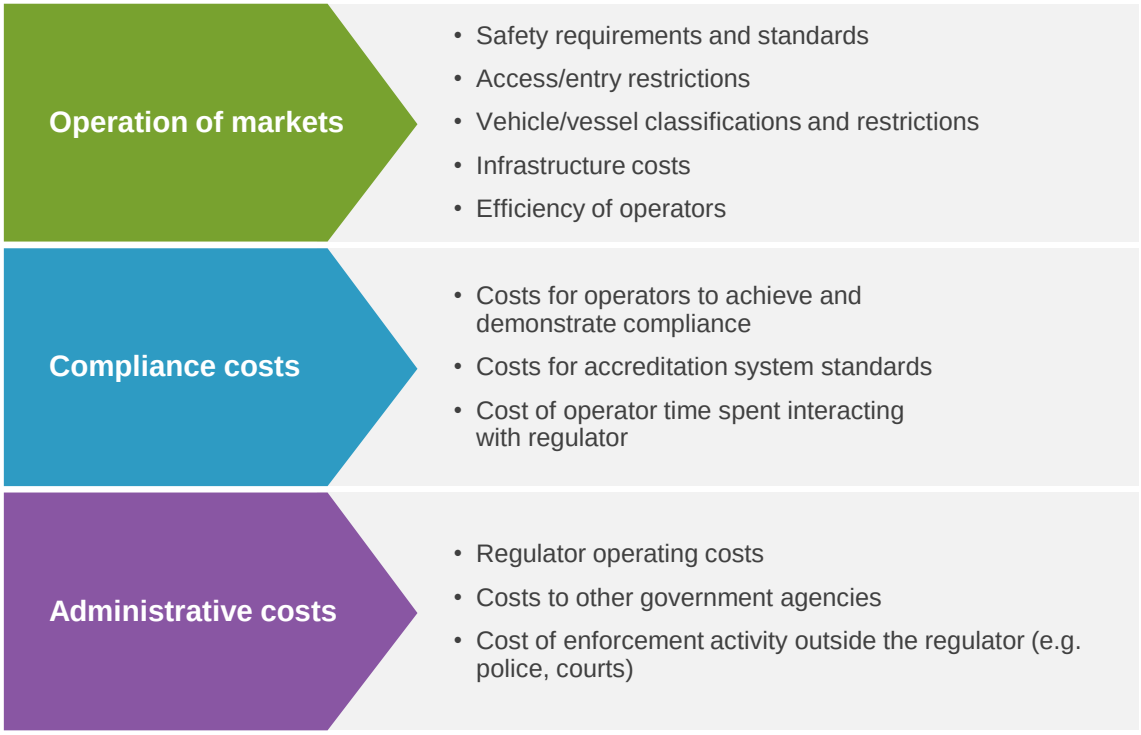
Key points

- The COAG transport reforms were expected to deliver more than $12 billion in productivity gains. Most of the expected gains were attributed to greater road access for more productive heavy vehicles.
- Despite some progress on access for heavy vehicles, productivity gains have been far less than the original optimistic estimates.
- The National Heavy Vehicle Regulator is promoting permit pre-approvals and gazette notices to achieve faster approvals and greater as-of-right access. These important initiatives are gradually reaching significant scale and will yield further benefits over time.
- Participating jurisdictions now have extended networks for Higher Mass Limits and Performance-Based Standards vehicles, encouraging wider use of these vehicles. Although growing, the number of heavy vehicles using Concessional Mass Limits, Higher Mass Limits and Performance-Based Standards arrangements appears relatively modest.
- There is scope to go further to give access to a wider range of heavy vehicles, potentially improving safety but at the least not compromising safety.
- 'First mile, last mile' issues continue to constrain access in many local government areas. A major barrier to improving local access is the capacity and, sometimes, willingness of local governments to approve access.
- Greater support for local government road managers is needed from the Australian, State and Territory Governments if the potential of the reforms is to be fully realised.
- Reform has delivered more consistent regulation across most jurisdictions and is likely to have reduced compliance costs for some operators. The regulators should monitor and report these costs as part of their efforts to deliver cost-effective regulation.

6.1 Introduction

Productivity is driven by decisions made by industry. However, the regulatory environment influences the productivity outlook, affecting the cost structure of the industry, how markets operate, the level of investment in safety, the degree of innovation and where and how industry undertakes its task. Compliance costs and the administration costs of the regulators also affect the overall productivity outcome (figure 6.1).

Figure 6.1 **How the regulatory system affects productivity**



COAG identified two main sources of productivity improvement in the transport reforms. The first was to increase network access for larger heavy vehicles to reduce heavy vehicle operating costs. Promoting productivity and efficiency was made an explicit objective in the Heavy Vehicle National Law (HVNL). Sections 6.2 and 6.3 of this chapter examine the impact of the heavy vehicle reforms on productivity.

The second source was to reduce compliance and administrative costs by replacing multiple State and Territory regulatory regimes with national regulators and laws. Sections 6.4 and 6.5 examine the compliance costs and administrative costs in the three sectors. More significant reforms that lie beyond the original scope of the regulators are discussed in chapter 10.

Transport, postal and warehousing represented 4.5 per cent of GDP and 5.1 per cent of total employment in 2018-19 (ABS 2019a, table 6; 2019b, table 4). The shares are larger when in-house transport activity by businesses outside the transport industry (for example, agriculture, construction and mining) is included — in 2015-16 the corresponding numbers were 7.4 per cent of GDP and 8.6 per cent of total employment (ABS 2018, table 1, table 10).

Road transport, including heavy vehicle transport, represents half of the transport sector's total output (Commission estimates using ABS (2018, table 2)). Rail accounts for 6.4 per cent of total output and water transport, including domestic commercial vessels,

accounts for 6.7 per cent. Air transport accounts for about 10 per cent of the total and is not directly relevant to this inquiry. The remainder comprises: other modes of transport; postal, courier pick-up and delivery services; transport support services; and warehousing and storage services.

6.2 Access management for heavy vehicles

The regulation impact statements for the COAG reforms predicted that the most substantial productivity gain across the three sectors would come from improved access for larger heavy vehicles. The regulation impact statements estimated efficiency gains of over $12 billion over 20 years; improved access was expected to contribute $9 billion (table 6.1). Only modest gains were expected from the new regulatory arrangements for rail safety and domestic commercial vessels.

Table 6.1 **Expected benefits from the COAG reforms**
Net present values ($billion)

Heavy vehicles (over 20 years)	
Access for restricted access vehicles	7.0
Access for Higher Mass Limits vehicles	1.8
Intelligent Access Program	1.2
Fatigue – Chain of Responsibility	1.0
Other	1.4
Total heavy vehicles (over 20 years)[a]	**12.4**
Rail safety (over 10 years)	**0.028 to 0.071**
Domestic commercial vessels (over 20 years)	**0.102 to 0.126**

a Top down analysis, best bet scenario.

Sources: NAMSRS (2009, p. 10); NTC (2011a, p. 15, 2011b, p. v).

Lifting productivity through regulatory change is a complex challenge. Regulation has an important role in transport because the sector involves major safety issues, complex planning issues and public good elements with respect to infrastructure provision. Infrastructure provision and maintenance, particularly for road and rail, have major costs. A new regulatory structure, like the one it replaces, needs to balance competing elements.

Reducing operating costs on a road with a large freight load (such as one of the Brisbane-Sydney-Melbourne main links) is likely to lead to greater aggregate cost savings than reducing freight costs on a road with a small freight load. Opening up access for larger trucks on a minor route (including first and last mile access) may be highly beneficial to the truck operators travelling on that particular route, but the total freight task undertaken on the route may be small, and infrastructure costs disproportionately high. There may be additional safety risks on minor roads that need to be taken into account. Infrastructure risks on minor

roads include the risk of the vehicle not having enough space to turn safely, difficulties navigating narrow roads or passing under overhead structures (NTC 2019). These can all be expensive to fix.

Increases in vehicle size have driven past efficiency growth

The Bureau of Industry, Transport and Regional Economics (BITRE) estimated that heavy vehicle productivity grew by nearly 500 per cent between 1971 and 2007 (BITRE 2011, p. 19). The strongest growth was in the period up to 1991 (table 6.2). The introduction of semitrailers as the freight workhorse was a key contributor to early gains. Increases in mass and dimension limits, improved road infrastructure and other regulatory changes were also important. B-doubles were introduced on limited networks in the early 1980s and these networks were extended substantially in the 1990s. Box 6.1 provides additional historical context and illustrates the effect of very strong periods of productivity growth in road and rail freight transport on freight rates.

BITRE estimated that productivity growth was nearing a plateau around 2010 with further increases depending on policy changes such as increased use of restricted access vehicles. The Commission extended BITRE's estimates to 2018 — the data since 2010 suggest slower growth in the heavy vehicle freight task, strong growth in the number of heavy vehicles and little change in the tonne kilometres[16] carried per heavy vehicle. On these figures productivity, measured in tonne kilometres per vehicle, has remained more or less unchanged since 2010. In examining broad categories of vehicles, the composition of the freight carrying heavy vehicle fleet and their tonne kilometres travelled has also been fairly stable since 2012 (figure 6.5). It is important to note that tonne kilometres is a partial measure of productivity and ignores the effect of other inputs (like fuel or driver costs) and measures that might allow more efficient routes.

16 One tonne kilometres is the movement of one tonne by one kilometre.

Table 6.2 **Heavy vehicle productivity indicators[a,b,c,d,e]**

Year	*Productivity*	*Freight load*	*Average load*	*Average vehicle kilometres travelled*	*Number of vehicles*
	'000 tonne km/vehicle	million tonne km	tonnes/vehicle	'000 km	'000
1971	65.0	26 223	3.5	18.8	403.4
1991	217.9	83 453	8.3	26.3	382.9
2007	379.9	177 474	11.4	33.3	467.1
2010	347.2	178 678	11.2	31.0	514.6
2012	349.2	186 296	11.2	31.2	533.4
2014	347.6	195 619	11.4	30.6	562.8
2016	346.1	196 283	11.0	31.6	567.1
2018	345.1	205 245	11.3	30.6	594.7
	% change	% change	% change	% change	% change
1971-1991	235.3	218.2	139.5	40.0	-5.1
1991-2010	59.3	114.1	35.5	17.6	34.4
2010-2018	-0.6	14.9	0.5	-1.1	15.6

a 'Heavy vehicle' includes light rigid trucks (3.5-4.5 tonne gross vehicle mass (GVM)). Heavy (> 4.5 GVM) and light rigid trucks could not be separated in the data. **b** BITRE estimates 1971 to 2007. **c** Commission estimates using ABS data for 2010 to 2018. **d** The ABS Survey of Motor Vehicle Use was designed to produce reliable estimates of key data items for a point in time only. The ABS suggests care should be taken in drawing inferences across time, as estimates of changes between years are subject to high sampling error. **e** An increase in 'tonne kilometres/vehicle' is an imperfect measure of increased productivity. For example, holding the number of vehicles fixed, 'tonne kilometres/vehicle' may decrease as a result of increased access, requiring fewer truck kilometres travelled.

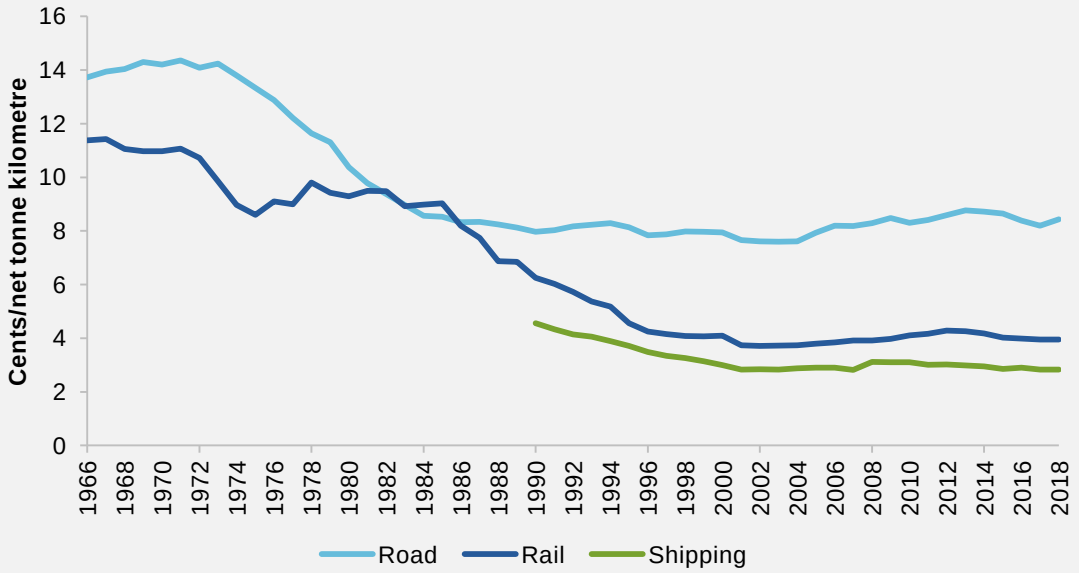
Sources: BITRE (2011); ABS (2019c).

Box 6.1 Productivity growth and transport costs

Transport productivity grew strongly from the 1970s to the 1990s. For road transport it was driven by the introduction of larger heavy vehicles (initially semitrailers and then B-doubles), progressive increases in mass and dimension limits, growth in long distance freight and improved roads. Productivity growth in rail transport was driven by the introduction of longer trains and higher axle mass limits, increased utilisation of the network, completion of the standard gauge network between capital cities and structural reforms of the rail providers (BITRE 2011, p. xv).

Slower productivity growth in the past two decades is evident in the levelling out of real costs for freight movements in road and rail freight. The relationship between productivity growth and freight costs is not one-for-one — other influences such as demand growth, intermodal shifts, the nature of the freight carried, and the price of inputs (such as fuel and wages) will also be important — but periods of strong productivity growth are evident in the freight rate reductions in the figure.

Freight cost reductions have levelled out[a,b]



[a] Recreated using data from BITRE (2017). [b] The road freight rates are real average rates for non-bulk freight on interstate freight routes. The real rail and sea rates are for non-bulk freight on the Eastern States to Perth route. 2017 and 2018 values are based on forecasts.

Source: BITRE (2017).

Restricted access vehicles are becoming more important for freight transport

As transport operators have sought to reduce costs and increase efficiency they have gradually moved to larger vehicles. These larger vehicles can carry more freight through heavier and larger loads but are subject to access restrictions. Technological improvements have made these vehicles safer, more efficient and less damaging for road infrastructure.

They are also operating in combinations that can be broken down to smaller units to access more densely populated areas. These vehicles offer potential productivity gains if suitable access routes can be made available.

Achieving the potential for higher productivity is not a simple task. The community remains concerned about the safety risk posed by very large vehicles. Community amenity may be affected by heavy vehicle traffic. Infrastructure may not have the capacity to handle the heavier loads or investment may be required to allow access to occur. Maintenance costs may be higher. Urban road infrastructure may not be appropriate for long, large vehicles — many of the larger vehicles will always be restricted to key freight routes outside densely populated areas.

COAG chose to tackle these issues by changing the administrative process for how access is approved.

Restricted access vehicles can only travel on sections of the road network that have been gazetted for their vehicle class (as-of-right access) or if the operator has received from the regulator a permit for the specific vehicle and route. Before the COAG reforms, access was administered by the State and Territory governments, with varying involvement by local governments.

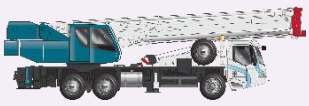
Some examples of vehicles from the three classes under the HVNL are shown in figure 6.2. Most freight vehicles fall within Class 2 of the HVNL. Larger and heavier vehicles that exceed prescribed mass and dimension requirements need approved access.

In general terms, access for freight vehicles operating within the HVNL's prescriptive requirements occurs in four broad classes:

- general access, with vehicles up to 19 metres and 45.5 tonnes
- B-double network, with vehicles up to 26 metres and 68 tonnes
- type 1 road train network, with two or three trailers and up to 36.5 metres and 113 tonnes
- type 2 road train network, with three or four trailers and up to 53.5 metres and 135.5 tonnes.

Figure 6.2 **Heavy vehicles come in many shapes and sizes**

Examples of **Class 1** heavy vehicles - HVNL s116(1)



Truck Mounted Crane

Prime Mover and Low Loader (Gooseneck)

Combine Harvester

1) A heavy vehicle is a **class 1 heavy vehicle** if it, together with its load, does not comply with a prescribed mass requirement or prescribed dimension requirement applying to it, and-
(a) it is a special purpose vehicle; or
(b) it is an agricultural vehicle other than an agricultural trailer; or
Note- See subsection (2) for agricultural trailers.
(c) it-
(i) is a heavy vehicle carrying, or designed for the purpose of carrying, a large indivisible item, including, for example, a combination including a low loader; but
(ii) is not a road train or B-double, or carrying a freight container designed for multi-modal transport.

2) An agricultural trailer is a **class 1 heavy vehicle**, irrespective of whether it, together with its load, does or does not comply with a prescribed mass requirement or prescribed dimension requirement applying to it.

Examples of **Class 2** heavy vehicles – HVNL s136

B-double

Rigid Truck and 5 Axle Dog Trailer (PBS)

A-triple

A heavy vehicle is a **class 2 heavy vehicle** if-
(a) it-
(i) complies with the prescribed mass requirements and prescribed dimension requirements applying to it; and
(ii) is-
(A) a B-double; or
(B) a road train; or
(C) a bus, other than an articulated bus, that is longer than 12.5m; or
(D) a combination designed and built to carry vehicles on more than 1 deck that, together with its load is longer than 19m or higher than 4.3m; or
(E) a motor vehicle, or a combination, that is higher than 4.3m and is built to carry cattle, sheep, pigs or horses; or
(b) it is a PBS vehicle.

Examples of **Class 3** heavy vehicles – HVNL s116(3)

Rigid Truck and Dog (over 42.5 tonnes GCM)

Underhook/Underlift Tow Truck

3) A heavy vehicle is a **class 3 heavy vehicle** if-
(a) it, together with its load, does not comply with a prescribed mass requirement or prescribed dimension requirement applying to it; and
(b) it is not a class 1 heavy vehicle.

Source: NHVR (2019b).

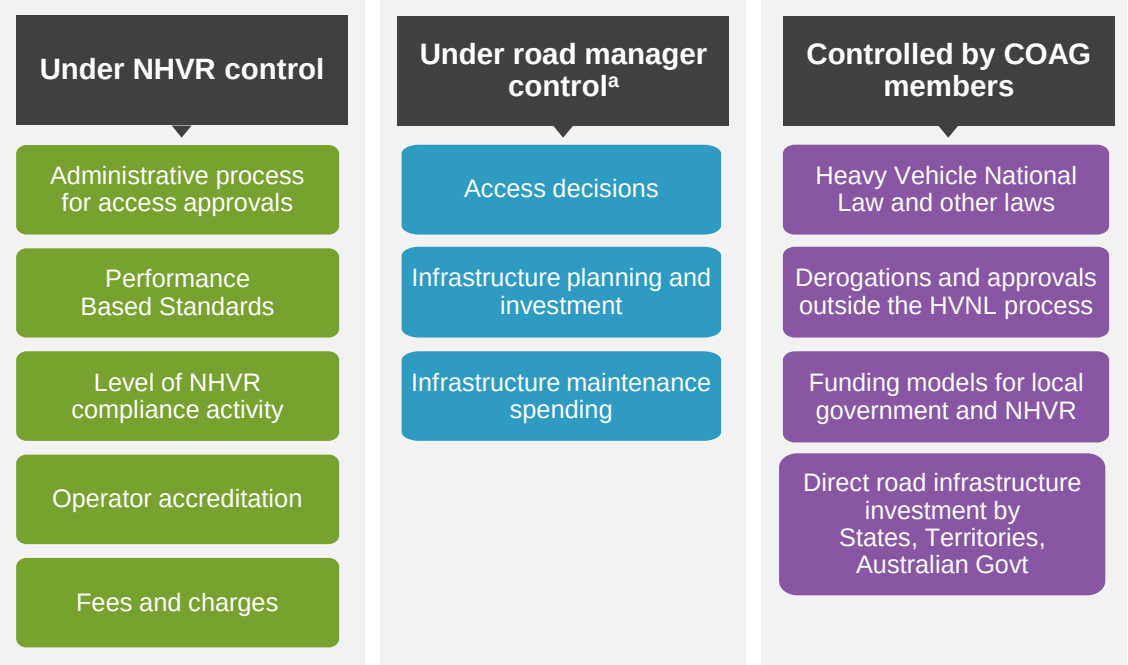
The intent of the reforms

Road managers, generally State and Territory governments and local governments, are at the centre of decision making on access for heavy vehicles — this aligns the responsibilities of safety, amenity, investment, maintenance and access. Road managers face the infrastructure costs of increased heavy vehicle access. They also need to take into account the views of their communities.

The COAG reforms established more structured, accountable and rigorous processes for deciding access. Road managers are required to make decisions according to guidelines from the National Heavy Vehicle Regulator (NHVR).

The relationship between road managers and the NHVR is critical to the success of the reforms. In this relationship, the NHVR provides the administrative processes for access approvals, acting as a one-stop-shop for applicants for access permits. The NHVR is also the expert adviser to road managers. Figure 6.3 describes the key responsibilities of the different parties and illustrates the limitations of what the NHVR can achieve acting alone.

Figure 6.3 **The governance framework for heavy vehicles**



[a] Road managers include local governments and State and Territory governments.

The reforms built on existing initiatives

The COAG reforms were intended to build on the access framework for heavy vehicles developed in the late 1990s and early 2000s (box 6.2). They were also intended to improve consistency in how access is administered across States and Territories.

Box 6.2 Heavy vehicle initiatives between the late 1990s and 2008

General Mass Limits

General mass and dimension limits for heavy vehicles have risen over time but were most recently set in uniform legislation passed by the States and Territories between 1993 and 1995. General access vehicles operate with weight and dimension limits and have as-of-right access to all roads unless a road is signposted otherwise. A semitrailer with prime mover, trailer and 6 axles operating under General Mass Limits (GML), can be up to 19 metres long and carry up to 42.5 tonnes.

Concessional Mass Limits

Concessional Mass Limits (CML) were introduced in 2006 for operators accredited under the mass management module of the National Heavy Vehicle Accreditation Scheme. The scheme allowed an approximate 5 per cent increase in loading compared with GML. The semitrailer described above could carry up to 43.5 tonnes under CML.

Higher Mass Limits

The Australian Transport Council approved Higher Mass Limits (HML) in 2008. Under these arrangements operators accredited under the mass management module who are operating trucks with road friendly suspension may carry around 10 per cent heavier loads compared with GML. This recognises the lower impact on road pavements. Vehicles operating at HML also generally require a road access permit. In Queensland and New South Wales these trucks must also participate in the Intelligent Access Program, which uses telematics to monitor the routes the trucks are using. The 6 axle semitrailer described above could carry up to 45.5 tonnes under HML.

Performance-Based Standards

The Performance-Based Standards (PBS) scheme was introduced in 2007. Trucks operating under PBS are assessed on outcome based performance standards rather than their mass and dimensions. Under the PBS arrangements an accredited vehicle may be significantly longer or carry significantly heavier loads, recognising the reduced damage the vehicle will do to road pavements and the dynamic safety and performance characteristics of the vehicle design. The vehicles can carry additional mass at CML and HML levels. PBS vehicles can be over 30 per cent more efficient than corresponding standard heavy vehicles.

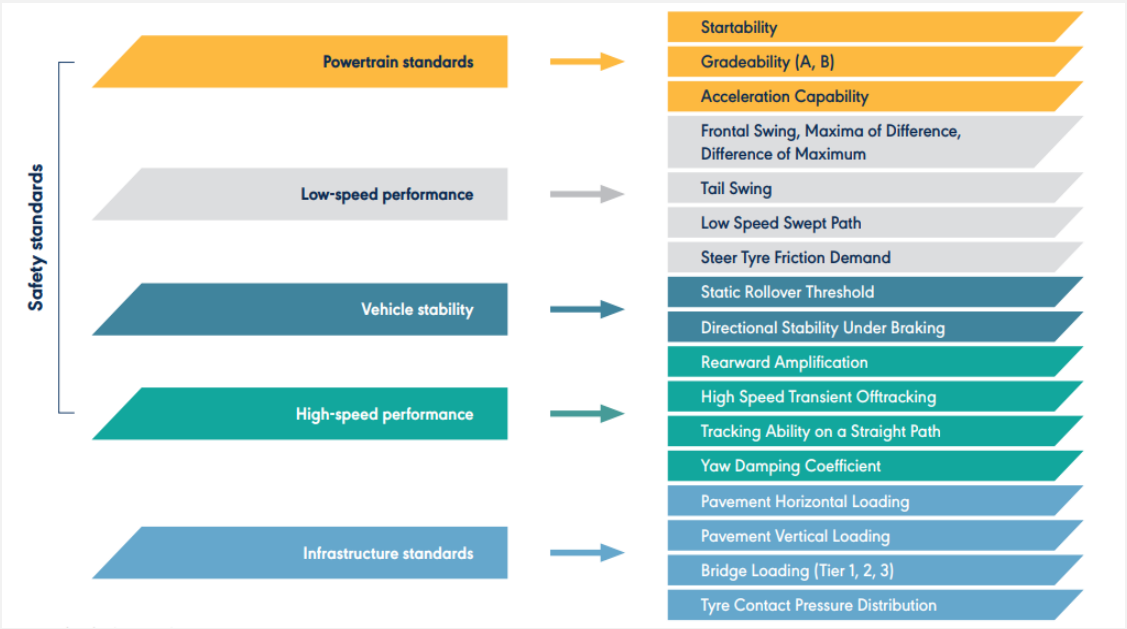
Sources: BITRE (2011); NHVR (2019e).

The Performance-Based Standards (PBS) scheme has become an important avenue for achieving greater access for heavy vehicles. The scheme recognises technological changes enhancing safety and heavy vehicle performance by allowing higher mass and dimension limits. The NHVR is responsible for approvals under the PBS scheme. Box 6.3 provides

information about PBS vehicles, including the criteria on which vehicles are assessed and the relationship between a selection of PBS vehicles and the prescribed vehicles — under the HVNL — with equivalent levels of performance.

Box 6.3 PBS vehicles

Performance of PBS vehicles is assessed against a range of indicators to determine safety and load carrying characteristics. This assessment ensures that PBS vehicles have performance characteristics that are equal to or better than their prescriptive vehicle equivalents.



PBS vehicles are categorised by PBS level and length to assist road managers with access decisions.

	Overall vehicle length (m)	
	Class A	Class B
PBS Level 1	L ≤ 20.0	L ≤ 20.0
PBS Level 2	L ≤ 26.0	26.0 < L ≤ 30.0
PBS Level 3	L ≤ 36.5	36.5 < L ≤ 42.0
PBS Level 4	L ≤ 53.5	53.5 < L ≤ 60.0

The table below shows the equivalent prescriptive vehicle for a selection of PBS vehicles, based on their performance and their impact on road infrastructure.

	Equivalent prescriptive vehicle configuration	*Network access*
PBS Level 1	19m prime mover and semitrailer	General access
PBS Level 2	26m B-double	26m B-double network
PBS Level 3	36.5m Type I road train	36.5m Type I road train network
PBS Level 4	53.5m Type II road train	53.5m Type II road train network

Source: NHVR (2019e).

Challenges for road managers

State and Territory governments are the road managers for highways and many key freight routes. Most freight is moved on these roads.

Local governments manage local roads. Eighty per cent of the Australian road network is local roads and include roads in towns and cities and regional roads.

Local roads are where the so-called 'first and last mile problems' occur. If heavy vehicles do not have approved access to locations where freight is loaded or offloaded, expensive workarounds are required, involving less efficient vehicles and double handling of freight. Dedicated long distance carriers can also find themselves needing local road access, for example if road works require a diversion.

While road restrictions can cause frustration, costs and delays for heavy vehicle operators, local governments have to respect reasonable community expectations about public safety and amenity. Local government is responsible for the initial investment in local roads, maintenance, safety and balancing the needs of local residents and road users, including heavy vehicles. Investment in and maintenance of these roads is important to maximise the benefits of new, larger heavy vehicles. There is a trade-off between the economically efficient operation of road networks and local factors.

The NHVR, local government road managers and State and Territory governments have all been grappling with the challenge of making the new system work. Many obstacles are still being overcome (box 6.4).

Access approvals vary significantly between local governments and between State and Territory road managers. Analysis of the timing of permit processing by the National Transport Commission (NTC) (2019, pp. 40–42) suggests that local governments receiving large numbers of permit applications appear to be more efficient at processing them. There is no obvious relationshp between the size (and resources) of the jurisdiction and processing performance. Compared with other States and Territories, New South Wales had a lower proportion of local government road managers that demonstrated consistently good performance — measured by an average consent or refusal time of less than 7 days — but the NTC analysis does not provide an explanation.

Local councils can lack the engineering expertise to assess the capacity of infrastructure and will often contract expert advice as required. This process can be slow and expensive. Given possible legal liabilities, the advice provided can be conservative. These are important obstacles identified by Austroads (Di Cristoforo 2018). To some extent, these issues can be managed by local government road managers, for example by working together and sharing resources. Assistance is also being provided by local government associations to their members — the Local Government Association of Queensland is particularly active, with assistance from the NHVR (Local Government Association of Queensland, sub. 33, p. 8). Local government resourcing and capability is further discussed in chapter 10, along with avenues for additional assistance and improvement by other levels of government.

Box 6.4 **Implementing the new system**

While clarifying the role of local government in approvals has been positive, the NHVR and many local governments have struggled with the flood of access requests — the NHVR received over 33 000 access permit requests in 2017-18 (NHVR 2018a, p. 9). The task is complicated where local governments are uncertain about the engineered capacity of their infrastructure or the impact of different types of heavy vehicles.

- As discussed in chapter 4, the NHVR was unprepared for the high volume of access requests when it first took over this task. Early system failures saw approvals returned to State and Territory authorities. It has taken several years for the NHVR to build systems capable of processing the requests.
- The problems are well documented (Di Cristoforo 2018; NTC 2019). This report prepared for Austroads included a case study of Greater Dandenong that found that 10 access requests per annum before the COAG reforms grew to 50 access requests per week in the first year of the reforms (Di Cristoforo 2018, p. 28). Greater Dandenong has since reduced the number of requests to 3 to 4 per week by assessing and gazetting access for most vehicles under notices or pre-approval arrangements with the NHVR.

The report catalogued the issues that could lead to refusal of access on doubtful grounds. These included:

- different road assessments by road managers — similar roads across the Victorian shires of Yarriambiack, Gannawarra, Loddon, Campaspe and Mildura are variously classified as PBS level 2A, PBS level 2A with restrictions (limiting use to dry weather or for pick up and set down only), PBS level 1, or with no as-of-right PBS access other than a small number of specified roads
- misunderstandings of PBS vehicle characteristics, for example regarding swept path, axle loadings or amount of road damage (all of which will be the same as similar non-PBS vehicles but which are sometimes thought to be greater)
- fear of liability when approving access — this tends to lead to councils seeking expensive and time consuming engineering reports. These reports themselves may be based on conservative assumptions
- other issues, including lack of knowledge of infrastructure capacity. wariness about opening the floodgates, insufficient clarity in guidelines or support from the NHVR, lack of penalties for resolving access requests and lack of effective review processes.

Inconsistencies between States also cause issues. For example, in May 2017 the Transport and Infrastructure Council agreed general as-of-right access should be allowed for PBS level 1 heavy vehicles wherever the infrastructure allowed it. This has been adopted in Queensland and Tasmania but specific road networks for PBS level 1 vehicles are prescribed in other States, limiting as-of-right access to particular roads and local government areas.

Source: Di Cristoforo (2018).

A further difficulty for road managers is the complexity of the heavy vehicle classifications. There is a wide range of truck types, each with its own performance characteristics — accreditation arrangements mean that many similar heavy vehicles can also be operating at different mass limits. Guidance material from the NHVR has been extensive but the initial formal guidelines for local government road managers were high

level (these guidelines are being revised). The NHVR has been tackling these issues through forums with local governments, tools to assist with route classification, and clearer information. A simpler system of heavy vehicle classifications would assist local government; this issue is being considered as part of the NTC review of the HVNL (NTC 2019).

The NTC has suggested 'envelopes' could be developed (covering heavy vehicles with similar performance characteristics) to simplify approval processes (NTC 2019). This theme is supported in the NHVR submission to the HVNL review (NHVR 2019f) which recommends immediately expanding PBS road networks to (at least) those roads where corresponding non-PBS heavy vehicles can already operate under notice. The NHVR also proposes gazetting low risk class 1 oversize and/or overmass (OSOM) vehicles under notice because permit applications for these vehicles are almost always approved.

These are decisions for road managers at the local, State and Territory levels but improvements can be facilitated by the NHVR and relevant State and Territory authorities. Decisions would still need to satisfy reasonable community expectations, including prohibiting access where it would be inappropriate. However, it does mean increasing access for these vehicles on highways and improving facilities so that vehicles can be broken down to more manageable sizes where the road network will not sustain them. These issues are also covered in chapter 10, with a greater focus on the roles that governments and improved governance may play.

DRAFT FINDING 6.1

Constraints around local government investment capacity and engineering expertise are limiting the effectiveness of the heavy vehicle reforms by preventing adequate assessment and upgrading of bridge and road infrastructure.

DRAFT RECOMMENDATION 6.1

Local governments should share engineering expertise and agree to consistent access arrangements for shared roads. The Australian Government should work with States and Territories to encourage this collaboration. States and Territories should report to the Council of Australian Governments in early 2020 on the status of this work.

DRAFT FINDING 6.2

The complexity of the vehicle classifications has limited the progress of faster access approvals, through permits, pre-approvals and notices.

DRAFT RECOMMENDATION 6.2

The Australian Government should seek simpler heavy vehicle classifications through the National Transport Commission's review of the Heavy Vehicle National Law for the purposes of access decisions. Additionally, the National Heavy Vehicle Regulator should provide more detailed and effective guidelines to road managers.

Western Australia and the Northern Territory

Western Australia and the Northern Territory remain outside the HVNL. There are many similarities between the regimes but also significant differences.

The length and weight restrictions on similar heavy vehicles appear roughly comparable between NHVR and Western Australia. However, one submission received by the inquiry noted:

> In collaboration with Main Roads WA and local WA Shires, Western Australia's Accredited Concessional Mass System provides for increased combination lengths (longer than East Coast combinations) and more flexible road access arrangements. (Co-operative Bulk Handling, sub. 13, pp. 2–3)

The Western Australian Department of Main Roads has retained centralised control of route assessment, notified routes and permit approvals. Higher Mass Limits (HML) and PBS vehicle access is extensive although an additional permit is required to operate a PBS vehicle approved by the NHVR in Western Australia. Western Australia claims it can ordinarily issue permits within a 48 hour period (WA Minister for Transport and Planning, sub. 43, p. 3).

In the Northern Territory, operators need to register heavy vehicles if they are operating in the Territory for more than 3 months. No accreditation is required and access is relatively broad. Operators must observe Northern Territory occupational health and safety regulations, including fatigue management. Operators have open access for road trains to all industrial areas. HML vehicles can access all of the road network unless specific restrictions apply (Northern Territory Government 2019).

6.3 Assessing the impact on heavy vehicle access

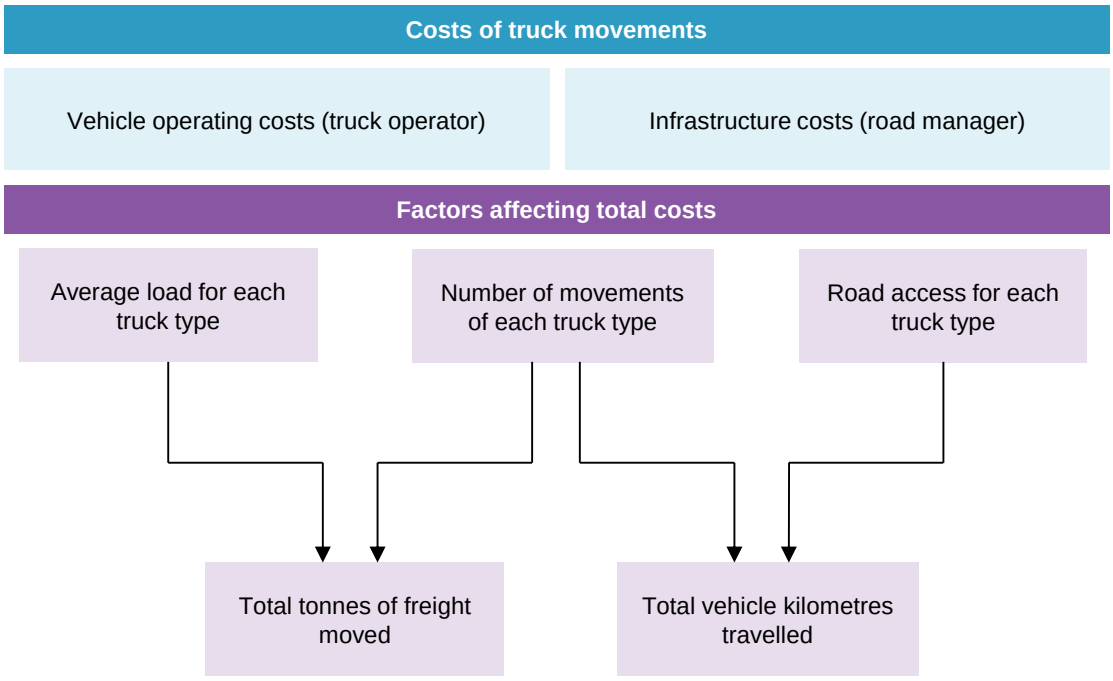
Conceptual framework

In line with other studies (for example, Chow, Kleyer and McLeod 2019; Deloitte Access Economics 2019), the Commission sees productivity as the aggregate cost effectiveness of vehicle movements — a reduction in cost for a given freight task would lead to a

proportionate increase in productivity. This assumes the freight task for heavy vehicles will not vary significantly if costs change.

In general, the cost of a heavy vehicle movement depends on the weight of freight the vehicle carries and the kilometres travelled. Two key components of costs are vehicle operating costs to the heavy vehicle operator and road infrastructure costs to the road manager (figure 6.4).

Figure 6.4 **Heavy vehicle costs**



Total vehicle operating costs might be reduced through:

- larger trucks — allowing larger trucks on a given road would reduce the number of truck movements required. As an example, switching from a 50 tonne B-double to a 79 tonne A-double results in 22 per cent higher vehicle operating costs on a per kilometre basis, but because the A-double requires fewer trips to carry the same freight, the costs per tonne kilometre are 23 per cent lower (Commission estimates based on ATAPGSC (2016) and NHVR (2016a))
- increasing road access — allowing a given truck to travel on a more efficient route would reduce the number of kilometres travelled.

It is necessary to consider the infrastructure costs to road managers. Allowing larger vehicles and broader access could increase or decrease infrastructure costs. In general larger vehicles cause more damage but this is not a uniform rule. If the mass of the vehicle is distributed over a larger surface area through wider tyres or more wheels then the force applied to the road surface is reduced. If fewer heavy vehicles are needed to accomplish the freight task

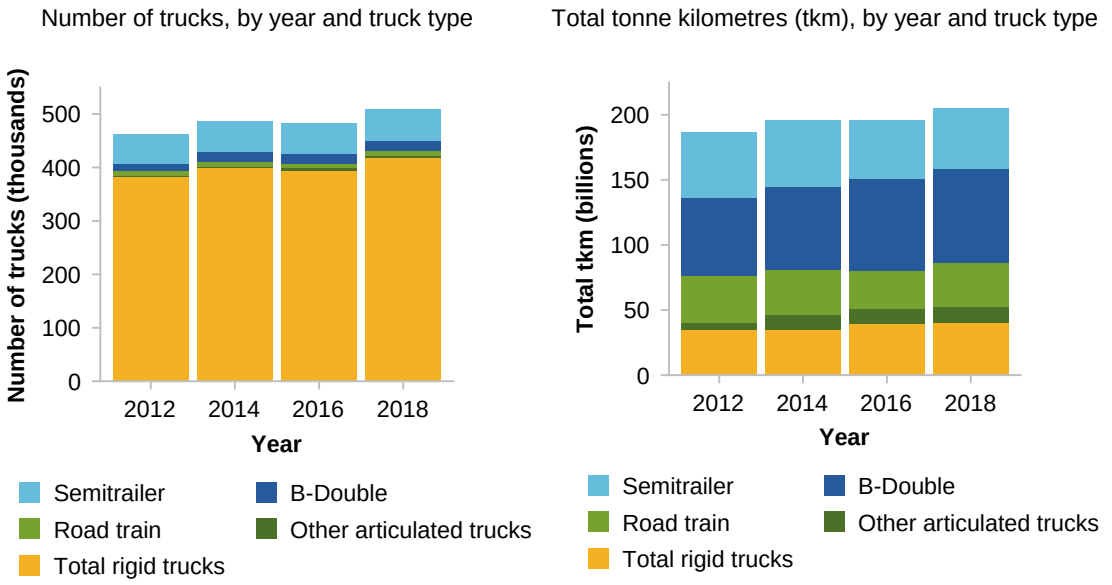
this may also reduce overall damage (NHVR 2019e, p. 5). In the case of bridges, the total mass applied by the vehicle must be within the structural limits of the bridge. Additional infrastructure investment is justified when there is likely to be a strong net benefit (demonstrated through a transparent cost-benefit analysis). Such net benefits are most likely on routes with significant (actual or potential) freight volumes.

In practice, assessing productivity improvements is difficult due to the complexity of vehicle types and configurations, their individual mass allowances and road access networks, and differences in their use and the loads they carry. Assessing economy-wide benefits is further complicated by the fact that specific reforms are unlikely to affect the entire heavy vehicle industry in the same way. For example, if access increases for a specific vehicle type used primarily by a specific industry, the flow-on benefits will mainly flow to that industry and its clients rather than all industries that use heavy vehicles. The following section illustrates some of the differences in vehicle types, what they carry, and where.

Who moves what where?

Australia's freight-carrying vehicle fleet in 2018 included 91 000 articulated vehicles and 418 000 rigid vehicles (light and heavy). However, the vast majority of the freight task as measured by tonne kilometres was carried by articulated trucks — with B-doubles accounting for about a third of the freight task (figure 6.5). The transport of food and live animals, manufactured goods and crude materials constitute most of the tonne kilometres travelled by articulated vehicles, while crude materials are the largest share of the tonne kilometres travelled by rigid vehicles (Commission estimates based on ABS (2019c)).

Figure 6.5 **The composition of the heavy vehicle fleet has remained fairly stable[a,b,c,d]**



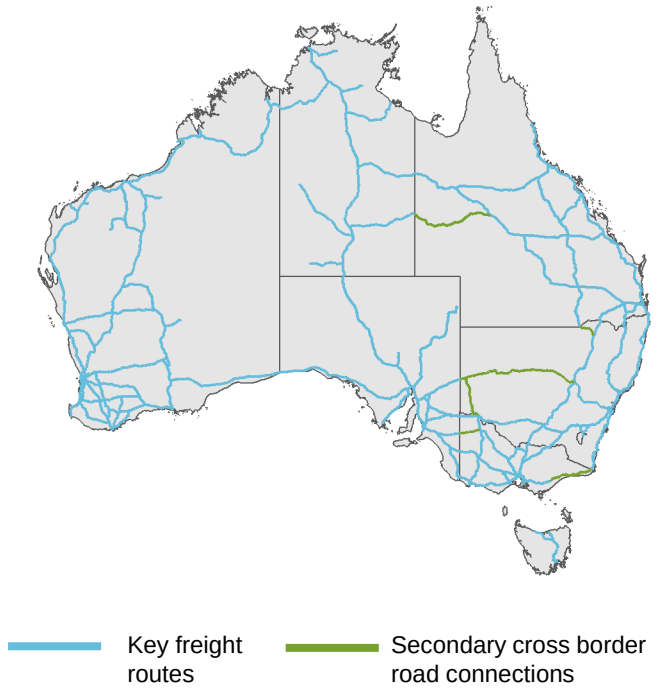
[a] Excludes light commercial vehicles, which make up 84 per cent of the freight vehicle fleet, but account for only 4 per cent of tonne kilometres travelled. [b] Total rigid trucks include both light and heavy vehicles. These cannot be clearly separated in the data. [c] The ABS Survey of Motor Vehicle Use was designed to produce reliable estimates of key data items for a point in time only. Care should be taken in drawing inferences across time, as estimates of changes between years are subject to high sampling error. [d] 'Number of trucks' is the number of freight carrying trucks operating in the given years.

Sources: Commission estimates based on ABS (*Survey of Motor Vehicle Use, Australia*, June 2018, Cat. No. 9208.0, table 28, table 29; *Survey of Motor Vehicle Use, Australia*, June 2016, Cat. No. 9208.0, table 28, table 29; *Survey of Motor Vehicle Use, Australia*, October 2014, Cat. No. 9208.0, table 28, table 29; *Survey of Motor Vehicle Use, Australia*, June 2012, Cat. No. 9208.0, table 22, table 24).

Road freight between capital cities accounted for about 19 per cent of total freight movements in 2011-12 (BITRE 2014, p. 4). The key freight routes (figure 6.6) used most often by heavy vehicles include routes along the eastern coast, connecting Melbourne, Sydney and Brisbane (Anderson et al. 2019). Freight originating from, or destined for, New South Wales accounted for two thirds of all interstate tonne kilometres in 2014 (Commission estimates based on ABS (2015)).

That said, of the total tonne kilometres travelled in 2014, 68 per cent were for freight movements within the same State — travel within Western Australia and Queensland each made up about 17 per cent of tonne kilometres travelled (ABS 2015). Further analysis has found that road freight within capital cities in 2011-12 accounted for over one fifth of total road freight, and road freight in other urban areas comprised a further 10 per cent (BITRE 2014, p. 4).

Figure 6.6 **Key freight routes[a]**



[a] Australia's key freight routes connect nationally significant freight locations (including freight terminals, industrial, mining and agricultural precincts) and experience high heavy vehicle traffic, higher volumes of freight, or involve the transport of important commodities. Secondary freight routes provide critical linkages, but do not meet the same level of significance as key freight routes (TIC 2019).

Source: Reproduced using data from DITCRD (2019).

The Commission's approach

A number of studies have attempted to assess the value of the efficiency gains since the COAG reforms. For example, work commissioned by the NHVR (Chow, Kleyer and McLeod 2019) estimated that the reforms would deliver $4.5–9.3 billion in productivity benefits over 22 years — similar to predictions in the HVNL regulation impact statement. Work commissioned by the Australian Trucking Association (Deloitte Access Economics 2019) suggested that the outcomes predicted in the regulation impact statement are not on track to being realised, but that alternative reforms could deliver productivity benefits of $13.6 billion over the period to 2050.

However, assessing the productivity gains from the changes so far and the contribution of the HVNL to these gains is difficult. Forecasting future benefits adds a further level of complexity. Many studies analysing heavy vehicle productivity benefits use simplifying assumptions, and are not able to take into account the complexity of the heavy vehicle fleet, including the implications of reforms on who moves what where.

To understand how the HVNL and NHVR may have affected productivity, the Commission has used public datasets from the ABS and unpublished administrative datasets from the NHVR and Transport Certification Australia (TCA), which were received in September and October 2019. The aim was to understand changes taking place on the ground rather than estimating prospective changes. The Commission will publish further details of its analysis in a technical appendix on its website in December 2019.

These datasets provide insights into the heavy vehicle landscape, but data limitations, the absence of a valid counterfactual and time constraints have limited the Commission's ability to undertake a rigorous examination of the productivity impacts associated with the national reforms.

Key data limitations include: a lack of spatial data detailing heavy vehicle movements, permit applications and approvals; and pre-approved routes and gazetted road access networks are either inconsistently reported or are only available for recent years. In addition, data on changes in the composition of the heavy vehicle fleet are aggregated and of limited value for the Commission's purposes — for example, ABS data do not contain sufficiently detailed information on vehicle types and cannot identify vehicles operating under the PBS scheme or the National Heavy Vehicle Accreditation Scheme (NHVAS) mass management module.

The task of attributing any observable change to the HVNL and the NHVR is further complicated by the various factors that may have influenced the composition of the heavy vehicle fleet and road access over time and the lack of a valid counterfactual. For example, changes in vehicle types are related to economic conditions and technological advancements, while road access decisions are made by State and local governments.

As a result of these constraints, the Commission has relied on qualitative discussion (supported where possible by available data) and case studies to provide an indication of how the NHVR's efforts may have affected productivity. The Commission has focused particularly on access for large vehicles on major freight routes, as these are likely to have a more significant impact on total productivity. This is not to say that access arrangements and operating conditions for other vehicles — such as OSOM vehicles — are less important. However, the vast majority of the productivity gains expected from the reforms were expected to flow from freight-carrying restricted access vehicles (CIE 2011). These activities represent the largest share of the nation's freight task and productivity improvements in this area are likely to be more important from a national perspective.

Isolating the impact of one regulation when many factors are at work is inevitably contentious. Consequently, the assessment relies on a holistic body of evidence. This includes qualitative and quantitative evidence, as well as substantial industry consultation. The Commission will undertake further analysis, particularly on changes in road access, for its final report.

What has happened to access?

General and Concessional Mass Limits

General access heavy vehicles operating under General Mass Limits (GML) and Concessional Mass Limits (CML) have access to the entire road network unless the routes are subject to specific restrictions. The COAG reforms have not changed these arrangements.

Restricted access vehicles are subject to access approvals under the HVNL. Pre-existing approved routes were retained when the law commenced.

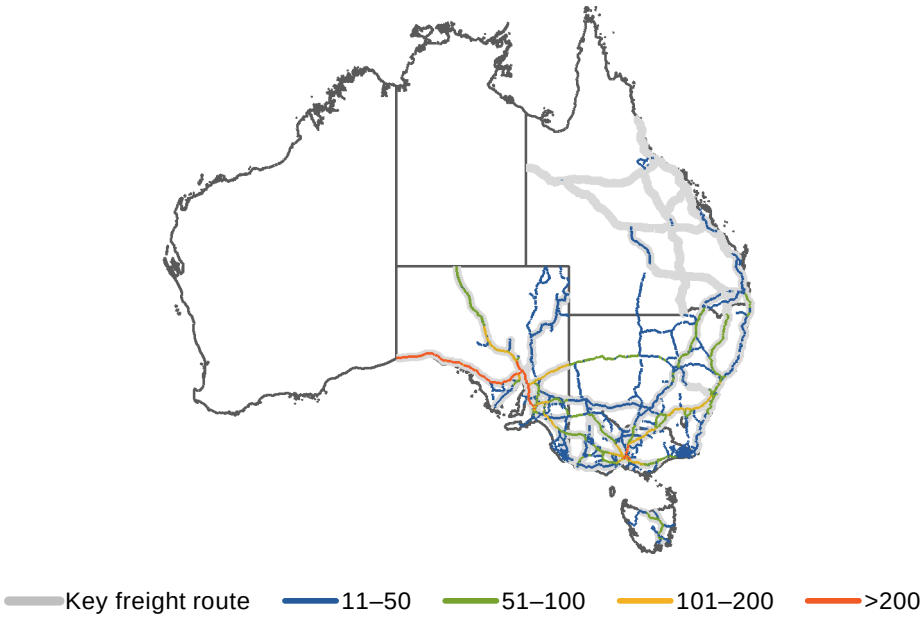
Access by permit and pre-approvals

The HVNL requires restricted access vehicles to apply for permits through the NHVR wherever a gazetted notice does not provide for access. As noted above, the NHVR continues to deal with large numbers of permit applications. There were 42 000 completed applications in 2018-19 (Commission estimates based on NHVR (unpublished)). This includes applications for both single routes (which tend to be across State borders) and areas (which are defined by local government boundaries), that have been either approved or rejected. The NHVR is now dealing with almost all permit applications following the return of responsibilities from the participating State and Territory Governments.

Class 1 OSOM vehicles are the most common vehicle type among permit applications. These constituted nearly one third of completed permit applications in 2018-19, and covered a large network of roads across regional Australia and cities (figure 6.7). Another 28 per cent of completed permit applications related to PBS vehicles. Where data on PBS vehicle types were available, nearly half of these permit applications were for PBS truck and dog combinations applying for relatively small sections of road (Commission estimates based on NHVR (unpublished)). This may be an underestimate given PBS permits that are missing vehicle information are more likely to be for truck and dog combinations under notice (NHVR, pers. comm., 24 October 2019).

Figure 6.7 **OSOM permit applications cover a large network of roads**

Number of OSOM permit applications by road segment, 2018-19[a]



[a] Excludes roads that had 10 or fewer permit applications in 2018-19.

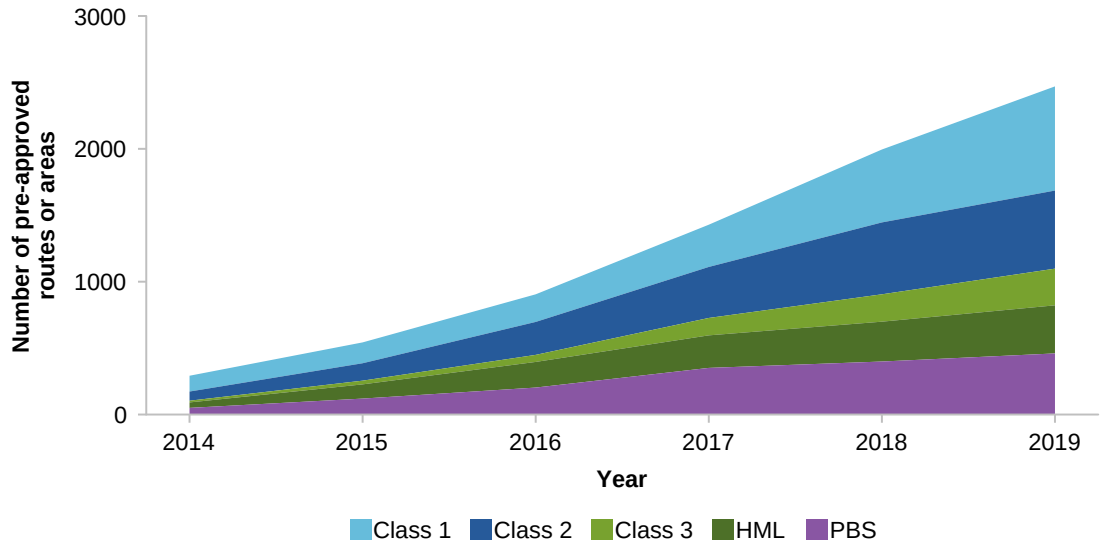
Sources: DITCRD (2019); Commission estimates based on NHVR (unpublished).

The proportion of applications refused among completed applications has fallen — from about 16 per cent in 2016–2017 to about 6 per cent in 2018-19. The vehicle types with relatively high rates of refusal during these years include B-doubles and road trains (at 18–19 per cent) and their HML equivalents, although these vehicle types have relatively large as-of-right access networks. OSOM vehicles were overwhelmingly approved, with a refusal rate of 2.5 per cent (Commission estimates based on NHVR (unpublished)). The reduction in permit refusals could be due in part to the NHVR's efforts to educate road managers about the impacts of certain vehicles on the road, or developing solutions that do not involve the refusal of a permit.

The NHVR has been working to improve the processing of access permits by working with road managers — State and local governments — to encourage them to pre-approve routes. Pre-approval allows the NHVR to approve access immediately within the limits set by the road manager. The extent of pre-approved routes has grown significantly since 2014 (figure 6.8).

Figure 6.8 **The extent of pre-approved routes and areas has grown**

Number of pre-approved routes or areas, by permit class, 2014 to 2019[a,b]



[a] The number of pre-approved routes or areas in 2019 is at September 2019. [b] Data may include some routes or areas that have since between gazetted.

Source: Commission estimates based on NHVR (unpublished).

In 2019, about 10 per cent of permit applications to road managers were granted via pre-approval — an increase from 8 per cent in 2018 (Commission estimates based on NHVR (unpublished)).

Access under notices

Gaining pre-approval for access to restricted routes from road managers was the first step to speeding up the approval process. In recent years, the NHVR has focussed on gazetting routes for as-of-right access for specified restricted access vehicles. By 2018, there were 415 gazetted heavy vehicle routes (NHVR 2018a). Box 6.5 describes some of the more significant notices that have been gazetted.

Box 6.5 A sample of the national notices issued under the HVNL

National notices provide as-of-right access for specified restricted access vehicles — bypassing the need for restricted access vehicles to apply for permits on an ongoing basis — and reduce and standardise the conditions under which different vehicle classes and configurations operate. National notices provide greater certainty to heavy vehicle operators and allow greater flexibility when operators plan their operations. This in turn acts to incentivise the use of high productivity vehicles, whilst also reducing the administrative burden placed on road managers by reducing the number of permit applications they are required to process.

National Class 2 B-double Authorisation Notice (2019)

The notice delivered a streamlined version of previous notices and reduced and harmonised the number of conditions with which B-double operators need to comply. For example, the notice aligned B-double requirements for general access 50 tonne, 19 metre vehicles across participating jurisdictions (which meant an increase in general mass for B-doubles in South Australia by 7.5 tonnes).

National Class 2 Heavy Vehicle Road Train Authorisation Notice (2015)

The notice authorised the use of road trains in stated areas or on stated routes, and clarified the conditions under which road trains may be used. The NHVR is currently reviewing and redesigning the national road train notice as part of the national harmonisation program. The project aims to create a new nationally harmonised notice by producing standard definitions and categorisation of road train configurations and improve the overall consistency of access and vehicle conditions across jurisdictions. Important draft conditions include: consistent definitions for road train combinations (adopted nationally), consolidated road access networks that align with PBS networks, flexibility around warning sign requirements and the exclusion of Intelligent Access Program and suspension requirements for A-doubles operating at General Mass Limits.

National Class 1 Agricultural Vehicle and Combination Mass and Dimension Exemption Notice (2019)

The notice harmonises dimension limits and standard operating conditions for agriculture vehicles and combination such as cane trailers, silage trailers, harvesters and tractors. The notice, used in conjunction with an NHVR published Operator's Guide and the Agricultural Heavy Vehicle Map, has reduced (and clarified) the number of designated agricultural zones and reduced the complexity of cross-border movements.

National Class 2 PBS level 1 and 2A Truck and Dog Trailer Authorisation Notice (2016)

The notice authorises the use of three or four axle trucks towing three-, four- or five-axle dog trailer PBS combinations on gazetted networks — .replacing the need for individual access permits. Since releasing the notice in 2016, the NHVR has continued to work with road managers to further expand the network.

National Class 1 Special Purpose Vehicle Notice (2016)

This notice authorises the use of Class 1 Special Purpose Vehicles up to 40 tonnes on gazetted networks. Examples of vehicles operating under this notice include mobile cranes (for example, 2-axle pick and carry cranes, 2- and 3-axle all terrain mobile cranes, 3- and 4-axle truck cranes) and mobile concrete pumps. Since its release in 2016, the NHVR has been working closely with local governments and industry to improve access for smaller special purpose vehicles. This included reviewing the existing notice and providing training to road managers to further expand access.

Source: NHVR (2019d).

Access for key freight vehicles

Changes to B-double road access are likely to have large consequences for productivity due to the high proportion of tonne kilometres undertaken by B-doubles. Road trains such as A-doubles also carry significant long distance freight volumes and typically more efficient than B-doubles (Dudgeon and Findlay 2016). Therefore, efforts to improve access for both these vehicle types would likely lead to productivity improvements by reducing the number of truck movements required to complete a given freight task.

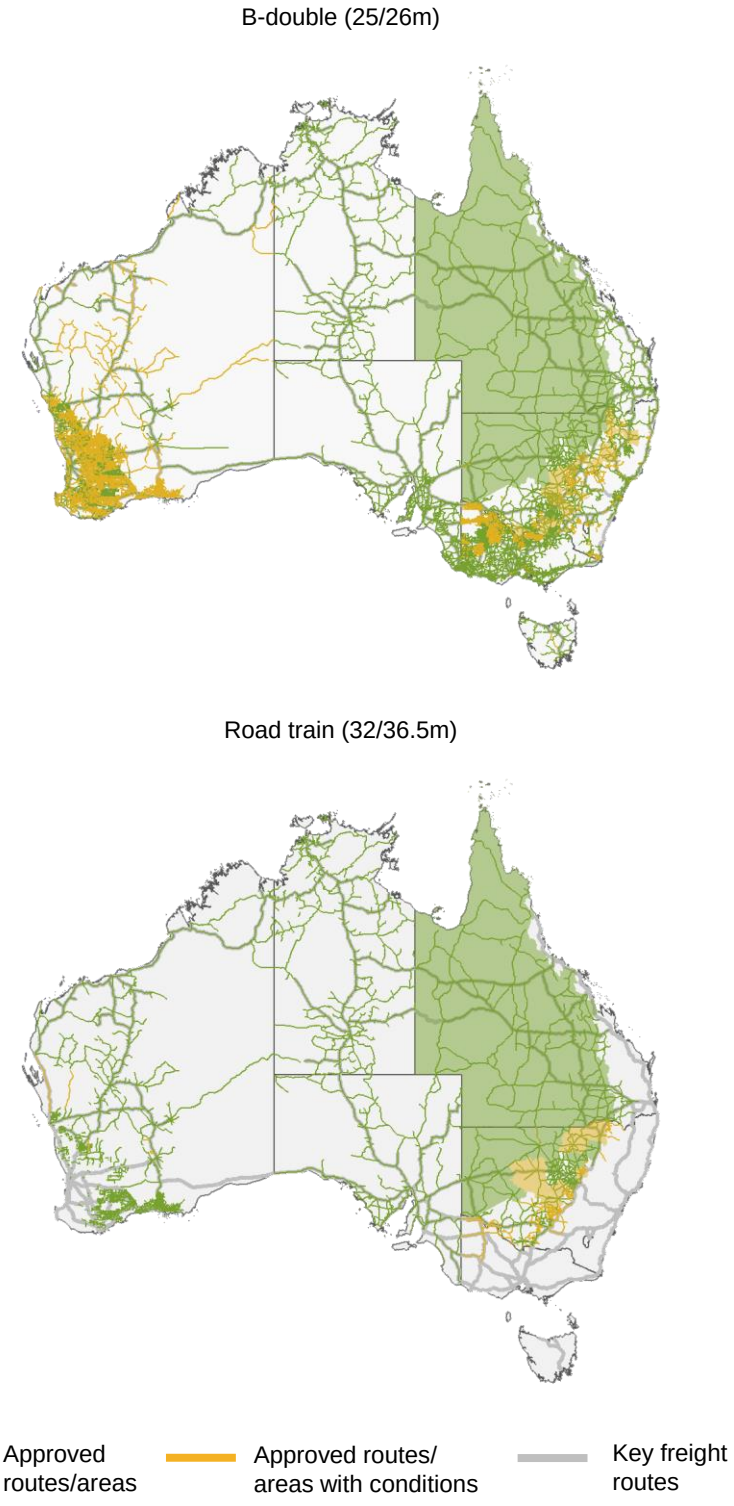
In 2019, following consultation with State and Territory governments and a review of existing B-double network access and operating conditions, the NHVR issued the Class 2 B-double Authorisation Notice (box 6.5). The notice was intended to address inconsistent access conditions and align B-double requirements across States and Territories. While certain restricted access B-double networks expanded after the national notice — for example 25/26m B-doubles in regional New South Wales — this has probably produced only a small productivity benefit. Comparisons of 2018 and 2019 25/26 metre B-double road networks shows that the new routes were primarily on local roads and were not part of Australia's key freight routes. Moreover, telematics data provided by TCA suggest low use by B doubles — most of the new routes were used fewer than 50 times in 2018-19 by vehicles participating in the Intelligent Access Program (IAP).[17]

On the other hand, while difficult to quantify, efforts to harmonise the system across States through notices — for example, changes which led to an increased mass allowance of 7.5 tonnes for 19 metre B-doubles operating in South Australia, a general access network across the ACT and general access bridge formulae for all general access B-doubles — may have delivered significant productivity benefits (NHVR 2019a).

Despite similar efforts by the NHVR to harmonise and improve the access networks for road trains (notably A-doubles), consistency and access remains constrained relative to B-doubles (figure 6.9). The NHVR is reviewing and redesigning the existing National Class 2 Heavy Vehicle Road Train Authorisation Notice (2015) (NHVR 2019c). This review aims to create a new nationally harmonised notice by producing standard definitions and categorisations of road train configurations, and further improve the consistency of access and vehicle conditions (box 6.5).

[17] Data were provided to the Commission by the TCA in an aggregated and de-identified form. The data draw on vehicle movements under the Intelligent Access Program. These vehicles are a subset of all heavy vehicles and the data may not be fully representative of all vehicle movements.

Figure 6.9 **B-double versus road train access[a]**



a Access restrictions not shown. Key freight routes include both primary freight routes and secondary cross border road connections. For updated road access networks, see State and Territory road authority websites.

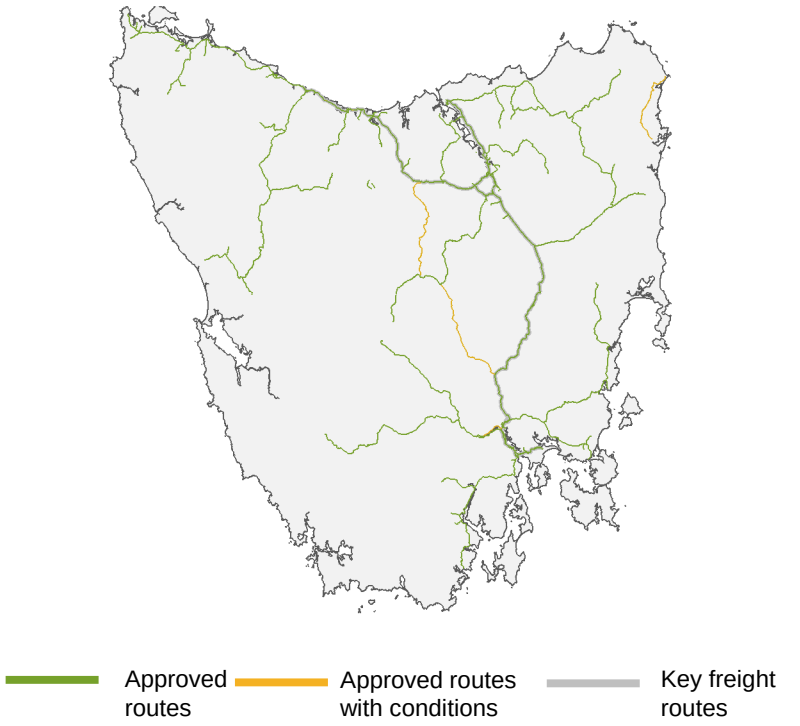
Sources: Reproduced using data from DITCRD (2019) and NHVR (unpublished).

The role of road managers

State and Territory governments play important roles both as road managers and by facilitating access decisions by their local governments. In 2015, for example, the Tasmanian Department of State Growth worked with the NHVR and local councils to develop pre-approved networks for restricted access vehicles (NTC 2019). Funding was provided to engage civil engineers to assess road corridors, bridges and other structures. Consolidated guidance and mapping was developed for transport operators to help them determine feasible routes.

The Department of State Growth is building on this work to increase and map access for special purpose vehicles. This project will assess more than 3000 bridges for different vehicle combinations and significant economies of scale are achieved by undertaking the task in a consolidated way (NTC 2019). Figure 6.10 illustrates the network of HML routes in Tasmania.

Figure 6.10 **Tasmanian HML network[a]**



a Access restrictions not shown. Key freight routes include both primary freight routes and secondary cross border road connections. For updated road access networks, see Transport Tasmania's website.

Sources: Reproduced using data from DITCRD (2019) and NHVR (unpublished).

Other States and Territories have developed heavy vehicle access maps of their jurisdictions to give similar guidance. These maps are consolidated by the NHVR and used in the NHVR's route planner.

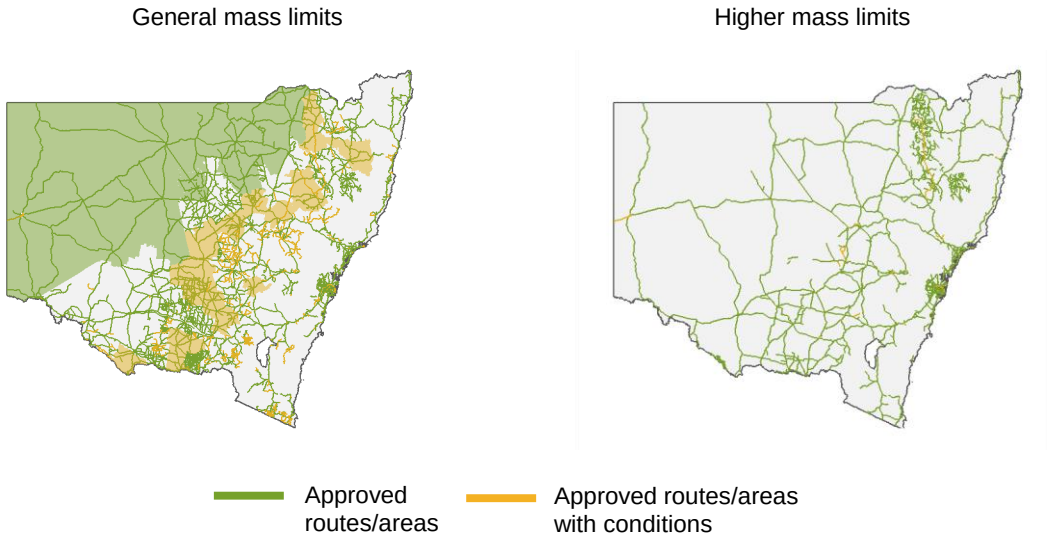
States and territories have also issued freight plans to identify priority actions, including improving first mile and last mile access.

Higher Mass Limits and Performance-Based Standards

The NHVR provides local governments with information about the advantages of newer truck designs and tools to assist with route assessments (NHVR 2018b, 2019e). The 2019-20 Australian government budget provided $8 million to the NHVR to fund engineering assessments for local government road infrastructure and to build an asset database.

HML approved networks are extensive. For example, figure 6.11 shows the 2019 HML network in New South Wales. However, significantly greater access is still permitted for standard 25/26m B-doubles. This suggests there is further to go in gaining access for HML vehicles.

Figure 6.11 **B-double access in New South Wales — GML versus HML[a]**



[a] Access restrictions not shown. For updated road access networks, see NSW Road and Maritime Services website.

Source: Reproduced using data from NHVR (unpublished).

PBS access has reached significant levels on major roads. Access for PBS A-doubles in Victoria provides an example (box 6.6).

Box 6.6 PBS A-double access in Victoria

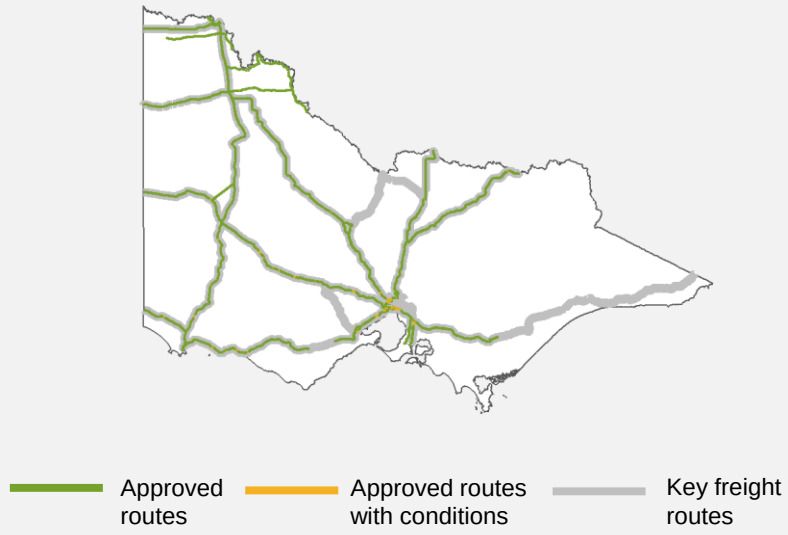
In 2018, Victoria introduced new High Productivity Freight Vehicle (HPFV) road access networks to accommodate 30-metre A-double combinations that have been approved under the Performance-Based Standards (PBS) scheme. A-doubles (especially those operating under the PBS scheme) are more efficient and versatile relative to the existing workhorse freight vehicle (B-doubles). They carry more freight, meaning that fewer vehicle trips are required to complete a given freight task, and are easily separated into two standard semitrailers, increasing flexibility for operators (Dudgeon and Findlay 2016; Johnston 2019).

The change in the road access network stemmed from the Victorian Government's commitment to improve the efficiency of its transport system and frustration within industry regarding HPFV access (Advantia 2017; Victorian Government 2018). The Victorian Government conducted a feasibility study in 2013 that identified the required infrastructure upgrades to safely facilitate access — this included the strengthening of various bridges on Victoria's key freight routes and improvements in rest areas to facilitate longer vehicle combinations (Advantia 2018; Victorian Government 2018).

VicRoads forecasts that between now and 2030, HPFVs operating under the PBS scheme — including combinations other than A-doubles — will lead to a reduction of 4.5 billion vehicle kilometres and about 100 fatal crashes nationally (VicRoads 2017). The change to the HPFV network in Victoria highlights the important role of the infrastructure managers in road access decisions.

Data indicate that PBS approvals for A-doubles in Victoria have continually increased, although this may be attributable to other factors in addition to the recent change in access networks (Commission estimates based on NHVR (unpublished)). Furthermore, telematics data from the Intelligent Access Program suggest that there is substantial utilisation of the routes opened up to these vehicles. For example, in 2018-19, Type 1 road trains (including A-doubles) have accessed the Westgate Freeway — a key freight route, previously inaccessible to A-doubles — over 113 000 times (Commission estimates based on TCA (unpublished)).

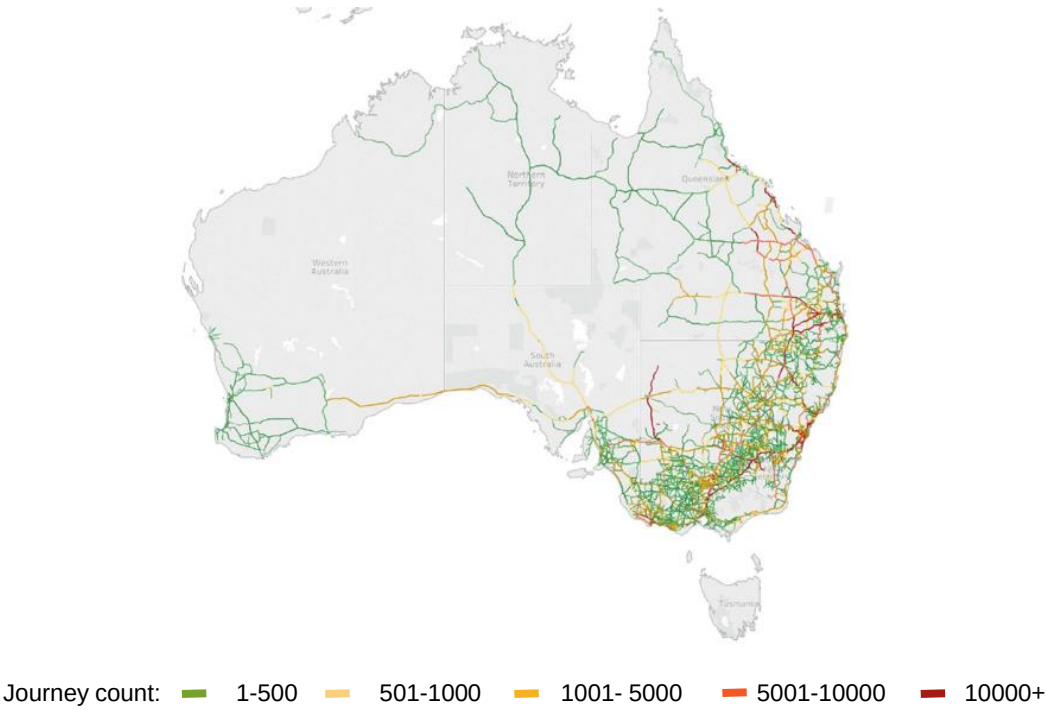
PBS certified 30-metre A-doubles have access to most key freight routes in Victoria



Sources: Map reproduced using data from DITCRD (2019) and NHVR (unpublished). For updated road access networks, see VicRoads website.

Figure 6.12 maps the movement of PBS vehicles using telematics as part of the Intelligent Access Program. Although this is just a sample of all PBS vehicles — not all States require use of the IAP for PBS vehicles — it suggests PBS vehicles are achieving significant access.

Figure 6.12 **A sample of PBS truck movements in 2018[a]**



[a] These vehicle movements are for the sample of PBS vehicles using telematics as part of the Intelligent Access Program.

Sources: ARTSA and TCA (2018).

Growth in the number of vehicles operating at higher mass

Increased access and the higher efficiency achieved with PBS vehicles provide the incentives for operators to invest in PBS vehicles. However, the fees associated with accrediting a PBS vehicle (from about $5000 to $20 000) are significant. This once off cost needs to be offset against the ongoing productivity benefits of the vehicle.

Similarly, there are costs associated with operating under HML arrangements, which require that operators are accredited under the NHVAS mass management module, have road friendly suspension and, in some jurisdictions, have installed telematics technology to allow participation in the IAP.

NHVAS accreditation also allows operators to work at CML levels without upgrading vehicle suspension or telematics.

CML, HML and PBS vehicle numbers

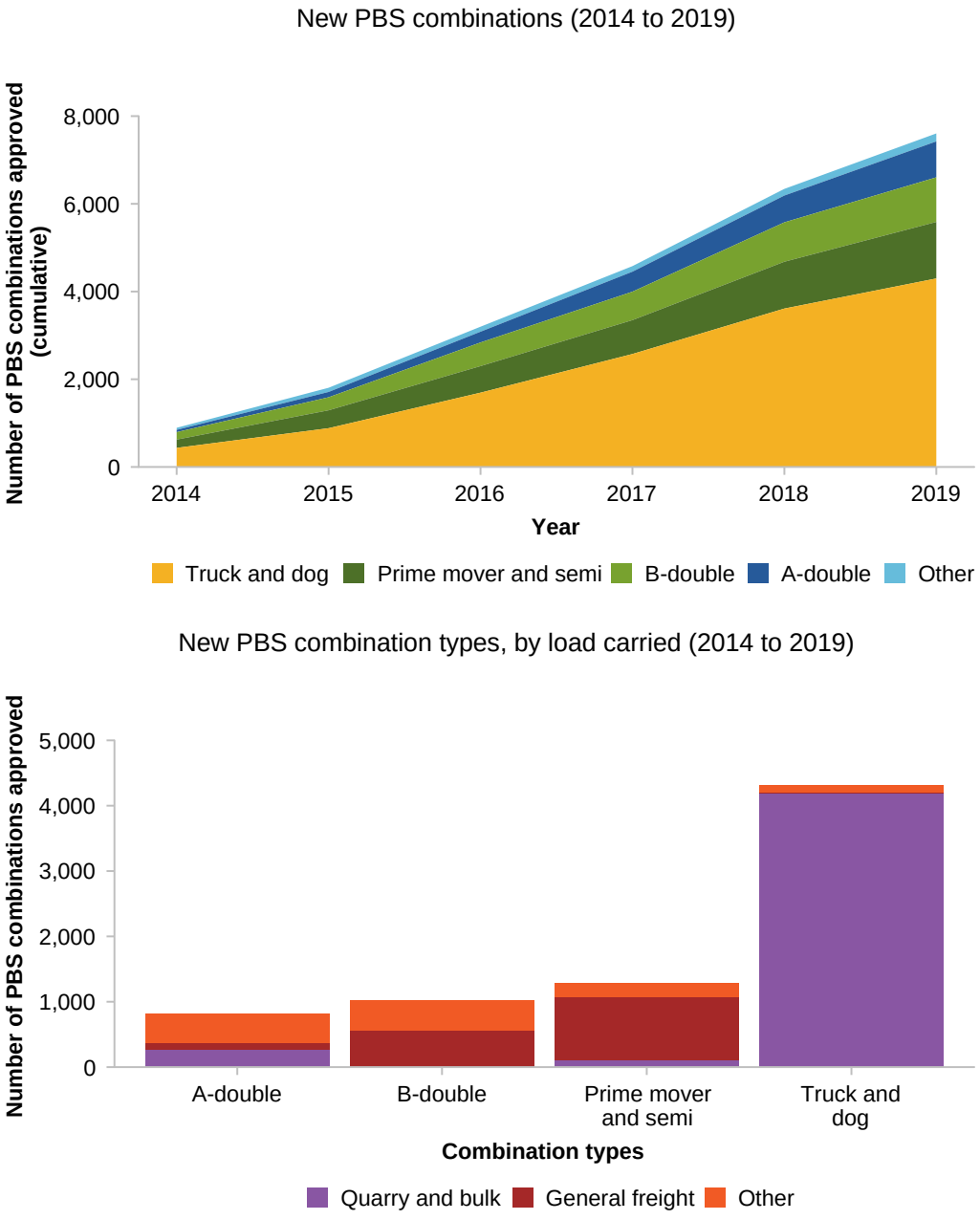
The number of operators and vehicles accredited under the mass management module of the NHVAS gives an indication of CML and HML vehicle numbers. These numbers have been growing steadily. In 2014-15, just under 4700 operators and 31 000 vehicles were accredited. By 2017-18, this had grown to over 5700 operators and 39 400 vehicles (NHVR 2018a, p. 64). Over the three years this represents a 27 per cent increase. These numbers are indicative only and do not necessarily mean that all of these heavy vehicles are actually operating with heavier loads.

While the total number of HML vehicles in Australia is unknown, data collected by TCA provide some insight. PBS and HML vehicles operating in New South Wales and Queensland are required to participate in the IAP. Under this program, heavy vehicles are fitted with tracking devices and the data collected by TCA. Other heavy vehicles may also be included in the program due to State and Territory conditions or permit conditions.

Data from TCA suggest an increase in the number of HML vehicles. In June 2015 just over 3300 vehicles were monitored through the IAP compared with over 5100 vehicles by October 2018 (TCA 2015, 2018). Seventy per cent of the vehicles monitored in 2018 were registered in New South Wales and Queensland. Although IAP monitored vehicles increased by more than 60 per cent, the total number of heavy vehicles covered under the IAP scheme is relatively small.

The NHVR maintains records of the number of PBS vehicles approved. Between 2013 and 2019, the cumulative number of PBS combinations approved has risen from around 1700 to over 9500 (NHVR (unpublished)). Some of these approvals related to multiple vehicles, suggesting the total number of PBS vehicles is likely to be higher but specific totals are not available. Around half of PBS approvals are truck and dog combinations, heavily used in the construction industry (figure 6.13). The release of the PBS truck and dog notice is likely to have contributed to the popularity of these combinations (box 6.7). PBS A-doubles, B-doubles and prime movers with semitrailer account for most of the remaining PBS approvals.

Figure 6.13 **PBS approved vehicle combinations, by combination type[a,b]**



a 'Other' (combination types) includes 'A-triple', 'B-triple', 'AB-triple', 'BA-triple', 'B-quad', 'AB-double', 'Buses', and 'Truck and pig'. These combination types are excluded in the bottom chart due to their relatively small numbers. **b** 2019 data include approvals up until September 2019.

Source: Commission estimates based on NHVR (unpublished).

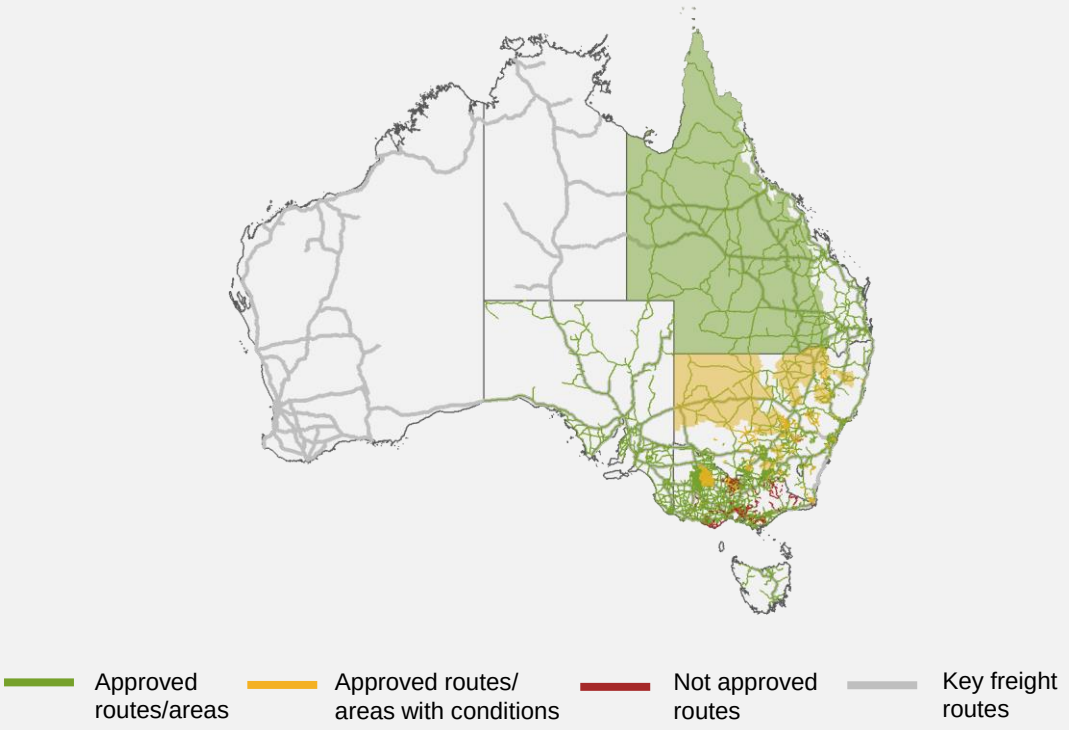
Box 6.7 National PBS truck and dog combination notice

In 2016, the National Heavy Vehicle Regulator released a notice in consultation with State and local governments to allow Performance-Based Standard (PBS) truck and dog combinations to operate without a road access permit on designated road networks. The notice covers PBS combinations consisting of a 3- to 4-axle truck towing a 3- to 5-axle dog trailer operating on the PBS level 1, PBS level 2A, and HML networks. Vehicles operating on the PBS level 2A network (pictured below) have a maximum length of 26 metres, and have road network access roughly equivalent to the 26 metre B-double network. Further, PBS truck operators working at Concessional Mass Limits gained increased access to networks without having to enrol into the Intelligent Access Program.

The New South Wales Minister for Roads, Maritime and Freight said that the notice removed about 300 road permits, making it easier for operators in the state to do business. The vast majority of PBS truck and dog combinations are used to carry quarry and bulk for the construction industry.

Although the notice removed the need for permits on PBS networks, data indicate that the number of completed permit applications relating to PBS truck and dog access on other routes (typically small routes) has continued to increase, from at least 1000 in 2016-17 to over 4300 in 2018-19. This increase likely reflects the rise in the number of PBS truck and dog combinations, which is expected to have been partly due to better overall access. PBS truck and dog combination numbers have continually increased since 2016, and there are now more than 5000 in Australia.

PBS level 2A network



Sources: NHVR (2016b, 2016c); map reproduced using data from DITCRD (2019) and NHVR (unpublished).

PBS vehicles typically display productivity improvements of around 10 to 40 per cent over equivalent heavy vehicle categories (Hassall 2014, p. 23). However, recurrent costs are also likely to be higher, mitigated by the fact that these vehicles are newer and often more efficient than the vehicles they replace.

Table 6.2 suggests that these increases have not yet achieved sufficient scale to move the average productivity of the heavy vehicle fleet as a whole.

Improving data

As is evident in the discussion above, data limitations prevent a fully comprehensive assessment of the reforms. Unreliable (and missing) historical data limit the extent to which changes in heavy vehicle access can be assessed. The NHVR is working to improve its collection and use of data.

Despite improvements in the NHVR's technical capabilities and data infrastructure, data management processes need to be improved substantially — including how data are stored, integrated, analysed and reported (chapter 8). In these ways the NHVR will be able to target its activities better and drive broader policy change to improve productivity and safety.

DRAFT FINDING 6.3

The National Heavy Vehicle Regulator (NHVR) has a well-developed information system that allows for effective management of its operational commitments. The NHVR is taking a strategic approach to the collection and use of data and this will allow it to target its activities better. It will also be able to drive broader policy change to improve productivity and safety.

DRAFT RECOMMENDATION 6.3

The National Heavy Vehicle Regulator should continue improving its data management processes, including how data are stored, integrated, analysed and reported.

Productivity impact of the reforms

While the COAG reforms have undoubtedly led to productivity benefits, they have not achieved the degree of productivity benefit estimated in the regulation impact statement. Further productivity gains will be driven by the industry itself under the provisions of the HVNL and regulatory oversight of the NHVR. Beyond this there is scope for additional productivity gains through measures discussed in chapter 10. In the end, it is the dynamics of the industry and the private sector competition and innovation that drives productivity

growth — government can facilitate or inhibit this by the regulatory environment it creates. The Commission considers that the original productivity growth estimates were excessively optimistic and could not be achieved even if implementation had been perfect.

It is clear on the indicators discussed above that the NHVR is making significant progress in several areas that improve productivity. Access has improved since the reforms were put in place, through the pre-approval process and notices. There is limited information on the realised benefits of the road access network expansions and harmonisation of access conditions that have occurred so far. Improvements have been widespread (but not universal) on both major freight routes and local roads but it is not clear that these have yet achieved the necessary scale to produce large productivity benefits. Nevertheless, growth in the numbers of higher capacity vehicles suggest that these vehicles are finding profitable opportunities and routes on which to operate.

Access still depends significantly on permit applications, with tens of thousands processed annually by the NHVR and road managers. Access is lagging technical improvements in heavy vehicles, with some road managers reluctant to approve access for larger PBS vehicles that have performance characteristics that are on par with heavy vehicles operating under the prescribed HVNL limits.

DRAFT FINDING 6.4

The productivity gains from the reforms so far are much less than expected, although there is scope in the future for greater improvements as Performance-Based Standards vehicles become a larger proportion of the heavy vehicle fleet.

Changes in access networks will not occur without the agreement and participation of road managers, both State and Territory and local governments. State governments have also been active proponents of greater access and facilitated infrastructure assessments and route approvals to further the freight flows through their jurisdictions. More support and additional reforms could yield a higher productivity dividend and these options are discussed in chapter 10. If the COAG reforms are to deliver their full promise, significant changes are required at each level of governance.

In the short term, the NHVR should continue its focus on consulting with industry, jurisdictions and local governments to further expand and harmonise networks for high productivity freight vehicles. While access decisions ultimately rely on road manager approval, and may require infrastructure upgrades, the NHVR has an important role to play:

- communicating the productivity (and safety) benefits associated with the use of high productivity freight vehicles
- promoting a consistent framework for considering road access.

DRAFT FINDING 6.5

There is scope to rapidly increase the number of gazetted routes, reducing the need for permit applications. In many cases, permit approvals are given as a matter of course for certain vehicle types; these approvals should be replaced with as-of-right access by gazette.

DRAFT RECOMMENDATION 6.4

The Council of Australian Governments should direct road managers (including the state road authorities) to work with the National Heavy Vehicle Regulator to rapidly expand key freight routes covered by notices and allowing as-of-right access for larger vehicle types. The focus of this work should include:

- expanding the networks available for heavy vehicles with performance characteristics equivalent to B-doubles (including Performance-Based Standards (PBS) level 2A and 2B B-doubles) and type 1 and 2 road trains (including PBS equivalents)
- where there are classes of vehicles for which permit applications are almost universally approved, developing notices covering these vehicles
- meeting infrastructure requirements such as truck stops and logistics centres near major urban centres, allowing larger vehicles to be broken down into smaller units where required by urban road network constraints.

Other specific areas where further work may be needed to ensure efficient decisions include:

- exploring the potential for higher mass and dimension limits for vehicles operating under general access as prescribed in the HVNL to take account of technology improvements in heavy vehicle design since these limits were set in the early 1990s
- giving local governments incentives for timely assessments and to offset the additional costs involved in widening access (for example, there is no real feedback mechanism between increased truck access and greater revenue for local governments to cover the additional road maintenance load)
- allowing local governments the option to delegate their decision making authority to the state road authority or to the NHVR.

These issues are largely outside the direct control of the NHVR and are discussed in more detail in chapter 10, as issues for further consideration by COAG.

6.4 Compliance costs and regulatory burden

One of the aims for the COAG reforms was to reduce costs for transport operators. This section assesses the available evidence on compliance costs.

All regulation creates costs for industry participants. The challenge for legislators and regulators is to achieve their desired outcomes with minimum cost and disruption to individuals and businesses.

The compliance costs borne by industry participants are higher when:

- laws and regulations are complex
- there are different arrangements in different jurisdictions
- rules are subject to exemptions or are difficult to interpret
- enforcement arrangements are unclear and involve multiple players.

To varying degrees, all of these factors apply to the three transport modes. This situation may be unavoidable in the early stages of consolidating disparate State and Territory laws into national laws.

Besides seeking submissions from interested parties, the Commission had discussions with interested parties from all three transport sectors, in all capital cities and, in the case of heavy vehicles, at four regional truck stops. The Commission sought information about the compliance burden of the regulations in each of these discussions. Although the information gained was not suitable for econometric analysis the views of industry participants have guided the formation of the Commission's views.

There is scope in each of the sectors to simplify legislation and harmonise arrangements further. The process being pursued by the NTC to revise and update the HVNL is a useful example of how such a process might be undertaken. The HVNL is a particularly complex and detailed law and creates issues for heavy vehicle operators and the regulator. Over time, similar processes could be undertaken for the other transport modes now that the new regulatory regimes are established and the transfers of responsibilities and staff are nearly complete.

The regulators do not collect and analyse compliance costs in systematic ways. The Office of the National Rail Safety Regulator (ONRSR) has conducted stakeholder surveys that contain relevant information but does not publish the results. The NHVR is aware that there are significant compliance costs from aspects of its activities but does not report on these costs. Similarly the Australian Maritime Safety Authority (AMSA) does not monitor and report on compliance costs as part of its business model.

The Commission's Final Report on the *Economic Regulation of Airports* (PC 2019) emphasised the importance of publishing information that allows interested parties to assess key management and regulatory decisions being taken. In the context of the transport

regulators in this inquiry, regulators should publish separate costs and revenue for different lines of business (such as domestic commercial vessels and Navigation Act vessels) and estimates of the compliance burden on operators for the regulatory activities undertaken, broken up against key activities. This information can be supplemented by qualitative surveys of transport operators to assess the impact of decisions taken and the effect on operators. This information should be published periodically by the regulators.

DRAFT FINDING 6.6

Data on the compliance costs for businesses for the three national regulators are not routinely collected, monitored and published.

DRAFT RECOMMENDATION 6.5

The National Heavy Vehicle Regulator, the Office of the National Rail Safety Regulator and the Australian Maritime Safety Authority should monitor the compliance and administrative costs created by the national regimes and report on the level and change in these costs in periodic (say 3 yearly) reporting. The first report should be published in 2020 to establish benchmark costs.

Fatigue management is a challenge for all three regulators and involves significant compliance costs. In rail, there is some flexibility but prescriptive arrangements in some States are still the cause of complaints by industry (for example, Australasian Railways Association, sub. 26). Heavy vehicle drivers devote considerable time to maintaining work diaries, whether paper based or electronic. Accreditation arrangements allow some operators greater flexibility. In Western Australia there appears to be much more flexibility in fatigue arrangements and safety outcomes appear similar. Greater flexibility on this important issue may be a source of compliance cost savings where operators can demonstrate capacity to implement safe working systems.

In their submission to the inquiry, Co-operative Bulk Handling Limited suggest there may be opportunities to use common approaches or at least common language (sub. 13, p. 2), including:

- consistent terminology between transport modes
- consistent approaches to the level of regulatory requirements to ensure that no industry faces more onerous requirements without clear justification
- a standardised approach where more than one regulator may be involved (for example, ports).

Any work to standardise language and approaches should also include the aviation sector.

DRAFT FINDING 6.7

There is little evidence at this stage that compliance costs for businesses have fallen. Each regulator is pursuing changes that should help reduce costs in the future.

Heavy vehicle issues

The requirements on operators and drivers of heavy vehicles are extensive and the costs of compliance substantial. These costs can be justified by the dangers inherent in heavy vehicles operating on shared roads. Costs are incurred to ensure adequate safety and balance the challenges of transporting freight (using very large special purpose vehicles) with maintaining community amenity and managing costs to road infrastructure.

Assessing trends in compliance costs before and after the COAG reforms is very difficult. Making truck movements more visible has made it possible for local governments to assess the level of heavy vehicle traffic through their areas but it has also created a substantial workload for operators and local governments. Essentially all parts of the industry have been forced to take a step towards more accountability and transparency.

It is clear that the NHVR has had to put significant resources into systems to process a flood of permit applications at the same time as it has assumed responsibility for accreditation, fatigue management and the PBS scheme. The NHVR Portal was designed to provide a one stage process for operators to gain access approvals. One permit can now cover multiple vehicles and multiple routes or areas. Heavy vehicle operators only need to submit one renewal application to renew multiple permit routes. Communication with road managers is now managed automatically within the Portal by the NHVR (NHVR, pers. comm., 24 October 2019). These changes have improved simplicity and flexibility for heavy vehicle operators.

With the permit processes, the NHVR is working to gazette and pre-approve routes for heavy vehicles, as well as standardise conditions of operation across jurisdictional borders — these changes are likely to have reduced compliance costs for transport operators and road managers.

Delays can cause significant costs for operators when the trip cannot easily be planned far enough ahead or when there is a high degree of uncertainty about how long approval may take. The time taken for permit approvals averaged just under 19 days in 2017-18. This is a significant improvement on 2016-17 when approvals took an average of almost 34 days. The administrative tasks involved in maintaining approvals can also be expensive for operators:

> A large livestock carrier which operates primarily in Queensland and New South Wales, and a member of the Australian Livestock and Rural Transporters Association, has experienced an increase in regulatory burden as a result of the national transport regulatory reforms.

> The business maintains approximately 70 class 2 permits for various routes, relating to B-doubles, road trains and B-triples.
>
> In Queensland, prior to the national reforms, the operator would apply directly to the state department for permits. These were usually granted for a period of three years and local councils were generally not consulted in the process for granting the permit.
>
> Following the establishment of the NHVR, the permits are now issued for only a one-year period and the process of consulting local councils has significantly increased the time it takes to have the permit approved.
>
> The 70 permits are 'rego specific,' which means each permit must be amended to include the registration of each new vehicle the operator may add to their fleet. The business purchases about 20 new trucks each year.
>
> The business has estimated it takes about an hour to amend a permit to add a new vehicle, resulting in an approximate annual cost of $70,000 (cost time at $50 an hour). (Australian Trucking Association, sub. 32, p. 8)

Most permit applications are processed reasonably quickly. However about 10 per cent of applications take much longer, averaging more than 60 days to completion. Some of these delays would be due to engineering assessments of infrastructure capacity. Although systems and processes appear to be improving, there is some way to go to meet the 24 hour processing objective for key freight routes suggested by the Final Report from the Inquiry into National Freight and Supply Chain Priorities (DIRDC 2018, p. 9).

Other key issues raised by operators in discussions with the Commission have been fatigue management requirements and access permits. Discussions between Commission staff and truck drivers suggest there is no obvious trend, either towards higher compliance costs or lower costs. Drivers pointed to improvements in permit processes in recent years but criticised the compliance burden of driver log books.

The NHVR estimates that up to 20 million daily work sheets are completed by drivers (NHVR 2018a, p. 15). This is a significant compliance load and these sheets must be retained for three years for compliance purposes. Electronic diaries appear to have low take up. The telematics solutions used by companies operate to provide management information rather than satisfy NHVR compliance.

Jurisdictional restrictions also continue to cause compliance burden. As noted in a submission by Gas Energy Australia:

> An example which highlights the need for harmonisation of state and territory regulations involves a heavy vehicle (LPG Bobtail tanker) travelling from NSW to a workshop in Queensland for a 3-week overhaul. An oncoming vehicle threw a stone which cracked the windscreen. The vehicle was shortly thereafter stopped by a roadside inspection and an NSW infringement notice issued requiring the defect to be cleared within 2 weeks. The workshop in Queensland that was conducting the overhaul was not able to clear an infringement issued in NSW. The vehicle owner had to postpone the overhaul and clear the defect with an NSW authorised repairer. This had a monetary cost of approximately 2-man days plus vehicle costs, incurred in clearing a defect with respect to jurisdictional requirements before it could

> commence its overhaul and highlights the need for cross border recognition and consistency in application. (Gas Energy Australia, sub. 5, p. 3)

Drivers consulted by the Commission referred to relatively small differences in State and Territory rules that could result in significant fines. Differences in load restrictions between South Australia and New South Wales and width restrictions between Queensland and New South Wales are two examples.

The boundaries between NHVR jurisdictions and Western Australia and the Northern Territory are also potential sources of compliance cost. In the case of the Northern Territory, heavy vehicles can travel relatively freely into the Territory without additional costs (chapter 4). Travel into Western Australia requires additional permits and compliance with the Western Australian regime, adding to costs. The reverse applies to Western Australian vehicles seeking to operate in the NHVR States. Mutual recognition arrangements, discussed in chapter 4, would reduce these costs.

The Chain of Responsibility reforms appear to be leading to a much stronger industry-wide focus on safety systems. However, compliance costs can be high, as each company develops its own compliance requirements. Sub-contractors can face differing arrangements to satisfy each client's needs. This is particularly so with new legislation before case law clarifies interpretations.

There may be scope for greater engagement with transport operators to set industry standards. In the rail industry, the Rail Industry Safety and Standards Board operates as a co-regulatory group to coordinate the development of standards, codes of practice, guidelines and rules. These documents do not have legal effect and do not bind the regulator. However, they can help set common industry practice. This model may be useful for the NHVR and the industry to consider.

DRAFT FINDING 6.8

The Chain of Responsibility reforms appear to be resulting in greater focus at all parts of the supply chain on compliance systems. However, the proliferation of in-house systems may raise the compliance burden for transport contractors. Industry could play a stronger role in determining common standards for the heavy vehicle industry. In the rail industry this role is undertaken by the Rail Industry Safety and Standards Board.

Rail issues

ONRSR appears to have managed the shift to a national system well. In the rail system, with a small number of relatively sophisticated operators, a co-regulatory and risk-based approach has meant smooth adoption of the new framework.

Ongoing delivery through State and Territory agencies under service agreements does not appear to have prevented the creation of a consistent approach. Establishment of common management structures (even where service level agreements are in place) is widely regarded as having worked well and transfers of staff and responsibilities to the regulator are almost complete.

Submissions to the inquiry reveal different views of the impact of the reforms on compliance costs:

> From discussion with members and industry, SAFC understands that the regulatory burden for the rail industry has fallen considerably. A single accreditation with a single audit for multi-jurisdiction operations is a major reduction in regulatory burden and cost. (South Australian Freight Council, sub. 6, p. 7)

> Arc's regulatory and compliance costs have increased since the introduction of ONRSR. … regulatory costs increased by approximately 21% in the 2017–2018 financial year as compared to the 2015–2016 financial year. (Arc Infrastructure, sub. 17, p. 8)

The Commission has been provided with results from a stakeholder survey conducted by ONRSR in early 2019 (ONRSR, unpublished). The survey results are mostly positive about the outcomes from a national approach. Against most measures ONRSR is rated as effective or very effective by over three quarters of respondents.

ONRSR was rated well against the objectives of the national reforms. These were defined as improving rail safety, decreasing the regulatory burden on industry, providing seamless national safety regulation and enforcing regulatory compliance. Respondents were asked to rate ONRSR on a scale of 1 to 10. Respondents rated ONRSR at slightly over 6 for regulatory burden — average ratings were above 7 for all other measures. This difference suggests that reducing regulatory burden should receive more attention.

Many of the issues raised in the survey and in submissions are outside the scope of ONRSR. These technical and rail access issues are covered in chapter 10.

Maritime issues

The key compliance issues for AMSA and the maritime sector lie in the broad scope of AMSA's responsibilities and the complexity of the Marine Safety National Law (MSNL). As with the NHVR, AMSA regulates operators ranging from large multinationals to small operators. The scope of the regulations has stretched the capacity of AMSA to deal with the estimated 27 000 domestic commercial vessels under the new law. Consultations carried out by the Commission suggested there are still significant variations in the way the law is administered in each State and even in different parts of the same State.

The MSNL is based on the National Standards for Commercial Vessels agreed by the States and Territories. Before the MSNL, some States and Territories applied more demanding standards. It is claimed that the introduction of the new arrangements saw compliance

activity fall in these jurisdictions (Maritime Union of Australia, sub. 37, p. 12). States like Tasmania have seen a reduction in the stringency of regulatory requirements, potentially reducing regulatory burden but also possibly raising safety concerns.

> In relation to maritime safety, the implementation of the MSNL has resulted in changes to nationally agreed standards and the regulatory oversight of certain vessels. While these changes may be reflective of the approach to safety that was undertaken in some jurisdictions prior to implementation of the MSNL, it is considered to be a reduction from the approach that was taken in Tasmania. (Tasmanian Government, sub. 41, p. 8)

Submissions suggest the documentary processes adopted by AMSA are complex and would benefit from simplification, for small boat operators in particular (Maritime Industry Australia Limited, sub. 14, p. 3).

The NTC process to rewrite the HVNL could be a useful model for reassessing the maritime laws. In any significant rewrite of the law it would also be worth considering the boundaries of AMSA's responsibilities. This issue is discussed further in chapter 7.

6.5 Administrative costs

The COAG reforms consolidated activities previously undertaken by the States and Territories, offering the potential for economies of scale, and a decrease in administrative costs (that is, costs incurred by regulators and governments in administering and enforcing the regulatory arrangements). This section mainly examines spending by the regulators. Costs are also incurred by other bodies in enforcing and managing the regulations (such as by road managers in delivering permit approvals under the HVNL or the police in enforcing all three regimes) but there is no information on costs incurred by these bodies in relation to the national laws.

Table 6.3 presents estimates of administrative costs for heavy vehicles, rail and domestic commercial vessels, before and after the commencement of the national systems. A decrease in cost alone is not necessarily a desirable outcome and numerous factors affecting administrative cost are to be considered.

Table 6.3 **Spending by regulators**[a]

Nominal expenditure

	Total expenses (pre-national systems)	*Total expenses by national regulator*	*Total expenses by national regulators*
	$m	*2014-15 $m*	*2017-18 $m*
Heavy vehicles	218.0[b] (2007-08)	123.5	149.2
Rail	29.0 (2008-09)	30.1	36.7[c]
Domestic commercial vessels	22.1 (2008-09)	**na**[d]	**na**[d]

na Not available. [a] Pre-national system estimates are taken from regulatory impact statements. 2014-15 and 2017-18 estimates are taken from national regulator annual reports. Care should be taken in comparing the above expenditure estimates over time and between modes, due to inconsistency of data. [b] Expenditure estimates include the costs of registration services, transport of dangerous goods, licencing and WA and the NT heavy vehicle regulatory activities. This in part explains the significant difference in expenditure for heavy vehicles between 2007-08, 2014-15 and 2017-18. [c] WA transitioned in 2015, and New South Wales and Queensland in 2017. Western Australia and Queensland have received service level agreement payments from ONRSR. [d] AMSA does not publish separate expenditure for the regulation of domestic commercial vessels.

Sources: DITRDLG (2009); NAMSRS (2009); NHVR (2015, 2018a); NTC (2011b); ONRSR (2015, 2018).

To determine whether costs have fallen, consistent and detailed data for the periods before and after the commencement of the national systems are needed. Due to data limitations and the complexity of the various systems however, it is difficult to determine whether cost savings have been realised.

Given the transfer of staff and responsibilities is still occurring, and states and territories continue to incur administrative costs, it is unlikely that significant savings resulting from economies of scale have been realised, especially for heavy vehicles and domestic commercial vessels.

Service level agreements with states and territories still account for a significant proportion of the expenses for NHVR, AMSA and ONRSR. Some state regulators incur costs exceeding payments by the national regulators, and Commonwealth payments, and associated industry fees. Since 2014, local governments have incurred the additional costs of processing heavy vehicle access applications and establishing rail-road interface agreements.

The issue of cross subsidies within regulators has been raised in submissions to the inquiry. For example the Maritime Industry of Australia submission points to Audit Office conclusions that AMSA is over-recovering costs for some activities and under-recovering others (MIAL, sub. 14, p. 3). Regulators should ensure that these cross subsidies are removed wherever practicable.

The issue of the different levels of subsidy between transport modes has also been raised due to potential effects on competitive neutrality, particularly with respect to road and rail. This

issue is complicated by the different starting points for the reform processes. At the start of the process, States and Territories had different levels of cost recovery — as consistent arrangements have been put in place there have been very different rates of cost increase to operators in different jurisdictions. This has left some rail operators in particular pointing to large cost increases for them since ONRSR was established. These issues are discussed in chapter 10 with respect to cost recovery principles and competitive neutrality.

6.6 Summary assessment

Implementing three national laws and three new national regulators was more challenging than anticipated. The national laws are complex, with significant differences between states and territories. The regulators themselves are only now approaching maturity, having taken on staff and responsibilities from the States and Territories.

This slow transition to national regulation has limited, so far, the productivity benefits of the COAG reforms. At the same time, the Commission believes that the original estimates of productivity gains were far too optimistic and will not be achieved.

The complexity of the approvals processes put in place for restricted access heavy vehicles has also meant that many of the productivity gains expected in this area are still to be achieved.

Nevertheless, the new arrangements are solid foundations for further progress towards effective regulation in these three critical areas.

Overall, the complex nature of a national harmonisation agenda can lead to an optimism bias that tends to overstate the benefits and understate the costs and difficulties of the transition to the new system. While the Commission consider that, overall, the reforms have been worthwhile, there are lessons to be learned for future reforms of this nature in allowing sufficient time for arrangements to be bedded down and to be cautious in estimating net benefits.

7 Assessing the national regulators

Key points

- The Council of Australian Governments (COAG) set out objectives for national transport regulation in the intergovernmental agreements (IGAs) signed in 2011. The objectives include national consistency, effective safety regulation and efficient administration.
- The National Heavy Vehicle Regulator (NHVR) is responsible for applying the Heavy Vehicle National Law (HVNL).
  - The HVNL is highly detailed and prescriptive. Excessive prescription is a barrier to achieving effective national regulation and can be inimical to good safety outcomes.
  - The National Transport Commission is reviewing the HVNL. The review is an opportunity to support more flexible, performance-based regulation.
- The Office of the National Rail Safety Regulator (ONRSR) is responsible for applying the Rail Safety National Law (RSNL).
  - The RSNL empowers the regulator to take a flexible, co-regulatory approach to regulation.
  - Of the three national regulators, ONRSR has made the most progress toward achieving the COAG IGA objectives.
- The Australian Maritime Safety Authority (AMSA) is responsible for applying the Marine Safety National Law (MSNL).
  - Before the MSNL was introduced in 2013, AMSA was responsible for safety regulation of international shipping (about 4500 vessels per year) and registered Australian vessels. AMSA is now responsible for regulating about 27 000 vessels ranging from hire kayaks and tinnies to trawlers and container ships.
  - The breadth of AMSA's responsibilities and the grandfathering provisions used to ease the transition to national regulation are impediments to AMSA achieving the COAG IGA objectives.
  - AMSA has not yet achieved an adequate level of service delivery or stakeholder engagement.

7.1 Introduction

This chapter sets out the Commission's assessment of the three national transport regulators — the National Heavy Vehicle Regulator (NHVR), the Office of the National Rail Safety

Regulator (ONRSR) and the Australian Maritime Safety Authority (AMSA). In the inquiry terms of reference the Australian Government asked the Commission to examine:

> … the implementation and development of the three national regulators (heavy vehicle, rail safety, and maritime safety), and the delivery against agreed objectives as set out in the IGAs and COAG priorities for transport.

The Commission has examined whether the regulators have delivered against the objectives in the intergovernmental agreements (IGAs) (box 7.1). It has considered the:

- policy frameworks that influence the regulators' ability to achieve the IGA objectives
- regulators' behaviour
- regulators' performance during and after the transition to the national regulatory regime.

Box 7.1 COAG's reform objectives for transport

The Australian, State and Territory governments committed to objectives for national transport reforms in three intergovernmental agreements (IGAs) signed in 2011. The objectives in the **heavy vehicles** IGA were:

- seamless national regulation of heavy vehicles that achieves the same outcome in the same circumstances
- consistent and streamlined administration and service provision for the regulation of heavy vehicles (COAG 2011b, p. 5).

The objectives in the **rail safety** IGA were:

- improved rail safety for the Australian community
- seamless national safety regulation of rail operations (COAG 2011c, p. 4).

The objectives in the **commercial vessel safety** IGA were 'safe commercial vessel operation and its effective, consistent and efficient regulation' (COAG 2011a, p. 5).

Assessing the policy frameworks

The national transport regulators operate within frameworks of legislation, regulation and funding agreed by the Australian, State and Territory governments. These frameworks influence the regulators' ability to meet the overarching objectives set in the IGAs. Regulators are more likely to be effective when they have clear roles and responsibilities, the power to carry out their functions, adequate resources and appropriate governance arrangements (box 7.2).

Box 7.2 **Criteria for assessing policy frameworks**

Roles and responsibilities — The roles and responsibilities of a regulator and related parties need to be clearly specified and consistent with the intended regulatory outcomes.

Capability — Regulatory bodies need adequate finances, suitably skilled staff and information.

Powers — Regulators need clear compliance and enforcement powers appropriate to their task.

Governance — Boards of regulators need an appropriate level and mix of skills and sound processes for managing conflicts of interest and for performance assessment.

Sources: ANAO (2014a, 2014b); OECD (2014); PC (2018).

Assessing regulator behaviour

Policy frameworks establish the boundaries for regulators' operations. Regulators' behaviour — the choices they make and the priorities they pursue — determine whether they achieve desired outcomes, subject to the constraints of the policy framework. As the Commission noted in its report *Regulator Engagement with Small Business*, regulator behaviour is critical.

> Regulators, by their conduct in interpreting, administering and enforcing regulatory requirements, can take considered, well designed regulation and produce regimes which discourage compliance, squander government resources or add to business costs and delays. Alternatively, a regulator might take an unwieldy accumulation of regulation and, by choosing judiciously what, when and how to enforce, deliver the desired regulatory outcomes in an efficient manner. (PC 2013, p. 3)

The Commission has gathered evidence on aspects of regulator behaviour that it considers particularly relevant to the objectives of the national transport regulation reforms (box 7.3).

A note on evidence

The Commission consulted with numerous parties in the process of preparing this draft report (appendix A). Many participants commented on the effectiveness of regulators, the capability of the executive and staff of the regulators and their engagement with the industry. Some of these comments were made in submissions or other written evidence; others were made in off-the-record meetings with the Commission. The Commission has given a greater weight to evidence that is publicly-available, but has also considered other evidence.

Interested parties are invited to make submissions to the inquiry addressing the matters in this chapter.

Box 7.3 Criteria for assessing regulator effectiveness

A regulator's fundamental task is to contribute to the achievement of intended **regulatory outcomes** as efficiently and effectively as possible. Effective management of risks is integral to this task. Further, as public institutions, it should be expected that regulators will demonstrate a high quality of service delivery. A number of factors contribute to meeting these ends.

Risk-based regulatory approach — Focusing greater regulatory effort on higher risk entities means that resources are directed where they can best contribute to achieving regulatory goals. Further, compliance costs are minimised through smaller imposts on lower-risk entities.

Strategic use of powers — Adopting the most appropriate power to deal with any identified issue — and applying powers consistently — can reduce administrative and compliance costs. Further, use of strategic actions for more serious breaches can signal the potential costs of non-compliance to regulated entities and communicate that the regulator is active — resulting in a deterrence effect.

Quality service delivery — Regulatory, compliance, enforcement and business services are delivered in a professional, streamlined, consistent and efficient manner.

Stakeholder engagement — Effective stakeholder engagement ensures that regulated entities clearly understand their compliance obligations. It also provides regulators with insights into the behaviour of those entities (contributing to focusing of regulatory effort) and into the effectiveness of regulatory activity.

Transparency and accountability — Regulators, as public institutions, are accountable to governments, to regulated entities and to the public. A regulator's staff and those of any agencies delegated to deliver services on a regulator's behalf make many decisions in the course of their work. Those decisions should be consistent, lawful and unbiased. Accountability is supported by transparency around that decision making.

Performance management — Monitoring, evaluating and reporting about performance enables a regulator to check, and to demonstrate to others, that it is achieving the desired regulatory outcomes — with quality of service delivery.

Collaboration — Collaboration amongst government institutions helps avoid duplication and inefficiencies. Effective collaboration depends, among other things, on a commitment by all parties to shared goals, cooperative working arrangements and effective communication between parties about shared programs and functions.

7.2 The National Heavy Vehicle Regulator

Nationally consistent heavy vehicle regulation is a work in progress. Inquiry participants, such as the Victorian Transport Association, agreed that the NHVR has not yet reached full maturity.

> The effective [implementation] of the NHVR has not been fully achieved to date. … This is clearly witnessed in the derogations of the HVNL [Heavy Vehicle National Law] by the state governments. This significantly impacts upon the current effectiveness of the NHVR. (sub. 23, p. 8)

The following sections identify some of the reasons for the slow achievement of the IGA objectives and propose actions that governments and the NHVR could take to accelerate progress towards these goals.

The policy framework

The NHVR commenced operation in January 2013 as the single national independent agency applying the Heavy Vehicle National Law (HVNL). The NHVR was not established, nor did it reach operational capacity, in line with the agreed timelines (chapter 4). Key steps in implementing the policy framework were delayed, including passage of the national legislation and state and territory referring legislation.

The Commission regards the slippage against the original COAG timelines as a lesson, rather than a failure. With the benefit of hindsight, it is clear that the timetable for reform was too ambitious. Harmonising regulation across jurisdictions can be a drawn out process requiring negotiations between governments. Timelines agreed at the start of the process may be unrealistic in practice. A carefully calibrated incremental reform process informed by trials and pilots is likely to be most effective.

Roles and responsibilities

The NHVR was established by section 656 of the HVNL. Its roles and responsibilities are codified in the HVNL (box 7.4) and reflect the IGA objectives — promoting safety and productivity and managing the environmental and amenity impacts of road transport.

Governments have given the NHVR a broad and challenging set of responsibilities. The regulatory framework established by the HVNL tasks the regulator with data collection, standard setting, enforcement, issuing permits for road access and accreditation of alternative approaches to regulatory compliance. The legislation and regulation prescribe requirements in matters including mass limits, vehicle loading and fatigue management.

Governments chose to include highly detailed requirements in the HVNL. For example, the section of the legislation dealing with vehicle mass, dimensions and loading covers 83 pages; the section on driver fatigue extends to 120 pages. Some inquiry participants were critical of the level of detail in the legislation. The National Road Transport Association (sub. 7, p. 4) stated:

> The HVNL is a poor piece of legislation. In particular the HVNL is different in scale and style from comparable laws. The HVNL is unduly large and highly prescriptive, with a lot of detail in the primary legislation.

The NHVR must apply the detailed requirements set out in the HVNL. The level of prescription in the legislation is an impediment to the NHVR taking a more outcomes-based

approach to its functions and constrains the regulator's engagement with stakeholders. The Australian Local Government Association stated:

> The HVNL comprises more than 800 sections and is supported by five sets of regulations. Together these provisions can be inconsistent in approach, difficult to read and interpret, onerous for industry to comply with and difficult for the National Heavy Vehicle Regulator (NHVR) to administer. (sub. 34, p. 10)

Box 7.4 Object of the Heavy Vehicle National Law and regulatory framework

Section 3 of the *Heavy Vehicle National Law Act (Queensland)* 2012 (the HVNL) establishes the object of the Law.

> 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 practices.

Section 4 of the HVNL sets out the regulatory framework to achieve the object of the Law.

> The object of this Law is to be achieved by a regulatory framework that —
>
> (a) establishes an entity (the National Heavy Vehicle Regulator) with functions directed at ensuring the object is achieved; and
>
> (b) provides for a database of heavy vehicles; and
>
> (c) prescribes requirements about the following —
>
> (i) the standards heavy vehicles must meet when on roads;
>
> (ii) the maximum permissible mass and dimensions of heavy vehicles used on roads;
>
> (iii) securing and restraining loads on heavy vehicles used on roads;
>
> (iv) preventing drivers of heavy vehicles exceeding speed limits;
>
> (v) preventing drivers of heavy vehicles from driving while fatigued; and
>
> (d) imposes duties and obligations directed at ensuring heavy vehicles and drivers of heavy vehicles comply with requirements mentioned in paragraph (c)(i) to (v) on persons whose activities may influence whether the vehicles or drivers comply with the requirements; and
>
> (e) includes measures directed at the matters mentioned in section 3(c) and (d) by allowing improved access to roads in certain circumstances, including by —
>
> (i) allowing heavy vehicles, that would otherwise be prevented from being used on roads, access to the roads through exemptions or authorisations granted in circumstances in which the matters mentioned in section 3(a) and (b) will not be compromised; and
>
> (ii) providing for accreditation schemes allowing operators of heavy vehicles who adopt best practices directed at the matters mentioned in section 3 to be subject to alternative requirements more suited to the operators' business operations.

The Commission considers that the excessive prescription in the HVNL has frustrated achieving the IGA objectives of seamless national regulation and consistent and streamlined administration and service provision. The governments of Western Australia and the

Northern Territory have opted to remain outside of the HVNL at least partly because of the prescription in the legislation.

The NHVR would be better able to achieve the objective of seamless national regulation and streamlined administration if the legislation and supporting regulations allowed more flexibility. The National Transport Commission is reviewing the HVNL and has identified many problems, including that 'the prescription and complexity of the HVNL presents challenges for governments and regulators administering the law' (NTC 2019, p. 39). The Commission agrees, and urges the Australian, State and Territory governments to reform the HVNL to reduce the level of prescription in the legislation.

DRAFT FINDING 7.1

The prescriptive approach of the Heavy Vehicle National Law impedes the National Heavy Vehicle Regulator from administering the law consistently with the Council of Australian Governments' objectives. A more outcomes-based approach to legislation and regulation would improve road safety, reduce the burden of compliance and administration, and increase the efficiency of road transport.

The National Transport Commission, which is reviewing the Heavy Vehicle National Law, is well placed to recommend improvements.

DRAFT RECOMMENDATION 7.1

The Australian Government should lead efforts through the Transport and Infrastructure Council to reform the Heavy Vehicle National Law. It should encourage State and Territory governments to remove prescriptive material from the legislation and to include an explicit mandate for the National Heavy Vehicle Regulator to take a risk-based approach to its functions.

Powers

The NHVR does not yet have the full suite of powers to carry out all of its functions. The largest states have not yet transferred all regulatory services to the NHVR, so it cannot deliver against the IGA objectives in those jurisdictions.

The South Australian Government transferred all regulatory services for heavy vehicles to the NHVR in October 2017. Tasmania followed in July 2018 and the ACT in July 2019. New South Wales, Victoria and Queensland are scheduled to transfer their services to the NHVR by 2020-21 (NHVR 2019b). Western Australia and the Northern Territory have chosen to not implement the national regulation.

The evidence suggests that the decisions by the WA and NT Governments to eschew the national law have not led to adverse safety outcomes (chapter 5). Those governments have stated that they have taken on board many of the better aspects of the reforms and avoided some of the pitfalls.

The staggered transfer of responsibilities to the NHVR is sensible. The experience with restricted access vehicle permits shows that there are risks in transferring national regulatory responsibilities from all participating jurisdictions at once to a new national regulator. Nevertheless, the drawn-out process for transferring functions to the national regulator has delayed the achievement of national regulation and lower compliance burdens for operators working across state and territory borders (chapters 4 and 6).

Some inquiry participants stated that the slow transfer of powers to the NHVR has led to inconsistency and diminished trust.

> NatRoad members are very concerned that enforcement of the HVNL is not consistent and is in the hands of too many agencies. The NHVR at present has a limited role in enforcement (Tasmania, South Australia and the ACT have vested their enforcement responsibilities in the NHVR) with State agencies and the Police having a greater role. NatRoad would like to see fundamental enforcement reform, as outlined in the submission to the NTC [National Transport Commission]. That reform would vest more responsibility in the NHVR and enable greater levels of justice in the application of the law through a tribunal system and greater and more consistent levels of education amongst operatives. This is an area where role clarity is poor and the trust and confidence that is required in the enforcement of the HVNL and related laws is low. (NatRoad, sub. 7, p. 13)

The Australian Logistics Council (sub. 12, p. 5) agreed that 'work needs to be done to … [f]inalise the transfer of enforcement officers from jurisdictional regulators to the NHVR'. The Commission agrees that transferring enforcement powers and resources to the NHVR is an essential step in achieving the IGA objectives.

Governments are working to resolve differences and transfer responsibilities

The Transport and Infrastructure Council has considered the issue of how to manage the transfer of regulatory services to the NHVR.

> As part of ensuring improved safety, reducing regulatory red tape and keeping costs to a minimum, Ministers also agreed to undertake an independent assurance review to assess options for how regulatory services are delivered. The review will report at Council's first meeting in 2019. (TIC 2019, p. 3)

The Commission has examined a confidential draft of the assurance review that the Independent Review Panel provided to the Transport and Infrastructure Council. The review panel has made many observations about the transition of regulatory services to the NHVR, and the concerns held by State and Territory governments. It has recommended changes to the governance of relations between the NHVR and State and Territory governments; the

strategic direction of the NHVR; the NHVR's capabilities and issues relating to the transition of responsibilities to the NHVR.

The Transport and Infrastructure Council endorsed some of the recommendations of the report at its meeting in August 2019.

> In response to the National Heavy Vehicle Regulator (NHVR) Services Transition Assurance Review, Council reaffirmed its ongoing commitment to the NHVR and its national mandate and tasked officials to ensure closer alignment between jurisdictions and the NHVR on regulatory approaches, including through the establishment of a working group with an independent chair under the direction of the Transport and Infrastructure Senior Officials Committee. (TIC 2019, p. 4)

The Commission considers that the most efficient and effective approach to enforcing heavy vehicle regulations will be for the NHVR to have primary responsibility. The Transport and Infrastructure Council should continue to work towards the transition of enforcement functions to the NHVR. State and Territory government agencies will retain responsibility for aspects of heavy vehicle enforcement, including police and workplace health and safety agencies. The NHVR should work with such agencies to ensure that the regulatory burden on heavy vehicle operators is commensurate with the risks of their operations.

DRAFT RECOMMENDATION 7.2

The Transport and Infrastructure Council should agree to have all regulatory functions still held by participating jurisdictions transferred to the National Heavy Vehicle Regulator no later than 1 January 2022.

Capability

When it was established, the NHVR did not have adequate staff, systems or information to carry out all of its roles and responsibilities. Over time, the regulator has built its capability, although the work is still in progress. In general, the Commission considers that the NHVR has taken a strategic approach to developing its capability, subject to the constraints arising from the transfer of functions from State and Territory governments.

A false start — permits for restricted access vehicles

'Restricted access vehicles' — such as very large trucks, buses and agricultural machinery — require permits to use sections of the public road network. Before the HVNL commenced, local, State and Territory government authorities granted permits for restricted access vehicles. COAG was advised that facilitating increased access to local roads by restricted access vehicles would deliver large productivity gains (chapter 6) and it incorporated changes to the permit process into the HVNL.

On 10 February 2013, the NHVR took over responsibility for granting permits. Almost immediately it became apparent that the NHVR did not have the capability to carry out the function. The NHVR was swamped by permit applications and its permit processing collapsed. Four days later participating State and Territory governments requested the NHVR to delegate responsibility for processing certain applications (particularly intra-state) to the relevant State and Territory authorities (except Tasmania). The functions were returned to State and Territory governments until the NHVR could build an IT system capable of managing the workload. During the handback period (2014–15), State and Territory governments issued about 90 per cent of total permits.

Following the failed implementation of permit processing, the NHVR conducted a review and put in place initiatives to remedy the situation. The NHVR has resumed processing for all participating states and territories through a purpose-built IT system. The NHVR is also having some success bringing the numbers of applications down by working with local governments to allow notifications allowing as-of-right access and pre-approvals.

With hindsight it is clear that the participating governments underestimated the time and resources needed to plan and deliver the new arrangements. The agencies responsible for implementing the system should have foreseen the potential scale of the task and the risks from a 'big bang' approach to implementation. Alternatives, such as a pilot in a single jurisdiction or a staggered transfer of responsibilities from jurisdictions, might have avoided the debacle. The Australian, State and Territory governments should learn from this example when considering national reforms in transport or other sectors.

Recent improvements in data and analytical capability

Intelligence — the combination of information and analysis — is an essential part of any regulator's capability. Intelligence can assist in identifying higher risk entities, targeting regulatory resources, engaging with regulated entities and monitoring the impacts of regulation.

In the early years of its operations, the NHVR did not have the intelligence capabilities required to fulfil all of its functions. On its establishment the NHVR faced legacy issues — State and Territory governments had not collected information in a consistent manner, so the NHVR did not have a nationally-consistent database to draw on. The lack of information and analysis was (and remains) an impediment to the NHVR taking a risk-based approach to compliance and enforcement and complicates the task of assessing whether the national reforms have led to beneficial outcomes in safety and productivity (chapters 5 and 6).

The NHVR has made inroads into better information gathering and analysis in the past two years. In 2017-18 the NHVR completed its 'Intelligence Capability Framework' explaining its approach to gathering, managing and analysing information (NHVR 2018). The Commission regards this framework as a positive step that will facilitate increased adoption of risk-based regulatory practices and policy development.

The NHVR could improve its data collection, analysis and publication about safety risks and outcomes. The Commission considers the ONRSR annual *Rail Safety Report* to be the benchmark in this area. The report presents data on the number of railway-related fatalities and serious injuries, as well as derailments and incidents that the regulator regards as 'important precursors to collisions and derailments' (ONRSR 2018d, p. 21). Similar information for heavy vehicles would be a useful input into a more risk-based approach to regulation.

DRAFT RECOMMENDATION 7.3

The Transport and Infrastructure Council should direct the National Heavy Vehicle Regulator to undertake the comprehensive collection and reporting of key safety risks and outcomes, similar to the Office of the National Rail Safety Regulator's annual *Rail Safety Report*.

The NHVR has adequate financial resources

The NHVR's revenue sources are adequate to fund its current operations. It had a surplus of about 30 per cent of retained earnings in the 2017-18 financial year. The NHVR is primarily funded by registration charges of heavy vehicles in participating jurisdictions. In 2018, around 90 per cent of NHVR funding was attributed to 'regulatory income' paid by State and Territory agencies. The Australian, State and Territory governments also provide 'unconditional government contributions', which accounted for around 5.6 per cent of NHVR funding in 2018. Revenue from fees accounts for about 3 per cent of funding (NHVR 2018).

The NHVR has argued that uncertainty about the costs of transitioning New South Wales and Queensland, along with its reliance on an income stream that fluctuates with economic activity, warrants healthy retained earnings. The Commission considers that, if the NHVR continues to retain substantial surplus earnings, it should explore options to reduce the cost of compliance to industry through reducing fees and charges.

Governance

The NHVR reports to responsible Ministers from participating governments, and is overseen by a board (box 7.5). The Board structure established through the HVNL is consistent with good corporate governance practices. Some inquiry participants observed that some board members have links to industry that could create perceptions of conflicts of interest. The Commission considers that having board members with industry experience is beneficial, although excessive representation from any sector could reduce the effectiveness of board decision making.

Box 7.5 Governance of the National Heavy Vehicle Regulator

The National Heavy Vehicle Regulator (NHVR) reports directly to 'responsible Ministers' who are appointed by each participating state and territory, plus the Commonwealth responsible Minister. The NHVR Board, established under section 662 of the Heavy Vehicle National Law, comprises 5 members appointed by the Queensland Minister on the unanimous recommendation of the responsible Ministers. The Board is responsible for deciding NHVR policies (subject to directions from responsible Ministers), and ensuring that the NHVR exercises its functions in a proper, effective and efficient way (NHVR 2019c).

Section 663 of the *Act specifies that t*he NHVR Board must consist of:

- at least 1 member who has expertise in transportation policy; and
- at least 1 other member who has expertise in economics, law, accounting, social policy or education and training; and
- at least 1 other member who has experience in managing risks to public safety arising from the use of vehicles on roads; and
- at least 1 other member who has financial management skills, business skills, administrative expertise or other skills or experience the responsible Ministers believe is appropriate.

In addition:

Of the members of the Board, one is to be appointed by the Queensland Minister, on the unanimous recommendation of the responsible Ministers, as the Chairperson of the Board and another as the Deputy Chairperson.

The Australian Trucking Association has proposed an alternative approach to heavy vehicle regulation that includes a simplified HVNL, more flexible options for compliance and more risk-based enforcement. It stated:

> The legislative model we are proposing would increase the workload and discretion of the regulator. This increase in the regulator's authority would need to be matched by corresponding improvements in its corporate governance, oversight and accountability. (ATA, sub. 32, p. 14)

The Association stated that under its proposed model it would be appropriate to:

- increase the size of the board from five to nine, and
- require that at least two of those members have recent experience operating a truck or bus business, either as a director or as an employee. (ATA, sub. 32, p. 15)

The constitution of the NHVR board is a matter for the NTC to consider in its review of the HVNL. Increasing board resources might be appropriate if legislative changes lead to a significantly increased workload. On the other hand, a larger board might prove unwieldy. The prudent approach would be to provide for discretion over the size of the board, such as requiring that it comprise between 5 and 9 members, depending on medium-term operational requirements.

Regulator behaviour

Despite the constraints the NHVR faces, inquiry participants were generally positive about its behaviour. For example, the Australian Logistics Council (sub. 12, p. 5) stated that it 'believes that the NHVR is generally operating satisfactorily'.

Flexible approaches to regulation

The NHVR faces impediments to implementing flexible approaches to regulation, including the level of detail in the legislation and its access to information. To date, the NHVR has not had the data needed to target regulatory effort in line with risk. The regulator has improved its data collection and analytical capabilities, although the Commission considers that there is significant scope for improvements to data that would be beneficial for safety and productivity (chapters 9 and 10).

Another impediment to flexible approaches to heavy vehicle regulation is that many smaller operators do not have the resources to take a risk-management approach — for them, black-letter law is the simplest way to achieve compliance.

For more sophisticated operators who want to use performance-based approaches, the HVNL does permit some flexibility through accreditation schemes. The NHVR is responsible for accreditation schemes that give drivers access to flexible options including concessional mass limits, higher mass limits and performance-based standards (PBS) for heavy vehicles.

The Commission has received little feedback on the NHVR's performance in its accreditation role. Data in the NHVR *Annual Report* (NHVR 2018) show that the number of accredited operators and PBS vehicles is increasing. Irrespective of any future changes to the HVNL, these schemes provide a mechanism for a more risk-based approach to regulation. The NHVR should ensure that it allocates adequate resources to accreditation and pursues efficiencies in vehicle certification to reduce the costs of using these approaches.

Service delivery and stakeholder engagement

The NHVR has regulatory relationships with about 40 000 road freight businesses, operating about 900 000 vehicles (NHVR 2019a). Managing relationships with so many operators and drivers is a daunting task. NatRoad commented on the number of industry bodies that the NHVR must deal with.

> As to accountability, the NHVR's consultative mechanisms suffer because the industry has too many representative bodies which often do not promote consistent policies. That is not generally the fault of the NHVR, but it means that representation on its consultative bodies and the processes it uses for consultation often do not cut through to industry members. (NatRoad, sub. 7, p. 14)

Transport industry bodies, transport users and governments have made positive comments about the NHVR's engagement with stakeholders (box 7.6).

Box 7.6 Participants' comments on the National Heavy Vehicle Regulatory stakeholder engagement

The Australian Local Government Association (ALGA) stated that engagement with local government had improved since the failed transfer of vehicle access permit responsibilities to the National Heavy Vehicle Regulatory (NHVR) in 2014.

> Since that difficult time, slowly but steadily the NHVR management has improved its processes and improved cooperation with ALGA and the local government sector generally. For example, increasingly, Heavy Vehicle Local Council Access forum are being held. These joint NHVR/local council access forums continue to improve access and understanding. (Australian Local Government Association, sub. 34, p. 11)

NatRoad stated that the NHVR has engaged successfully with the industry on some issues.

> The forums that it organised for explaining to industry the new COR [chain of responsibility] laws was, however, a very useful and successful means of communication and NatRoad supports this method of direct engagement with the industry. (NatRoad, sub. 7, p. 14)

The National Farmers' Federation stated that it had worked closely with the NHVR on some matters.

> We worked closely with the National Heavy Vehicle Regulatory (NHVR) and relevant jurisdictions in the drafting of a National Class 1 Agricultural Vehicle and Combination Notice. We also worked with NHVR on increasing awareness of changes to Chain of Responsibility requirements. (NFF, sub. 36, p. 2)

Engagement with drivers

Much of the NHVR's engagement with drivers is in the context of compliance and enforcement. Inquiry participants were generally positive about the NHVR's engagement with drivers, particularly in comparison to their experiences with police. The South Australian Freight Council stated that NHVR officers are better trained than general duties police on heavy vehicle laws and are more likely to take a flexible, outcomes-based approach to enforcement.

> NHVR and specialist heavy vehicle branch police officers are trained to a high standard, and have the inbuilt experience benefit of operating with the law every day. General duties police officers do not — while they may have had some training, they are not specialists and road interceptions of heavy vehicles likely constitute only a small portion of their work duties. Reports from industry members indicate that these officers are more likely to charge for technical (non-safety related) breaches, and may interpret the law incorrectly. (sub. 6, p. 6)

Truck drivers who participated in the 'truck stop' days in regional Australia generally agreed that their experiences with NHVR officers were more positive than their engagement with police. The drivers stated that NHVR officers tended to be more efficient than police in carrying out inspections, which reduced delays. They also stated that NHVR officers generally took a more 'educational' approach, whereas many state and territory police officers focused on compliance and enforcement.

Strategic use of powers — road access for restricted access vehicles

The NHVR has taken steps to increase the number of routes pre-approved or gazetted for access by restricted access vehicles. Gazetted heavy vehicle routes increased from 343 routes to 415 routes during 2017-18. The number of pre-approved routes (where road managers have agreed that a permit application can be automatically approved) rose by 21 per cent to 2025 routes (NHVR 2018).

Inquiry participants commented on the time taken to process permit applications. Average end-to-end permit processing time reduced by 44 per cent during 2017-18 from just under 34 days to less than 19 days, but inquiry participants complained that processing is still too slow (Victorian Transport Association, sub. 23, p. 7).

Some participants in this inquiry stated that the permit processing times are a result of the NHVR's resourcing. The NHVR has gradually increased its staffing over time and hence its capacity to carry out its functions (including permit processing). The NHVR should continue to increase its capability to process permits, with a view to reducing the total time taken.

Summing up

The transition to national regulation of heavy vehicles is not yet complete. The HVNL establishes a broad scope of operations for the NHVR and the Australian, State and Territory governments have, sensibly, chosen to stagger the development of the regulator's operations.

The NHVR operates subject to substantial constraints. In particular, the HVNL precludes the regulator from taking a genuinely risk- or outcomes-based approach to regulation across its operations. The NTC review of the HVNL presents an opportunity to improve the legislation and pave the way for more effective regulation.

In spite of the constraints that it faces, the Commission considers that the NHVR is developing in a way that will enable it to achieve the delivery of the COAG IGA objectives across the full scope of its operations within a reasonable timeframe.

7.3 The Office of the National Rail Safety Regulator

Of the three national transport regulators, ONRSR is the closest to achieving the IGA objective of seamless national regulation. Inquiry participants were generally positive about ONRSR's performance (box 7.7).

The policy framework

ONRSR commenced operations in January 2013, after the passage of the *Rail Safety National Law Act 2012* (South Australia) (RSNL). ONRSR is headquartered in Adelaide and has offices in capital cities.

From ONRSR's creation in 2013, it took five years for all states and territories to come under ONRSR's remit. South Australia, the Northern Territory and Tasmania all joined at ONRSR's inception, while New South Wales and Victoria entered into service-level agreements (SLAs) with ONRSR. Western Australia did not join until 2015 and Queensland did not join until 2017. New South Wales fully transitioned after its SLA expired in 2016 (ONRSR 2014), while the Victorian SLA is due to expire in late 2019 (Transport Safety Victoria 2018).

As at June 2018 ONRSR regulated 186 accredited operators, including above- and below-ground operators. In 2017-18, these operators undertook 136 million passenger train kilometres and 88 million freight train kilometres on 44 000 kilometres of track (ONRSR 2018d).

Box 7.7 Participants' comments on ONRSR's performance

Inquiry participants were generally positive about ONRSR's performance.

> ONRSR has demonstrated strong commitment and leadership to improving rail safety. (FORG, sub. 8, p. 5)
>
> RISSB believes the establishment of ONRSR has had a positive impact on rail safety in Australia. (RISSB, sub. 9, p. 7)
>
> Industry members are broadly satisfied with the … Office of the National Rail Safety Regulator. (ONRSR) (Australian Logistics Council, sub. 12, p. 1)
>
> Arc acknowledges that despite some difficulties during the transitional phase, ONRSR is maturing into a competent and efficient regulator, and ONRSR's focus on responsiveness and continuous improvement should be commended. (Arc Infrastructure, sub. 17, p. 4)
>
> The establishment of the ONRSR has been beneficial in introducing one national conversation on rail safety, as opposed to dealing with each State individually. (Freight and Logistics Council of Western Australia, sub. 22, p. 5)
>
> ARA members have indicated that the creation of ONRSR has led to some notable benefits. (ARA, sub. 26, p. 17)
>
> On balance, the introduction of the Rail Safety National Law (RSNL) and the establishment of the Office of the National Rail Safety Regulator (ONRSR) has yielded tangible benefits and improvements in regulatory practice. (Aurizon, sub. 30, p. 3)
>
> [T]he formation of the Office of National Rail Safety Regulation (ONRSR), and the move towards nationally consistent regulation, has reduced the regulatory burden on [ARTC's] business. (ARTC, sub. 31, p. 3)

Roles and responsibilities

ONRSR's objectives have been codified consistently across the original IGA (COAG 2011c), the RSNL and ONRSR's most recent statement of intent. These objectives include:

- to facilitate the safe operation of rail transport in Australia
- to exhibit independence, rigour and excellence in carrying out its regulatory functions
- to promote safety and safety improvement as a fundamental objective in the delivery of rail transport in Australia (ONRSR 2018e).

The COAG Regulation Impact Statement set out ONRSR's roles and functions (box 7.8).

The regulator's functions are detailed in the IGA, the RSNL, and the most recent statement of intent. The functions are not always written consistently and there is some overlap with the roles and responsibilities set in the IGA. Although inconsistency is not ideal, the inconsistencies do not appear to create any contradictory expectations about ONRSR's objectives or methods. More broadly, participants did not express any concern with how ONRSR carries out its functions.

The RSNL enables ONRSR to take a risk-based, or co-regulatory, approach to safety regulation (chapter 2). This approach to rail safety regulation pre-dates the national system — the previous Model Law and State and Territory regulators also took a co-regulatory approach. Participants strongly endorsed co-regulation (Arc Infrastructure, sub. 17, p. 4; Freight and Logistics Council of Western Australia, sub. 22, p. 5; ONRSR, sub. 21, p. 5; SAFC, sub. 6, p. 2; RISSB, sub. 9, p. 3).

Should ONRSR have a productivity objective?

Some inquiry participants suggested that, in addition to its safety functions, ONRSR should also be responsible for promoting productivity in rail transport (as the NHVR is required to do under the HVNL). Participants suggested different interpretations of a productivity objective for ONRSR. Some, including the ARA (sub. 26, p. 29), FORG (sub. 8, p. 1), SAFC (sub. 6, p. 5) and Pacific National (sub. 24, p. 5) argued a productivity remit would help ONRSR focus on opportunities to improve productivity without compromising safety, such as seeking the removal of State and Territory variations, and pursuing consistency in industry standards and network rules. Others, such as Arc Infrastructure (sub. 17, p. 10) and RISSB (sub. 9, p. 8) argued that, rather than an objective to pursue productivity gains, ONRSR should simply have an objective to ensure that it does not unnecessarily create regulatory burden that prevents innovation.

Achieving greater consistency in regulation and reducing the regulatory burden are consistent with the broader objectives codified in the IGA (box 7.1). ONRSR also identified 'decreased regulatory burden' and 'seamless national regulation' as objectives in its most recent statement of intent (2018e).

The Commission has proposed some options for increasing productivity in the sector (chapter 10). The evidence does not indicate that the lack of a productivity objective is having a material effect on rail transport productivity. Participants that supported the idea of ONRSR having a productivity objective did not provide examples of actions by the regulator that materially affected industry productivity.

Box 7.8 ONRSR's role and functions

Role

The NRSR [National Rail Safety Regulator] will:

(a) administer the national rail safety law and perform the functions and responsibilities conferred/imposed on it by that law;

(b) secure compliance with the national rail safety law through effective and appropriate compliance and enforcement measures;

(c) promote improvement of the safe carrying out of railway operations;

(d) ensure railway operators manage risks associated with their railway operations;

(e) promote public confidence in the safety of railway operations;

(f) undertake cost benefit analysis where mandatory decisions have a significant impact on industry; and

(g) consult with the ATSB [Australian Transport Safety Bureau] where appropriate and practicable to do so.

Functions

In administering the national rail safety law, the NRSR will:

(a) administer, audit and review the accreditation regime under the national rail safety law;

(b) work with rail transport operators, rail safety workers and others involved in railway operations to improve rail safety in Australia;

(c) research, collect and publish information relating to rail safety;

(d) provide, or facilitate the provision of, advice, education and training in relation to rail safety; and

(e) monitor, inspect, investigate and enforce compliance with the national rail safety law.

Source: Council of Australian Governments (2011c, pp. A1–A2).

ONRSR's relationship with RISSB

The RSNL does not prescribe how railways must operate. Rather, it sets a high level requirement for railways to operate safely and provides flexibility for industry to develop approaches to achieve this goal.

The Rail Industry Safety and Standards Board (RISSB) is funded jointly by industry and governments and is responsible for developing standards, guidelines, codes of practice, rules and procedures for the rail industry. The documents that RISSB develop and maintain are intended to 'assist the rail industry to manage rail safety, improve efficiency and achieve safety outcomes through standardisation, interoperability and harmonisation' (RISSB, sub. 9, p. 2).

ONRSR, which is responsible for interpreting and enforcing the requirements of the law 'does not specifically endorse RISSB standards, but rather recognises the value of an operator adopting [them] and any other standards including international standards in their safety management system' (ONRSR, sub. 21, p. 44).

Some inquiry participants expressed concerns about the delineation of responsibilities between RISSB and ONRSR (ARA, sub. 26, p. 29; Arc Infrastructure, sub. 17, p. 7). One issue is the potential for duplication. For example, RISSB and ONRSR have both developed voluntary guidelines for operators to assist them to comply with their fatigue risk management obligations. Duplication can lead to inconsistency and confusion. In this case, the role of developing guidelines for regulatory compliance is a better fit with the regulator than the standard setting body.

The Rail, Tram and Bus Union stated that the 'flawed relationship' between RISSB and ONRSR is the 'primary inhibiting factor' to achieving 'nationally consistent and harmonised outcomes'. It stated:

> In many cases, RISSB has developed standards which, despite receiving the ONRSR's endorsement, are effectively ignored by operators. Fundamentally, all that has been established is a national process to bring about a regime of national inconsistency. (sub. 10, p. 5)

The union stated that 'the failure to achieve national standardisation of safe working rules' (sub. 10, p. 5) is an example of this inconsistency. The Commission has noted that rail safety regulation is not completely consistent across Australia (chapter 4), but has not seen any evidence that the lack of nationally consistent safe working rules has had any material adverse effect on safety (chapter 5).

The Rail, Tram and Bus Union identified its preferred approach to achieving harmonised rail safety regulation:

> … the only way to achieve harmonisation is through the introduction of more prescriptive outer-limit regulations, a significant reform of the ONRSR-RISSB-Operator relationship and the introduction of penalty-based incentives to drive change. (sub. 10, p. 5)

Penalties exist under the current system, but ONRSR's approach has been to use penalties to deter operators from conduct that could affect rail safety, not to achieve regulatory harmonisation. This is a sensible application of the available tools.

Replacing the RSNL with a more prescriptive approach would be overkill and would be more likely to reduce safety outcomes than to improve them, as prescriptive regulation is generally less effective than outcomes-based regulation at achieving good safety outcomes. An effective but imperfectly consistent co-regulatory approach (which is the current case in rail) is preferable to achieving greater consistency through highly prescriptive regulation. Excessive prescription inhibits safety and productivity improvements. The available evidence shows that rail transport safety outcomes are improving (chapter 5). Moving away from the current approach would likely have a net negative effect on the community.

Regarding the relationship between the regulator and the standard-setting body, both ONRSR (sub. 21, pp. 34, 41, 44) and RISSB (sub. 9, pp. 7–8) commented that they work closely in a complementary fashion. Neither advocated for a re-allocation of duties. RISSB (sub. 9, p. 5, 7-8) argued that it has the 'capability to extend its industry leadership roles including in relation to productivity and efficiency', and that the best ways ONRSR can play a role are by pushing for national consistency and to not inhibit innovation. This latter sentiment was also echoed by Arc Infrastructure (sub. 17, p. 10).

The Commission understands that ONRSR and RISSB are working on a joint statement to clarify their roles. The Commission considers that no further action is required at this time.

Powers

ONRSR has a range of powers it can exercise to achieve operator compliance with the RSNL. The pre-RSNL Model Law (*National Transport Commission (Model Legislation – Rail Safety Bill) Regulations 2006)* introduced a 'hierarchy of sanctions' for regulators to secure compliance with legislation. These powers carried through to the creation of the RSNL and ONRSR.

Parts 4 and 5 of the RSNL deal with securing compliance and enforcement powers. Part 4 empowers 'rail safety officers' (effectively representatives of ONRSR) to conduct inspections free from hindrance. Part 5 details the range of tools ONRSR can use to secure compliance. Some other enforcement provisions can be found elsewhere in the legislation (for example, infringement notices have their own Part) (box 7.9).

Sitting above all of these powers is the RSNL's direction to operators to report any 'accident or incident that has, or could have, caused significant property damage, serious injury or death' — a notifiable occurrence — to ONRSR (RSNL, section *4(1)*). ONRSR (sub. 21, p. 36) stated:

> ONRSR believes it has an appropriate range of enforcement measures, as detailed in Part 5 of the RSNL, to achieve its objectives.

The Commission agrees.

Capability

Financial capability

The original IGA stipulated that all ongoing costs of ONRSR were to be shared across States and Territories through a combination of cost-recovery from industry and government contributions. The RSNL established the National Rail Safety Regulator Fund to facilitate funding of ONRSR's activities. Sections 76 and 95 of the RSNL require operators to pay annual fees to ONRSR, and section 3 requires that these fees are reasonable. These fees have fixed and variable components; the variable component depends on an operator's number of

trains or track kilometres (ONRSR 2018c). In 2016, following a review by ONRSR, the COAG Transport and Infrastructure Council approved a separate fee for major projects, given they require extra regulatory effort by ONRSR that would not necessarily show up as more train or track kilometres.

Box 7.9 ONRSR's tools for compliance

ONRSR's tools for compliance include:

- an improvement notice — a notice that directs a person or operator to remedy a particular safety risk
- a prohibition notice — a notice that prohibits activity that poses a safety risk
- a non-disturbance notice — a notice that requires a person or operator to facilitate rail safety officers exercising their powers (for example, preserve the site of a notifiable occurrence)
- an infringement notice — a notice that signals ONRSR believes that a person or operator has breached one of a range of provisions
- a directed amendment of a safety management system — ONRSR can direct an operator to amend their safety management system
- an enforceable undertaking — an agreement between ONRSR and an operator to carry out specific activities to remedy a contravention or suspected contravention
- a condition or restriction of accreditation or registration
- a suspension of accreditation or registration
- cancellation of accreditation or registration
- prosecution.

Source: ONRSR (2018f).

Since its inception, as ONRSR's responsibilities have increased, its annual revenue has increased 61 per cent from $24 million to $39 million. During this time, the share of revenue sourced from industry fees has increased from 33 per cent to 55 per cent (figure 7.1).

ONRSR (sub. 21, p. 5) claimed that it is 'operating in a financially responsible manner', and no statements were made to indicate that the quantum of funding was inadequate to achieve its regulatory task.

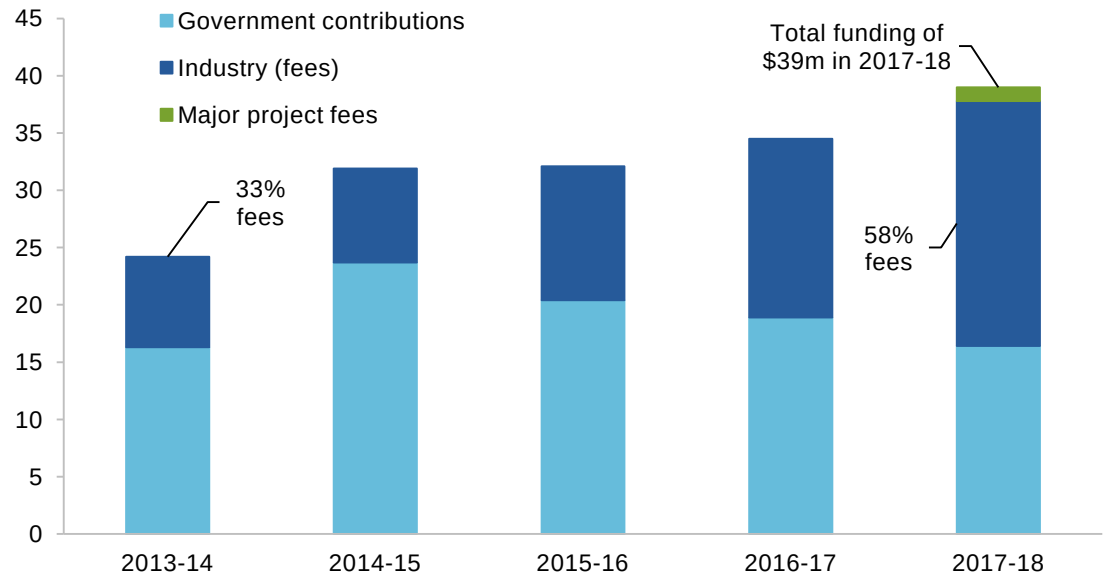
Before the national system, the degree of cost recovery ranged from 9 per cent to 100 per cent across jurisdictions. To assist with the transition, government contributions have reduced by 5 per cent each year in each jurisdiction, with three jurisdictions already 100 per cent industry funded (ONRSR, sub. 21, p. 29).

This transition from government to industry funding, combined with occasional changes to the industry funding model, has seen the fees paid by some operators fall and some rise. However, this simply reflects the transition to a more efficient, cost-recovery model. No operators submitted that their individual fees were a particular concern.

The ARA (sub. 26, p. 37) raised two concerns with the model itself: that track and train kilometres is a poor proxy for regulatory effort and risk, and that changes to the funding model should not have to be approved by TIC. On the first concern, as acknowledged by the ARA, the Transport and Infrastructure Council has approved ONRSR to undertake further work to better align annual fees with regulatory effort and risk (ONRSR 2017b). On the second concern, the Commission considers that matters of fiscal appropriation are necessarily a matter for elected representatives.

Figure 7.1 **ONRSR's revenue has increased over time**

$m by source, 2013-14 to 2017-18



Sources: ONRSR (2014, 2015, 2016, 2017a, 2018a).

Staff

ONRSR employs 143 staff. Since its inception, ONRSR has hired more staff as more states and territories have come under its remit. The regulator developed a workforce plan to smooth the transition of new staff and to match their capabilities to organisational needs (ONRSR 2016). The Commission understands that the process of taking on State and Territory government staff has led to some duplication of roles and overstaffing. However, once staff employed under previous SLAs are factored in, ONRSR (sub. 21, p. 5) stated that the actual number of staff employed to undertake rail safety regulatory activity has been 'relatively static' since inception.

Some participants raised concerns about ONRSR staff capability. For example, Aurizon (sub. 30, p. 5) noted that it is common to 'experience inconsistency of approaches … within and between state offices'. The ARA suggested that the goal of 'sufficient capability and

expertise' has only been 'partially achieved'. It also noted that the move to national regulation has led to trade-offs between local knowledge and access to broader skillsets.

> Some ARA members in smaller jurisdictions also consider that the pooling of regulatory resources has enabled local offices to access greater expertise sitting elsewhere within ONRSR, which has improved the regulator's effectiveness. However, in some cases, ARA members are of the view that regulatory staff now appear to be less familiar with local operational nuances. (sub. 26, p. 11)

WA-based Arc Infrastructure (sub. 17, p 11) suggested that local ONRSR staff lack the understanding needed to meaningfully engage with their operations. The Commission understands that a large number of State government staff in Western Australia retired rather than joining ONRSR, which might explain a shortage of local expertise. Arc Infrastructure also acknowledged recent improvements, noting the difficulties associated with transition and ONRSR's focus on continuous improvement.

On balance, it appears that the ONRSR workforce is capable of delivering its roles and responsibilities.

Information and analytical capability

ONRSR (2018f) described three steps in its co-regulatory approach: developing an understanding of the risks an operator faces, prioritising these risks, and delivering regulatory activities that improve safety. To effectively carry out its functions ONRSR needs reliable information on the risks faced by individual operators and to identify industry-wide trends related to safety risks.

ONRSR collects data on individual operators' risks from multiple sources, including operator reporting, third party reports and other interactions with industry (ONRSR 2018f). It has established new data systems and a website portal which helps operators lodge information (ONRSR, sub. 21, p. 5). ONRSR has used this information to develop a model that gives each accredited operator a risk score. This score is then used to inform regulatory activities (ONRSR, pers. comm., 4 June 2019). ONRSR (2018a) is aiming to strengthen this process through a Data Needs and Intelligence Strategy (part of a broader National Safety Data Strategy (ONRSR 2018b)) to improve risk based-decision making.

ONRSR has also put substantial effort towards collating industry-level datasets that help it identify broad trends. These data are published in the regulator's Rail Safety Report series (ONRSR 2018d).

ONRSR collects data on stakeholder experiences through its stakeholder survey, which has been run in 2016 and 2018. The 2018 survey found that 70 per cent of stakeholders think ONRSR has been effective or very effective at improving data and information on safety risks (ONRSR sub., 21, p. 37).

ONRSR (2018b) has released the '*National Rail Safety Data Strategy 2018–2022*'. ONRSR elaborated:

> The National Rail Safety Data Strategy has been developed as a partnership between ONRSR, the ARA and rail industry representatives to achieve relevant, consistent and quality national rail safety data that is readily available to stakeholders. (sub. 21, p. 6)

ONRSR appears to have good systems in place to produce the information it needs to be effective, and also seems committed to continual improvement of these systems.

Governance

The RSNL establishes the CEO as the National Rail Safety Regulator. The CEO and at least two other non-executive members then constitute the board — or the governing body — of ONRSR. The governing body's decision making is independent from government, but the body does report to TIC. ONRSR (2018f, p. 2) stated that it is 'guided by the expectations of the Transport and Infrastructure Council to which it is accountable'.

Some participants expressed concerns about the degree of ONRSR's independence from TIC. ARC Infrastructure (sub. 17, p. 13) said that influence from State and Territory governments creates a 'challenging position' for ONRSR as 'competing state preference make ONRSR's task difficult', the end result of which is 'compromised policies'. ARA argued that:

> ARA has concerns that ONRSR is not provided with sufficient freedom to achieve its legislative objectives … (sub. 26, p. 3)
>
> …projects relating to developing nationally-consistent approaches to regulation relating to alcohol and drug testing and fatigue have effectively been stymied. In part, this is because legislative change and/or change to regulations ultimately revert to the state and territory ministers. (sub. 26, pp. 28–29)

Aurizon (sub. 30, p. 5) also cited the fatigue, and drug and alcohol policy area, arguing that ONRSR is 'at best a national coordinator of state-based preferences'.

These concerns ultimately go to the heart of the reform process. As detailed in chapter 4, there are many ways to build a national system. The 'applied laws' approach taken in rail — that allows to states to maintain some control to oversee jurisdictional derogations — likely reflects the reality that a national system could not be built without allowing for some residual state influence. That said, the Commission is seeking feedback on practical ways to enhance ONRSR's ability to make decisions in the national interest, given the constraints of the system design.

Regulator behaviour

Flexible approaches to regulation

The flexible, outcomes-focused, co-regulatory approach established by the RSNL and carried out by ONRSR is consistent with best practice in safety regulation. Inquiry participants were generally positive about ONRSR's flexible approach. The Rail, Tram and Bus Union (sub. 10) was an exception; it favoured a more prescriptive approach, including 'outer limits' on work hours as part of fatigue management regulation.

The union's main concern appears to be that the outer limits applying in New South Wales and Queensland might be removed. The Commission considers that setting a maximum allowable working time (and minimum rest times) is a necessary part of any fatigue management system. Within that 'outer limit' there should be scope for flexibility based on assessments of risk.

As the Commission noted in chapter 5, the number of fatalities from rail accidents has declined significantly since 2009 and the evidence shows that a risk-based approach to fatigue management is no less effective than the New South Wales and Queensland approaches.

On balance, given the evidence presented to the Commission, there is good cause to be confident that RISSB and ONRSR have the capability to implement flexible approaches to regulation, within sensible limits. The focus on a outcomes-based system of co-regulation is fit for purpose and delivers good safety outcomes while not restricting the industry from its efforts (through technology and competition) to increase productivity.

Service delivery and stakeholder engagement

Inquiry participants were complimentary about ONRSR's service delivery and engagement. Participants stated that ONRSR consults effectively with industry and other regulators. Several inquiry participants have made positive comments about the senior management of ONRSR.

ONRSR conducts a stakeholder survey each year. In the 2016-17 survey, 71 per cent of surveyed operators stated that ONRSR is effective in delivering its functions; 87 per cent stated that it is effective in delivering national rail safety reform objectives and 66 per cent agreed that 'ONRSR and the industry work co-operatively in a coregulatory environment' (ONRSR 2018a, p. 64).

Summing up

ONRSR is an effective regulator and, of the three national transport regulators, ONRSR is closest to achieving the objectives of the COAG IGAs. Although the objective of seamless

national regulation has not yet been achieved (largely due to derogations from the national law) the national regulator is establishing a consistent approach to regulation (chapter 4). The evidence on compliance costs and the regulatory burden is mixed (chapter 6) and ONRSR should continue to monitor the costs faced by industry. Overall, rail transport in Australia remains relatively safe (chapter 5) and ONRSR has been proactive about promoting safety and safety improvement. The current co-regulatory and outcomes-based regulatory structure is consistent with improved productivity in the sector.

7.4 The Australian Maritime Safety Authority

The policy framework

Roles and responsibilities

AMSA was established as the Commonwealth's maritime regulator in 1990, responsible for search and rescue, control of ship-sourced marine pollution, safety regulation of maritime operations in Australia, and of Australian ships operating overseas (chapter 3). The *Marine Safety (Domestic Commercial Vessel) National Law Act 2012* (Cwlth) (MSNL) commenced on 1 July 2013, creating a single national system of regulation for domestic commercial vessels (DCVs). This substantially increased AMSA's responsibilities, bringing about 27 000 additional vessels under AMSA's jurisdiction (MIAL, sub. 14, p. 2). The increase in AMSA's responsibilities created challenges for the regulator delivering the IGA objective of 'effective, consistent and efficient regulation'.

Initially, state and territory agencies were responsible for service delivery under the MSNL. AMSA stated:

> A review of the national system in 2014 identified inconsistencies in jurisdictional service delivery as the cause of systemic inefficiencies that were preventing the realisation of the full benefits of the national system. To resolve this, Transport ministers decided in November 2014 that AMSA would assume full service delivery responsibilities for all domestic commercial vessels. (sub. 35, p. 3)

Following a transition period of almost four years, AMSA became responsible for delivering services under the MSNL in all States and Territories in July 2018.

AMSA's performance is the subject of an inquiry being undertaken by the Senate Standing Committee on Rural and Regional Affairs and Transport. The Commission has drawn on evidence provided to that inquiry in its assessment of the regulator's performance.

A diverse group of operators

AMSA regulates a much more diverse set of operators than the NHVR and ONRSR. As the Maritime Union of Australia (MUA) put it:

> The National Law regulates vessels covering the entire spectrum of floating transport from kayaks for hire to intrastate trading vessels, from water taxis to the Manly ferries, and every type of vessel and operation in-between. (sub. 37, p. 50)

The decision to allocate AMSA responsibility for regulating all domestic commercial vessels has been a barrier to effective regulation. The Commission is recommending transferring some regulatory responsibilities back to State and Territory governments (draft recommendation 7.4).

Transitional arrangements have complicated the regulator's task

Governments have sought to minimise the costs of implementing nationally-consistent maritime regulation on existing operators. Some vessels were 'grandfathered' so they could continue to operate as they had under previous regulation. Governments have also enacted exemptions from legislation (MIAL (sub. 14) stated that there are 41 exemptions from the MSNL).

The transitional arrangements have affected AMSA's ability to effectively regulate DCVs. AMSA described the grandfathering arrangements as the 'greatest constraint on the further development of a truly national system' (sub. 35, p. 6).

> Whilst a logical approach at the time, the effect of how it was interpreted and applied has inhibited AMSA's ability to make regulatory improvements and improved safety outcomes to be fully recognised across the domestic commercial vessel fleet. (AMSA, sub. 35, p. 6)

MIAL agreed that the transitional arrangements have increased the difficulty of AMSA's task.

> The transitional arrangements that have been necessary to bring a hugely diverse range of vessel types, commercial operations and historical regulatory settings under the one umbrella, while allowing maritime businesses to continue to operate, have resulted in an extremely complex and often ambiguous regulatory landscape … AMSA's remit to interpret and enforce the legislation is made very difficult as a result. (sub. 14, p. 1)

The grandfathering arrangements are a barrier to national consistency. The Commission is recommending changes to the MSNL to ensure that the grandfathering arrangements remain only while they are required as a transitional measure (chapter 5).

Exemptions from the MSNL create impediments to effective regulation, but they may be an effective way to deal with the effects of the breadth of the MSNL. MIAL stated:

> By way of example, some standards for a Sydney Harbour Ferry are the same for a small tinny used as a workboat in jetty construction, despite one being aimed at transporting the commuting public and the other being designed to work alongside port-based infrastructure with a small

> number of people on board. To allow for this extreme variation in operation, minimal prescription and many exemptions (currently 41 in total) to legislation has been necessary, leading to ambiguity and lack of clarity in regulation. (sub. 14, p. 4)

Exemptions are a 'second best' way to deal with the broad scope of AMSA's responsibilities. The Commission is recommending amendments to the MSNL to reduce the scope of AMSA's responsibilities and hence the need for exemptions (draft recommendation 7.4).

Interaction with other laws

Numerous agencies have responsibilities for regulating DCVs.

> The National Law was developed on the basis that it would apply alongside offshore regulation and certain state and territory laws, including waterways management, fisheries management, gas and electrical safety, drug and alcohol, and passenger monitoring, as well as work health and safety. (AMSA, sub. 35, p. 14)

AMSA stated that co-regulation with other agencies creates 'ambiguity in AMSA's role' (sub. 35, p. 5) and that State and Territory laws 'can undermine the "one system, one decision-maker" principle underpinning the National Law' (sub. 35, p. 15). AMSA stated that it manages its relationships with other regulators through cooperative arrangements (such as memorandums of understanding), but that industry stakeholders remain confused about the responsibilities of the State and Territory regulators and AMSA (sub. 35, p. 15).

The MUA was critical of AMSA's interaction with workplace health and safety (WHS) laws and agencies.

> AMSA does have MOUs with state and Territory WHS agencies to coordinate activity. However, the MUA regularly finds a remarkable lack of knowledge by AMSA officials about the WHS Act and Australian WHS systems, and a similar lack of knowledge about the concurrent jurisdiction by state WHS agencies. More worryingly, there is no fact sheet or reference on the AMSA website that we could find to clarify to vessel operators that the WHS Act applies to them. AMSA's safety documents that are designed for use by vessel operators in designing safety systems do not contain any reference to the WHS Act, and undermine key aspects of the WHS Act. (MUA, sub. 37, pp. 34–35)

Given that AMSA is in the early stages of its role in regulating DCVs it is understandable that staff have not yet developed a thorough understanding of WHS laws. The examples of the NHVR and ONRSR show that regulators need time to build capability, including in their interactions with other laws and regulators.

Powers

MIAL noted that AMSA has a reputation as an effective and strict regulator in its original remit of *Navigation Act* vessels.

> It is important to note that AMSA is well known throughout the global shipping industry as having a zero-tolerance approach to non-compliance, and as a consequence, shipowners and charterers are very careful about the quality of the assets they send to Australian ports. AMSA's sophisticated vessel targeting regime and active participation in the Tokyo MOU [memorandum of understanding], means that there is a high likelihood that substandard operators and poorly maintained or non-compliant ships will be detected and detained when in Australian waters. (sub. 14, p. 1)

Participants suggested that AMSA has been less effective in its regulation of DCVs. The MUA suggested that AMSA does not have adequate powers under the MSNL to prosecute breaches of safety provisions.

> It is our understanding that some of the challenges in prosecuting breaches of the National Law are due to the lack of robust and enforceable wording in the Act. A pattern seems to be emerging that more prosecutions are going ahead under the WHS Act than the National Law. (MUA, sub. 37, p. 55)

The MUA went on to explain the difference in the wording of the MSNL and WHS legislation.

> The differences in the wording for the National Law 'General Safety Duties' of owners (s.12) and the WHS Act 'duty of care' (s.19) for a Person Conducting a Business or Undertaking (PCBU) should be reviewed. The WHS Act (s.19) explicitly states that a PCBU 'must ensure' health and safety, safe systems of work, and other aspects of the work environment, in some level of detail. The National Law (s 12.1) uses this wording more briefly in relation to vessels, vessel equipment, and vessel operations. However, s. 12.2, 12.3 and 12.4 provide that an owner contravenes the section if they do *not* implement, provide, or maintain safety. It should be examined whether this reverse wording makes the National Law more unclear or harder to enforce, as it would appear to require proof that an action is not safe. The WHS Act duty may be higher and clearer. (sub. 37, p. 55)

The Commission is seeking feedback on the wording of the MSNL and AMSA's powers under the Act.

INFORMATION REQUEST 7.1

Is the wording of the Marine Safety National Law an impediment to effective enforcement by Australian Maritime Safety Authority? Would a positive requirement that operators 'must ensure' safety be more consistent with providing the regulator with the powers it requires?

Capability

Financial capability

The transition to the national system has been funded by the Australian, State and Territory governments. AMSA stated that the cost was 'around $112.4 million over ten years' (AMSA, sub. 35, p. 4).

AMSA did not comment on the adequacy of government funding. However, industry stakeholders raised some concerns about the cost recovery model used by AMSA. MIAL stated that a recent audit by the Australian National Audit Office found that AMSA had 'significantly over recovered costs in recent years' (sub. 14, p. 3). The period of the audit pre-dates AMSA taking responsibility for regulating DCVs.

The Commission has not reached a conclusion on the adequacy of AMSA's funding. AMSA noted that the Australian Government has announced a review of the costs and charges for the national maritime safety regulation system (sub. 35, p. 15). The Commission has set out some principles for cost recovery that could be useful for that review (chapter 10).

Staff

In 2018, before AMSA became responsible for the MSNL, the agency had a headcount of 385. This was forecast to increase to 434 in 2021, an increase of 13 per cent. AMSA did not comment on its staffing levels in its submission to this inquiry. However, some inquiry participants suggested that AMSA does not have adequate staff to carry out its core functions as a safety regulator. The MUA stated:

> While a significant increase in IT expenditure has taken place, it appears to us that AMSA is significantly under resourced to carry out the job it has been given. More Maritime Safety Inspectors (MSIs), Port State Control Officers, and Marine Surveyors are needed. Resources are needed to provide the kind of safety analysis identified in sections 6 and 7, to develop appropriate regulatory response and education materials and to interface properly with other jurisdictions. (sub. 37, p. 50)

The International Institute of Marine Surveying stated that the process of harmonising regulation has diverted staff away from AMSA's core business.

> This centralisation and the work it creates, in our view, diverts precious technical talent away from revising and updating the standards and creates significant bottlenecks in the system as vessels are unable to operate until Canberra grants permission in the form of exemption, equivalences and determinations. It is highly questionable if any of these bureaucratic activities add any safety value to the Australian fleet or if they further the aims of this reform in any manner whatsoever. (International Institute of Marine Surveying 2019, pp. 3–4)

Pacific Tug stated that AMSA's staff do not yet have the capability to carry out their functions in regulating DCVs.

> It appears that AMSA representatives did not understand what was required when dealing with an existing commercial vessel. They were learning as they went along which delayed the process for Pacific Tug. (Pacific Tug 2019, p. 3)

Evidence on AMSA's service delivery and engagement (discussed below) shows that some stakeholders are not satisfied with AMSA's communication with industry. AMSA acknowledged in its *Corporate Plan 2019-20* that delivering the national system for domestic commercial vessel (DCV) regulation is a challenge and that the regulator will need to 'continue to develop our vessel inspection program and add resources where required' (AMSA 2019, p. 43) and 'ensure we have appropriate resources, knowledge and staff in the regions and centrally' (AMSA 2019, p. 43).

Information

When it took on responsibility for the MSNL, AMSA also became responsible for maintaining a national database. Before 2018, State and Territory agencies had collected information on DCVs. AMSA is in the early stages of developing the national database and has faced challenges arising from differences in data collection methodology.

> A key issue for AMSA in developing and maintaining a national database as that there was previously no consistent methodology for capturing records or data for domestic commercial vessels. Prior to AMSA taking on service delivery, some jurisdictions ran decentralised paperbased record management systems, while other jurisdictions maintained electronic files. It has also become apparent that not all required records may have been captured accurately, comprehensively or at all, regardless of the methodology used.
>
> This has practical implications for AMSA and industry, as it is not always clear what certificate or approval a vessel may have, if any, nor the history the vessel and operator have with the state and territory regulatory bodies. As a result, AMSA regulates domestic commercial vessels based on mostly inherited data that contains errors, and is incomplete. Correcting these issues is time consuming and resource intensive and remains an ongoing challenge for AMSA. (AMSA, sub. 35, p. 8)

Industry agreed with the regulator that the data collection task is complicated.

> AMSA has the un-enviable task of doing the best they can with limited vessel history available from some states and a system that was not applied consistently across Australia. (Maritime Survey Australia 2019, p. 1)
>
> The transition of the DCV sector from state/territory regulation to the National System is clearly a challenging task, made more difficult by the variation in the quality, format and extent of historical data collected by the state/territory, needing to be acquired by AMSA. The data processing aspect of the transition of data has been hugely resource intensive as we understand it. There are also major inefficiencies in information handling affecting industry because the states and territories still hold some historical records that, due to the removal of jurisdictional

> authority to provide information, require Freedom of Information requests to obtain. (MIAL, sub. 14, p. 5)

Pacific Tug provided an example of how the failure to transfer data from State and Territory regulators has affected vessel operators.

> In mid-August 2018, Pacific Tug were contacted by AMSA stating that two of their vessels were due for renewal surveys. Pacific Tug queried the need for survey, as both vessels had been surveyed only five months earlier. Three months then passed before AMSA returned this correspondence and stated that the documents held by Pacific Tug were in fact correct and that the renewal requests were incorrectly sent. The vessels' data had not been provided when DCV responsibility had transferred from the States to AMSA. (Pacific Tug 2019, p. 2)

AMSA is developing a database and its ability to use the information it obtains. Progress in this area will take time given the absence of a consistent approach to data collection by State and Territory agencies.

Governance

The *Australian Maritime Safety Authority Act 1990* (Cwlth) specifies that the board of AMSA is to consist of nine members, who are appointed by the Minister for Infrastructure and Transport. The Minister is required to use his or her 'best endeavours' to ensure that at least one board member 'is a person who the Minister is satisfied has knowledge of, or experience relevant to, the construction or operation of domestic commercial vessels' (s. 13(4A)).

On paper, AMSA's governance arrangements are consistent with good practice (although nine board members is at the upper limit for effective governance). However, several participants have commented to the Commission that AMSA's leadership did not take full advantage of the period from November 2014 (when governments decided that AMSA would take responsibility for regulating DCVs) and July 2018 (when AMSA formally took on responsibility for service provision). Participants suggested that AMSA could have done more during this time to develop its capabilities and information about DCVs and achieve a smoother transition to national regulation.

The International Institute of Marine Surveying asserted that there are several problems with AMSA's service delivery and stakeholder engagement (discussed below) which it attributed to the regulator's culture.

> This points in our view to a deep cultural malaise which has the very real potential to harm and which in our view needs serious and deep reform. (International Institute of Marine Surveying 2019, p. 4)

Establishing an effective culture within an organisation is a core responsibility of the board, but corporate culture is difficult to assess from outside and the Commission is not jumping to any conclusions about the capability and functioning of the AMSA board. The

Commission will continue to consider the effectiveness of AMSA as it develops the final inquiry report and welcomes contributions to assist in this task.

Regulator behaviour

Flexible approaches to regulation

AMSA stated that it takes:

> … a risk based and proportionate approach in determining where to focus legislative and compliance responses so that those who demonstrate a safety culture, and are compliant, are rewarded by reduced regulatory intervention. (AMSA 2018b)

In its submission to the inquiry AMSA acknowledged that it does not have access to all the data required to properly identify higher-risk categories of vessels and operators.

> Where operators have compliant vessels, a good safety record and a safety management system, AMSA focuses on periodically verifying that they are complying with the safety outcomes required by the law through risk-based surveillance and systems-based audits. However as noted above, the accuracy and completeness of data remains an ongoing challenge for AMSA. (AMSA, sub. 35, p. 13)

Participants in this inquiry and in the Senate inquiry into AMSA commented on the regulator's application of flexible approaches. The MUA stated that AMSA has reduced the frequency of vessel surveys and that this is an impediment to identifying higher-risk vessels.

> The office of the chief investigator, Transport Safety, Victoria, published a report on a hire and drive vessel in Lakes Entrance. The report mentions that AMSA had reduced the frequency required for regulatory surveys of vessels from every year to every five years, which reduced the opportunity for the regulator to identify safety-critical defects. (MUA, sub. 37, p. 33)

AMSA has identified the benefits of taking a flexible, risk-based approach to regulation. However, the regulator has not yet developed the information base that it would require to implement this approach.

Service delivery and stakeholder engagement

Participants in this inquiry and in the Senate inquiry into AMSA criticised AMSA's service delivery and engagement (box 7.10). The anecdotal evidence on AMSA's stakeholder engagement is supported by quantitative evidence from AMSA's online survey of its 'customers'. The results from the most recent survey were reported in the 2017-18 AMSA annual report, and are less favourable than similar surveys carried out by the other national regulators. The results were:

- AMSA helps vessel owners and seafarers safely operate or work on a vessel without getting in the way — 3.54 out of 6
- communications I get from AMSA are clear and useful — 3.67 out of 6

- given the risks involved in what I do, the level of regulation is about right — 3.25 out of 6
- AMSA's compliance and monitoring arrangements are well organised and efficient — 3.15 out of 6
- AMSA explains its decisions well — 3.22 out of 6
- AMSA is always trying to improve maritime regulations to create a safer and more efficient industry — 3.46 out of 6 (AMSA 2018a, p. 58).

These results pre-date AMSA assuming full responsibility for regulating DCVs, so they are related to AMSA's responsibilities under the *Navigation Act*, rather than the MSNL. Nevertheless, these data are still relevant evidence of the regulator's performance. They suggest that AMSA has significant scope for improvement in its customer service and stakeholder engagement.

Box 7.10 Stakeholders' criticisms of AMSA's service delivery and engagement

The Tasmanian Government stated that the transition to a national system has led to reduced levels of service for some Tasmanian industry participants.

> Following transition to the new nationally consistent national system, the Tasmanian Government notes that the Tasmanian Seafood Industry Council, among others, has raised legitimate concerns with regard to the reduced level of service provided to Tasmanian commercial fishers and recreational boat users under the new structure in comparison to the former Tasmanian model. (Tasmanian Government, sub. 41, p. 7)

Industry stakeholders stated that AMSA staff do not communicate effectively.

> Messages from AMSA staff are contradictory and confusing and are spoken and written in quasilegal language which is presumably intended to protect the individual officers and agency but which in fact frustrates and confuses. (International Institute of Marine Surveying 2019, p. 4)
>
> A single AMSA point of communication & assistance to deal with Survey matters would have the direct benefit both to the client and AMSA personnel in delivering good & superior Customer Service. At the moment we have a situation where the consistency is poor. The responses are never personable, there is no name in the signature pane and you may be dealing with someone in a call centre with no knowledge in this space and on the other side of Australia. (Maritime Survey Australia 2019, p. 2)
>
> AMSA representatives do not know the legislation, regulations, or standards that they are to be enforcing (Pacific Tug 2019, p. 2).

Stakeholders also suggested that AMSA does not seek feedback from industry.

> In our experience AMSA is unresponsive and bureaucratic, preferring to regulate from afar (Canberra is a long way from the sea) rather than to genuinely engage with mariners and the maritime industry; and preferring to punish non-compliance rather than assisting good-willed mariners to comply. (Pacific Maritime Lawyers and Consultants 2019, p. 11)
>
> In all responses and communication, the clear message that comes back is that AMSA knows best and is regulating efficiently and effectively with broad stakeholder support. (International Institute of Marine Surveying 2019, p. 4)
>
> Based on our observations, AMSA conduct Stakeholder engagement and consultation process simply to tell industry what they have already decided. (Maritime Survey Australia 2019, p. 5)

AMSA has acknowledged that it has room for improvement in service and stakeholder engagement and stated in its *Corporate Plan 2019-20* that it would 'review how we communicate with industry and the effectiveness of consultative arrangements with the sectors' (AMSA 2019, p. 43). The Commission agrees that this is necessary.

Strategic use of powers

Participants in this inquiry and in the Senate inquiry into AMSA had a range of opinions on AMSA's use of its enforcement powers. The Maritime Union of Australia (sub. 37) contended that AMSA has been reluctant to use its powers to prosecute DCV operators.

Pacific Maritime Lawyers and Consultants submitted to the Senate inquiry that AMSA's approach to enforcement is inflexible and bureaucratic. It gave the example of an accident aboard the *Spirit of 1770*. The vessel was carrying almost 40 passengers when a fire broke out. The vessel's safety management system (SMS) required the Master (Dean Grose) to make a mayday call on the ship's radio. The radio was located in the wheelhouse, which became 'choked with smoke and flames' (Pacific Maritime Lawyers and Consultants 2019, p. 6). Mr Grose used his mobile phone to call for help and assisted in evacuating the vessel. For this diversion from the SMS 'he was charged with criminal offences for using his mobile phone instead of staying in the wheelhouse' (Pacific Maritime Lawyers and Consultants 2019, p. 6). The case went to trial and Mr Grose was acquitted (with costs awarded against AMSA). The decision to prosecute is inconsistent with an outcomes-based approach to regulation.

At this stage of the implementation of nationally consistent DCV regulation there is not enough evidence to make a firm judgment about AMSA's use of its enforcement powers. AMSA does not yet have the information that it would require to target its enforcement efforts toward the vessels and operators that pose the highest risks. The lack of information is an impediment to the regulator making effective use of its powers.

More broadly, the International Institute of Marine Surveying stated that AMSA has unnecessarily increased the burden of regulation.

> As an example, one of our members reports (and has proof) that over 70 pages of AMSA forms are now required to bring a standard new vessel into operation whereas before AMSA took over service delivery a dozen sufficed.
>
> There appears to be little justification for this increased red tape bar a frequently repeated mantra that AMSA in Canberra has little sight of the vessel and needs this information for its database. Why the regulator needs to know how many seacocks are on a given vessel, or what the specification of a seating cushion is, is beyond the understanding of our surveyors. As a consequence, an increased financial burden is being placed on industry by the Regulator as a result of AMSA's desire to collect this obtuse data. (International Institute of Marine Surveying 2019, p. 2)

AMSA has stated that one of its strategic goals is to 'reduce regulatory and administrative burden without compromising safety' (AMSA 2019, p. 42). Following through on this commitment is an important aspect of cementing the nationally consistent system for DCVs.

Summing up

The Australian, State and Territory governments greatly expanded AMSA's responsibilities when they made it responsible for service delivery under the MSNL. Although it had a lead-in period of almost four years, when it took on responsibility for service delivery for DCVs in 2018, AMSA did not have the necessary capability to deliver services effectively. In addition, the carve-outs created by the grandfathering arrangements and the inconsistent data on DCVs have been major barriers to effective regulation.

The Commission is recommending that the Australian, State and Territory governments take steps to reduce the scope of AMSA's responsibilities. A possible starting point is Hire and Drive (Class 4) vessels, which account for about 11 per cent of the DCV fleet. These vessels are likely to have more in common with recreational vessels than with other commercial vessels (such as fishing vessels) and might be more appropriately regulated in the same way. The Commission is seeking further information on options to revert some vessels back to State and Territory government regulation.

AMSA is still developing the capabilities that it requires to be an effective regulator. AMSA staff have not yet developed effective relationships with stakeholders and there is scope for increased use of flexible approaches to regulation of DCVs. The Commission has noted criticisms of the board and executive of AMSA and will revisit the issue of governance and leadership in the final report, taking into account any recommendations arising from the inquiry that is being undertaken by the Senate Standing Committee on Rural and Regional Affairs and Transport.

DRAFT FINDING 7.2

The broad scope of the Australian Maritime Safety Authority's responsibilities is an impediment to effective regulation of domestic commercial vessels. Safety regulation of 'Hire and Drive' recreational vessels could be undertaken effectively by State and Territory government agencies, which already regulate similar vessels that are not used for commercial activities.

DRAFT RECOMMENDATION 7.4

The Australian Government should negotiate with State and Territory governments to return responsibility for regulating Class 4 Domestic Commercial Vessels (Hire and Drive) to State and Territory agencies.

The Council of Australian Governments should consider the benefits and costs of returning regulatory responsibilities for other vessel types to State and Territory governments.

INFORMATION REQUEST 7.2

Are there activities within the Australian Maritime Safety Authority's responsibilities that the Council of Australian Governments should consider returning to State and Territory oversight?

PART III

OPPORTUNITIES FOR FURTHER REFORM

8 Transport technology and data

Key points

- New technologies have the potential to deliver productivity, safety and environmental benefits in the transport sector. However, with new technology comes new costs and risks.
- Regulation should promote safety without imposing an unnecessary regulatory burden or stifling innovation. Regulation should be technologically-neutral and outcomes-based, prevent regulatory 'gaps', enable interoperability of new technologies, enable trialling and testing of new technologies, and be flexible and adaptable.
- The speed at which industry adopts new technologies has implications for productivity and safety. The Australian Government should amend the Australian Design Rules and in-service vehicle standards to allow for the timely uptake of new and internationally-approved transport technologies, including automated technologies.
- Given that Australia is a relatively small market, the Australian Government should aim for national and international consistency of laws and standards where practicable, and accept safety devices adopted in other leading economies.
- Telematics data from heavy vehicles is collected by many parties and used for many purposes. Consolidating these data into a secure central repository could maximise its value.
- Uncertainty exists around how third parties should access transport data. In developing the National Freight Data Hub, the Australian Government should develop a regulatory framework to address how these data should be collected, stored, accessed and analysed. The data access powers of regulators, enforcement agencies and accident investigation bodies should be clarified to enable these bodies access to undertake their respective tasks, without compromising privacy and confidentiality.
- Autonomous technologies remove or reduce the need for a human operator and have the potential to improve the safety and productivity of freight transport and the transport sector more broadly. However, many Australian laws and regulations (including road rules, insurance schemes and driver licencing) assume a human driver.
- Determining the safety of autonomous technologies can be challenging, because the underlying code is often created in opaque environments and may change over time. As a first step, regulators should identify the risks posed by the use of algorithms in transport technologies, draw on evidence from overseas research and regulators, and employ staff with the relevant skills to assess algorithms and autonomous transport systems.
- There is uncertainty around determining legal liability when autonomous driving systems breach legislation or cause harm. A general safety duty should apply to all parties with a significant influence over the safety operation of autonomous transport technologies. This may need to be supported by prescriptive rules where the assessed risks are high.

While parts I and II of this report focus on assessing the impacts of COAG's national transport reforms, part III considers future opportunities for reform in the transport sector.

The terms of reference state that the Commission should examine opportunities for reform to 'further integrate and harmonise the regulation of the national freight market', including the focus and remit of the National Heavy Vehicle Regulator (NHVR), Office of the National Rail Safety Regulator (ONRSR) and Australian Maritime Safety Authority (AMSA). However, reform of the national freight market is broader than the COAG reforms harmonising safety regulation and the operation of the national regulators and the national laws. There are many opportunities — outside of the national regulatory regimes — for governments and industry to make transport safer or more efficient, and with lower compliance costs for transport users.

This chapter focuses on new and emerging transport technologies, the implications of these technologies for stakeholders in each transport mode, and any need for regulatory reform. The chapter examines:

- the state of technology in the transport sector, including emerging and potentially disruptive technologies (section 8.1)
- the increasing creation and use of transport data by these technologies (section 8.2)
- the implications of increased automation of transport technologies (section 8.3).

8.1 Transport technologies

Technological improvements have the potential to lift productivity, safety and environmental performance in the transport sector. It has been estimated that new heavy vehicle technologies could reduce operating costs by 50 to 70 per cent over the next 10 years (Freight and Logistics Council of WA, sub. 22). Technologies such as Electronic Stability Control and Roll Stability Control have already reduced the frequency and severity of vehicle accidents (NTC 2018b, p. 14), just as seat belts, anti-lock braking (ABS) and airbags provided such benefits earlier.

However, there are costs and risks associated with new technology. Risks include the interface with existing infrastructure and other vehicles not using the technology, as well as failures in both software and hardware. Newer autonomous technologies carry additional risks due to the complexity of decision making and high degree of machine control involved. For example, both ABS braking and autonomous emergency braking (AEB) may fail to operate when needed, but AEB may cause an accident by activating unnecessarily.

This section will outline some disruptive transport technologies, propose a principles-based framework for assessing whether regulation of transport technology is fit for purpose, and then briefly assess the state of technology in Australia's transport sector.

Emerging transport technologies

Transport technologies are changing rapidly. Emerging transport technologies can be broken down into four categories: intelligent transport systems, autonomous technologies, new models of ownership and new physical means of transport.

Intelligent transport systems

Intelligent transport systems (ITS) is a collective term for the use of information and communications technologies in transport vehicles and infrastructure. ITS can generate or use data in various forms, enabling advanced data analysis to inform infrastructure planning and operations. Some of these technologies are described as 'cooperative intelligent transport systems' (C-ITS), which enable vehicles to wirelessly communicate with other vehicles, infrastructure or other parts of the road network, often using low latency communications technologies (for example, 5G). Some examples of ITS include:

- telematics — remote monitoring of vehicles through wireless communications
- machine-to-machine and machine-to-infrastructure technologies, such as Dedicated Short Range Communications (DSRC) between vehicles
- signalling and other traffic management technologies
- sensors — technologies that gather data to inform ITS and planning decisions, including smart phones, fibre optic cables, cameras, and in-vehicle sensors (Australian Academy of Technology and Engineering 2019, p. 57).

Autonomous technologies

Autonomous technologies are technologies capable of sensing the environment and navigating without human input. These technologies can also rely on machine learning and artificial intelligence. Some examples include:

- driverless and autonomous vehicles, trains and maritime vessels
- heavy vehicle platooning[18]
- partially-automated vehicles and enhanced safety features, such as autonomous emergency braking, self-parking or traffic jam assist
- automated warehousing and freight handling technologies, such as autonomous forklifts.

[18] Heavy vehicle platooning involves a number of trucks closely following one another, connected using vehicle-to-vehicle communication. The lead truck is typically controlled by a human driver, while the following trucks operate autonomously.

New models of ownership

New business models and forms of ownership are emerging in transport. Better customer interfaces, similar to the model pioneered by Uber in passenger transport, are being used for freight transport. These may enable more cost-effective deliveries and raise productivity by using the excess capacity of freight operators. However, they may also change the nature of the supply chain, particularly with regard to liability and responsibility for safety. Examples of new models of ownership in transport include:

- car-sharing and ride-sharing services providing a viable alternative to car ownership
- apps allowing heavy vehicle owners and drivers to register their availability for transport tasks via a platform app, such as those by Uber and Amazon in the United States, or Eastern Plant Hire and Channel 40 in Australia (Williams 2017)
- mobility-as-a-service (MaaS), which encourages a shift from personally-owned modes of transport by enabling individuals to purchase a combination of transportation services from public and private providers through a single access point (Zipper 2018).

New physical means of transport

A number of new or emerging physical transport technologies have the potential to be highly disruptive to existing markets. These include:

- remotely piloted aircraft (RPA) and drone technologies. RPA and drone technologies have the potential to ease the 'last mile' problem of delivering goods in cities. However, these technologies create new issues relating to safety, privacy and amenity. Trials of this technology are underway in Canberra
- low and zero emissions vehicle technologies. Advances in various technologies including battery storage, rooftop solar and alternate fuels may lead to significantly increased uptake of low emission vehicles as the price of the technology drops. This could have significant environmental benefits. However, such technologies will require significant changes to infrastructure (for example, the creation of electric vehicle charging stations)
- 3D printing. This has the potential to reduce the freight task by allowing objects to be printed at the destination, or printed in designated 'hubs' in convenient locations.

This chapter will focus primarily on ITS, transport data and automation, as the technologies most relevant to freight transport and the COAG national transport reforms.

Regulation of emerging transport technologies

Effective regulation can enable the benefits of new and emerging transport technologies to be realised in a manner that minimises externalities and risks. Different government policy levers — various forms of regulation, taxation or spending — can shape how markets develop, adopt and diffuse new technologies (chapter 2).

This chapter considers how the key roles of governments should change to better respond to emerging transport technologies. The Commission defined these roles in the research paper *Digital Disruption: What do governments need to do?* With respect to technology, the key roles of government are to:

- *regulate frameworks* in which firms and markets operate, pertaining to issues such as market power and information provision to consumers
- *enable new technology* development and adoption — establishing public infrastructure, setting standards to ensure interoperability between technologies, and investing in education and training to ensure the workforce is appropriately skilled
- *mitigate risks* — smoothing the structural adjustment process for workers and firms by ensuring the social safety net evolves with changing work practices, and safeguarding individuals' privacy and security
- *provide public services* for the community (PC 2016a, p. 32).

A framework for assessing the regulation of transport technologies

A range of factors influence the ability of Australia's transport sector to develop and use emerging transport technologies. Examining these factors will provide a framework for determining if and how the regulation of transport technologies should change. Factors to consider include whether:

- infrastructure enables and/or supports the use of new technologies. For example, the uptake of electric heavy vehicles depends partly on the availability of charging stations along freight routes, the distance or time which the vehicle can travel without charging, and the time taken to recharge a vehicle battery
- the workforce (for industry and government) has the right skills to enable and/or support the use of new technologies. For example, a regulator may require technical knowledge to assess compliance of a new technology with safety legislation.
- social barriers are preventing the roll-out of new technologies. For example, community concerns around the safety of autonomous vehicles could limit their uptake
- existing regulations and government policy enable and/or support the use of new transport technologies. For example, whether regulations:
  - are outcomes-based, and applied at a level proportional to the negative externality or risk being addressed
  - are technologically-neutral and adaptable to changes in technology over time
  - support coordination and enable interoperability between technologies
  - enable the trialling and testing of new technologies.

The remainder of this chapter uses these questions as a framework to consider the state of technology, the use of data, and transport automation, and assess the extent to which regulations should change.

The state of transport technology

The age of transport technologies and supporting infrastructure, and the rate of uptake of new technologies, have implications for safety and productivity.

Australia has a relatively old heavy vehicle fleet compared with other developed countries. In 2015, the average age of an Australian heavy vehicle was 13.9 years — significantly higher than in various European countries (for example, 6.7 years in Germany and 7.6 years in Great Britain), South Africa (8.9 years) and Japan (11.9 years) (Truck Industry Council 2019, p. 24).

There are also significant delays in adopting new safety technologies in the heavy vehicle fleet. The Heavy Vehicle Industry Association (2018) advised that, when a new safety feature is mandated, it takes over 20 years to become universal in the heavy vehicle fleet. The Commission heard through consultation that new heavy vehicle technologies (for example, fatigue monitoring technologies) are sometimes available but not used by operators. For example, heavy vehicles purchased new from Europe with advanced telematics often have these features deliberately switched off in Australia due to privacy concerns, even though there may be a safety cost. This has consequences for both the productivity and safety of transport technologies.

Using new transport technologies can (and does) lead to productivity improvements for industry. The Freight and Logistics Council of WA (sub. 22, p. 2) argued that facilitating the introduction of new transport technologies allows exporters to profitably reach key markets and helps local industry compete with cheap imports. In this instance, 'facilitation' is likely to involve removing barriers or disincentives to the adoption of the technology, such as parts of the Australian Design Rules (ADRs).

The speed at which industry adopts new technologies also has implications for safety. More frequent adoption or renewal of fleets increases the likelihood of new safety equipment being implemented. However, there are some disincentives for operators to update their safety technologies.

The ADRs prevent the use of unmodified imported heavy vehicles and, in combination with the regulations enacted by the Heavy Vehicle National Law (HVNL), discourage the adoption of new safety technologies. For example, regulations around heavy vehicle mass and width limits result in drivers removing safety technologies from imported vehicles to reduce weight or width[19]. The Transport and Infrastructure Council (TIC) argued these

[19] Australian heavy vehicles are required to have a width of 2.5 metres or less under the ADRs. This compares to 2.55 metres in Europe and 2.6 metres in the United States. A recent Austroads study (2019) supported

limits reduce the availability of safer, cleaner heavy vehicles and that manufacturers spend $15 to $30 million per year redesigning heavy vehicles to meet Australian width restrictions (2018, p. 13).

The Australian Government aims to harmonise national vehicle safety standards, including the ADRs, with international regulations 'where possible' and considers adoption of the international regulations of the United Nations Economic Commission for Europe (UNECE) on an opt-in basis (DITCRD 2018). However, stakeholders have raised concerns around the speed with which ADRs are amended, and the unnecessary duplication of similar processes undertaken overseas (DITCRD 2019b, p. 21).

Part of the success of the Performance-Based Standards (PBS) arrangements (chapter 6) appears to be that the scheme allows new designs to sidestep the ADR processes, and the increased adoption of PBS vehicles may be partly driven by the disincentives to technological adoption in the ADRs. According to the National Transport Commission (NTC), such heavy vehicle standards present an unintended barrier to the supply of safe vehicles to the Australian market (2019c, p. 26). The ADRs may also act as a protectionist instrument, by reducing the heavy vehicle models available in Australia to those which can easily be altered to meet Australian requirements. Reforms to the ADRs may help to address Australia's lagging in the adoption of safety technology.

Other safety technologies are available but are not widely used, due to not being recognised by the HVNL. For example, the HVNL does not recognise the potential role of technology to observe truck driver fatigue (NTC 2019a, p. 34). The use of fatigue monitoring cameras and other sophisticated monitoring systems are constrained by the HVNL, despite potentially offering an innovative and effective solution to monitor fatigue in real time. The head of the Queensland Trucking Association commented that 'we live in a digital world and we're bound by analogue legislation' (McKay 2018).

The uptake of new technology is less problematic in the rail sector, and the locomotive fleet has become younger in recent years. As of 2018, about half of the locomotive fleet was aged 11 years or less, compared with 16 or less in 2016 (BITRE 2016, p. 59, 2018, p. 62). Newer locomotives are generally used for 'frontline' duties, while older locomotives tend to be used for secondary duties such as providing additional power behind new locomotives or doing yard duties (BITRE 2018, p. 63). The risk-based regulatory regime outlined by the Rail Safety National Law also means that new technologies with proven safety benefits can be introduced with relative ease (ONRSR, sub. 21).

While there is no available data on the average age of Australian domestic commercial vessels, concerns about the age of the maritime fleet have been raised by stakeholders, and indefinite grandfathering provisions in the Marine Safety National Law create a disincentive for operators to update their fleets. Grandfathering issues are covered in detail in chapters 4 and 5.

increasing the allowed width of Australian heavy vehicles to 2.55 metres, but argued that a further increase to 2.6 metres should only be considered following 2.55 metre vehicles being 'proven' on the network.

When should governments mandate or encourage new transport technologies?

In some cases, technologies can have a profound effect on safety. For example, the NTC (2018b, p. 14) found that Electronic Stability Control and Roll Stability Control may prevent between four and 56 per cent of fatal crashes. The NTC also predicted that fatigue and drowsiness detection devices have the potential to prevent between four and ten per cent of fatal crashes, reduce the severity of injuries and achieve cost savings of up to $28 million.

New technologies may also offer less costly but at least equally effective ways to address safety risks. For example, some operators insist on truck drivers using fatigue detection technology (with supporting real-time monitoring). Allowing this technology to be used could enable a more flexible approach to fatigue management, and remove the need for work diaries. The uptake of telematics could also remove the need for annual inspections.

Policy decisions can influence the adoption of new transport technologies. Various stakeholders argued that transport safety technologies should be mandated. For example, the Australian Trucking Association (sub. 32, p. 4) argued that the Australian Government should mandate AEB for new heavy vehicles and that all new rigid trucks should have stability control. The Freight and Logistics Council of WA (sub. 22, p. 2) argued that:

> There is also a role for the regulators to provide commercial incentives to encourage the adoption of new technology, particularly in regards to cleaner and safer heavy vehicles. The regulators must work closely with industry in this regard.

A recent regulation impact statement from the Department of Infrastructure, Transport, Cities and Regional Development (DITCRD 2019a) recommended that all new heavy vehicles be fitted with AEB, through the development of a new ADR. However, a new ADR would not address the large proportion of older heavy vehicles that will continue to operate. DITCRD (2019a, p. 6) noted that:

> As retro-fitting sophisticated technology such as AEB would generally be high cost and disruptive for current vehicle owners, the action has focused on new vehicles only.

Mandating new technology may be justified provided the safety benefits, compliance costs and any impact on competition have all been carefully considered. Such decisions should be based on evidence regarding the potential gains for safety, the related compliance burden, and the potential effects on competition. Generally, governments should instead focus on setting outcomes-based standards and removing any barriers to effective new technologies being introduced.

The Australian Government should take a risk-based approach to approvals for new transport technology, with a general preference for encouraging the adoption of new technologies that are likely to have positive safety impacts. To minimise regulatory burden, the Australian Government should facilitate easier adoption of technologies adopted in other leading economies through increased recognition of international standards.

There may also be benefits in developing 'deemed to comply' guidelines for particular technologies. This approach enables a compromise between prescriptive and principles-based regulation by providing industry with guidance without precluding alternative options.

Technological standards and interoperability

Technological standards will need to be continually updated to support new transport technologies and enable interoperability between transport technologies.

For example, vehicle standards do not have adequate regard to telematics and some automated safety technologies, such as blind-spot warnings and lane change assistance. Nationally inconsistent standards could be a regulatory barrier to market entry, and new manufacturing standards encompassing autonomous driving systems as well as the physical technology will be required.

Consistent standards will be needed to facilitate the use of cooperative intelligent transport systems (C-ITS). As C-ITS relies on technologies 'communicating' with each other and with the surrounding infrastructure, ensuring that technologies 'speak the same language' through standardised messaging will be important (Australian Academy of Technology and Engineering 2019, p. 52). These national standards could be developed collaboratively with industry (Australian Academy of Technology and Engineering 2019, p. 60). The Australian Communications and Media Authority recently introduced a Class Licence to enable the use of ITS in Australia (ACMA 2018). This licence reserves a certain frequency of radio spectrum and is consistent with international standards to enable interoperability.

Enabling interoperability will be important, particularly given that Australia is likely to be a net importer of ITS technologies. In the rail sector, one major inconsistency is that signals vary across jurisdictions and track systems (unlike the road and maritime sectors). Train drivers crossing into other jurisdictions therefore need to understand different signalling systems. Interoperability of automated transport technologies was raised as an issue by the Freight on Rail Group (FORG). FORG described the use of the Advanced Train Management System (ATMS), an automatic braking and advanced signalling system used by rail operators in some States, as best practice (sub. 8, p. 2). However, operators in other States use an alternative technology — the European Train Control System (ETCS).

In regards to autonomous vehicles, the NTC (2019b, p. 49) argued that:

> In global terms, Australia is a secondary and relatively small market. This means Australia benefits from international regulatory decisions and from aligning its rules with international standards. We recognise that if Australia imposes standards for automated vehicles that are inconsistent with international regulation, manufacturers may not make their automated vehicles available in Australia. This would deprive Australians of the benefits of automated vehicles or delay these benefits.

Given that Australia is a relatively small market, COAG should aim for national and international consistency of laws and standards where practicable.

DRAFT RECOMMENDATION 8.1

The Australian Government should amend the Australian Design Rules and in-service vehicle standards to allow for new transport technologies, including automated technologies, with proven productivity or safety benefits. The Australian Government should aim for national and international consistency of laws and standards where practicable, and accept safety devices adopted in other leading economies. The Council of Australian Governments should investigate whether a 'deemed to comply' approach would be practical for some technologies.

8.2 Transport data

Transport technologies are generating ever greater volumes of data. At the same time, progress in digital technology has expanded the potential uses of data in freight and logistics, and transport systems more broadly. The increased availability of transport data, combined with significant improvements in the tools used for its management and analysis, present opportunities.

Transport data come from a variety of sources. Data are created by vehicles, trains and vessels, as well as the supporting infrastructure, and external sources such as smart phones. Intelligent transport systems (ITS) collect, process, integrate, and sort these data to better inform decisions and optimise the performance of traffic networks in real time (Australian Academy of Technology and Engineering 2019, p. 50). Governments will need to explore the potential of big data in the transport sector while addressing challenges in data access, capture, storage and analysis (TIC 2016a, p. 14). Managing the use of data while ensuring effective privacy and security arrangements will also become increasingly important, as operators will be more supportive of the use of ITS if the risk of inappropriate data access or misuse is addressed.

This section will assess the issues relating to the creation and use of historical and real-time transport data, while outlining the implications for stakeholders in each transport mode, and investigating the need for regulatory reform.

New sources and uses of transport data

Some emerging technologies are enabling transport data to be collected and used in new ways. For example, some relatively new sources of transport data include telematics and Dedicated Short Range Communications (DSRC).

- *Telematics* is the term used to describe long-distance transmission of computerised information (Australian Academy of Technology and Engineering 2019, p. 57). The use of telematics enables information about a vehicle, such as its location, speed, fuel consumption and condition to be wirelessly relayed to the vehicle's owner or an authorised third party.
- *DSRC* is a communications protocol that provides high speed, low latency communications from vehicle-to-vehicle (V2V), vehicle-to-infrastructure (V2I) and vehicle-to-other entities (V2X). DSRC can compete with, or complement 5G systems (Australian Academy of Technology and Engineering 2019, p. 49).

These data can be used for many purposes, including:

- optimising freight routes and schedules. For example, using real-time information to help travellers or freight operators plan an efficient journey, including facilitating optimal route selection, efficient connections with public transport and access to transport related services like parking (TIC 2016a, p. 11)
- congestion monitoring and management. For example, smart infrastructure, such as signals on motorway on-ramps or variable speed limits, can significantly improve traffic flows at relatively low cost (TIC 2016a, p. 10)
- enabling the use of ITS and autonomous technologies. For example, better communications on railways can safely allow shorter following distances between trains (TIC 2016a, p. 11)
- improving compliance and enforcement for regulators (chapter 9)
- improving record keeping and removing paperwork. For example, removing the need for truck drivers to maintain written work diaries through the use of automated electronic log books
- providing an evidence base for policymakers (chapter 10). For example, data can improve infrastructure planning and investment and operational decision making over the life of an asset (TIC 2016a, p. 11)
- enabling and enforcing dynamic road pricing (chapter 10).

A range of new technologies trialling or implementing these uses of transport data are underway in Australia and overseas (box 8.1).

Box 8.1 Some examples of data-based transport technologies

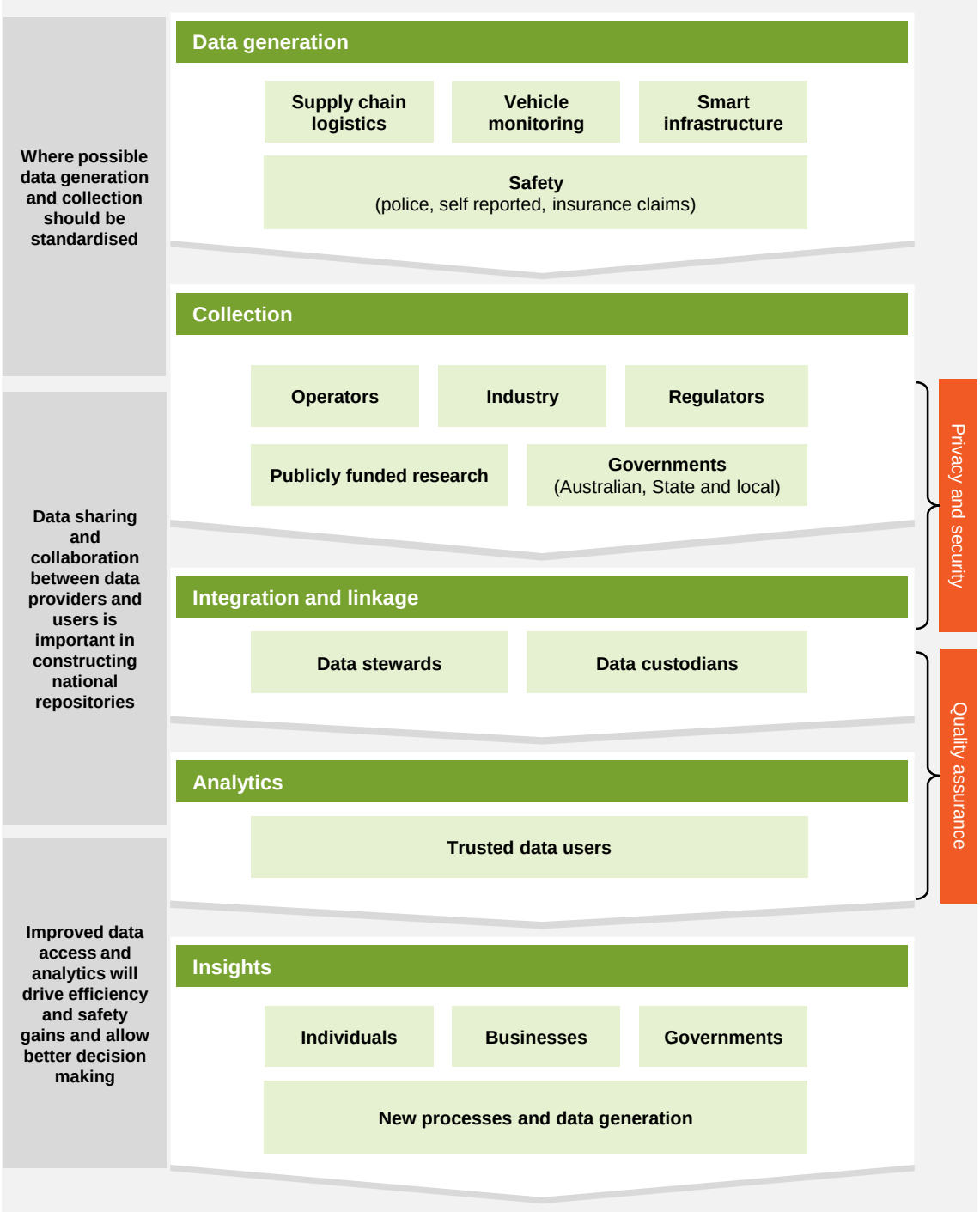
- Transport for NSW has established the Cooperative Intelligent Transport Initiative — one of the world's first large scale test projects of vehicle-to-vehicle and vehicle-to-infrastructure communications in heavy vehicles.
- The Cooperative and Automated Vehicles Initiative is running a large-scale pilot project of C-ITS in Queensland.
- A Victorian company, Eastern Plant Hire, operates a service whereby heavy vehicle owner-drivers can register their availability for transport tasks via a platform app. Uber operates a similar freight business in the United States, but not yet in Australia.
- Allianz has offered discounts on insurance premiums to 'good' European drivers based on data from real time monitoring and telematics. This approach was trialled with 80 000 vehicles.
- The Port of Fremantle uses a fully automated IT system with variable messaging signs to manage congestion. The Port also uses OneStop — a vehicle booking system for full containers that manages the available slots during the day via a compulsory app.
- The CSIRO has developed 'TraNSIT', which uses telematics to map millions of vehicle trips between production and domestic and export markets. For each supply chain path, it selects the least-cost travel path as well as vehicle configuration, accommodating road conditions, driver fatigue regulations and vehicle decoupling costs.
- The University of Melbourne developed the Australian Integrated Multimodal Ecosystem — a transport 'test bed area' incorporating 100 km of road and containing up to 1000 sensors to collect data on vehicle and pedestrian movement and public transport use.
- Cubic Transportation Systems and Transport for NSW have signed a five-year contract for an Intelligent Congestion Management Program, that will enhance Sydney's ability to manage its roads and public transport system.

Sources: Allianz (2019); Australian Academy of Technology and Engineering (2019); CSIRO (2019); Eastern Plant Hire (2019); Fitzgerald (2018); iMOVE (2017); ITS Australia (2017);Transport for NSW (2016).

Data collection and access

The Commission considered data access in the 2017 inquiry into Data Availability and Use. The inquiry found that improved data access and use can enable new products and services, drive efficiency and safety, create productivity gains and allow better decision making (PC 2017, p. 2). There are various policy challenges throughout the data life-cycle — from generation and collection through to its use. Such a life-cycle applies to data in the transport sector (figure 8.1).

Figure 8.1 **The transport data life-cycle**



The Australian Government has committed to releasing more non-sensitive public data to support private sector innovation, to improve service delivery, and to inform policy (Australian Government 2015), including the establishment of a Consumer Data Right in the banking and energy sectors (box 8.2). There may be potential to establish a similar framework for sharing data for the transport sector.

Box 8.2 The Consumer Data Right

The consumer data right (CDR) was announced by the Australian Government in November 2017, to enable consumers to access and safely transfer their banking data to trusted parties, so that they can benefit from its value. The CDR was designed to improve consumers' ability to compare and switch between products and services in the banking sector, and to encourage competition between service providers, in order to lower prices and encourage innovation. It was announced that the Australian Competition and Consumer Commission (ACCC), supported by the Office of the Australian Information Commissioner (OAIC), would develop the regulatory framework underpinning the CDR.

The CDR is intended to eventually become an economy-wide right, applied sector-by-sector where beneficial to do so, beginning in the banking, energy and telecommunications sectors. Future sectors subject to the CDR may be designated by the Treasurer based on advice from the ACCC and OAIC on the costs and benefits of including them.

Sources: ACCC (2018); Treasury (2018).

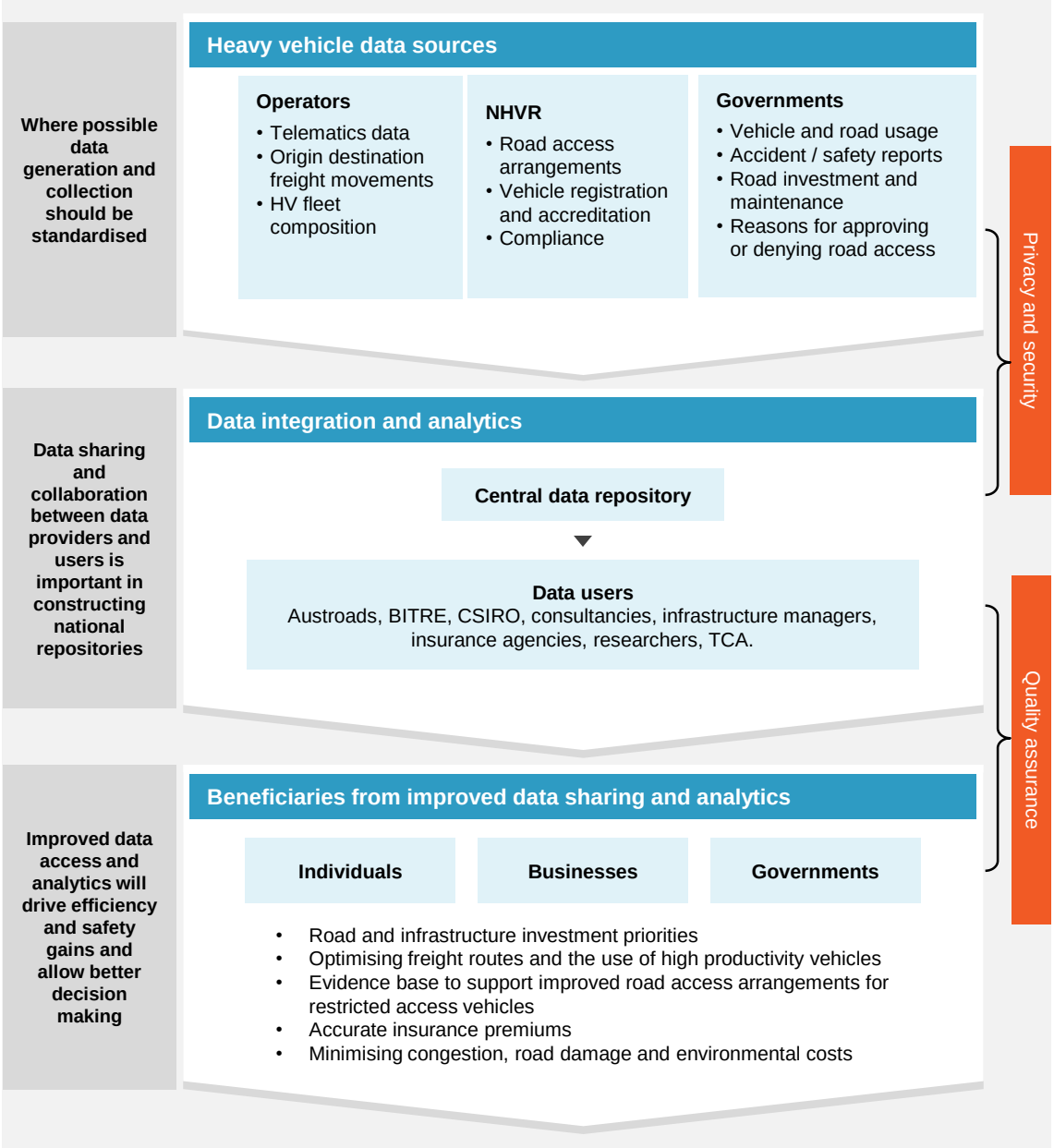
With heavy vehicles, data are generated from a range of sources, and collected by industry, the NHVR and other government bodies (figure 8.2).

Telematics data are being increasingly used by private operators. Although commercial logistical data are often very rich, they are usually not available to third parties and markets for trading telematics data have not developed. For large trucking companies, the cost of real-time vehicle tracking is likely to be relatively low, and most logistics fleets would likely be tracked for commercial purposes. However, such data are likely to remain within each individual organisation, as there is little commercial incentive (and possibly a lack of commercial infrastructure) to share data. Similarly, some transport data collected by governments can remain private. In other areas of transport, significant data gaps exist. Data are also collected in an inconsistent, ad-hoc manner (chapter 6).

Transport Certification Australia (TCA) is responsible for providing assurance in the use of telematics and related intelligent technologies, and the collection and management of heavy vehicle data through the National Telematics Framework. The Framework is intended to provide a common digital business platform for transport operators, road managers, regulators, and other parties (TCA 2019).

Data are also collected by government bodies. In the 2019-20 Federal Budget, $8.5 million was allocated for the creation of a National Freight Data Hub, to be managed by the Department of Infrastructure, Transport, Cities and Regional Development (DITCRD). The precise design of this Hub is yet to be determined, but DITCRD have described its purpose as to 'enhance the collection of and access to freight data, across all modes' to support operators, improve infrastructure decisions and enable evaluation of Australia's freight system (DITCRD 2019c).

Figure 8.2 **Potential framework for the use of heavy vehicle data**



By bringing the transport data from these sources together into a central repository, the National Freight Data Hub has the potential to benefit a range of stakeholders. Access to a large, network-wide dataset as a common resource would maximise the benefits of 'big data', while protecting the confidentiality of individuals and businesses (much as the Australian Bureau of Statistics collects and publishes data but is committed to privacy). For example, such data could be used (subject to terms and conditions) by:

- private operators and logistics companies to improve record keeping, optimise transport routes across modes in real time, and gain insights into trends in unsafe behaviour such as speeding or harsh braking

- regulators, for monitoring compliance and enforcement of operators (but not for directly punishing drivers through automatic penalties) (chapter 9)
- infrastructure managers, for managing traffic flows, monitoring the condition of infrastructure to determine investment priorities, and as a means to facilitate mass-distance charging (chapter 10)
- government bodies undertaking research
- other third parties, such as insurance companies rewarding drivers for driving safely (chapter 9).

Successfully establishing a centralised national data repository will require the cooperation of all the parties outlined above. In addition to the sharing of data between data providers and users, collaboration is required when making the subjective decisions needed to turn these data into useful information (for example, determining the technical definition of a heavy vehicle 'trip'). However, a central repository should aim to enable access to primary, unmodified data (other than the de-identification process) where possible to enable flexibility for data users.

Encouraging the uptake of telematics

As outlined above, vehicle telematics can deliver significant productivity and safety benefits for a range of parties. However, some of these benefits, such as improved user charging and infrastructure planning, do not accrue to private parties. There may therefore be a role for government to encourage the uptake of telematics.

For example, smaller operators may lack the capability to collect and/or use telematics data. These operators may also have no incentive to do so, because the benefits of tracking and optimising the use of a small fleet may be minimal. If there are positive externalities (i.e. safety and/or productivity benefits) from all operators' data being available in a centralised manner, there could be a role for government to either subsidise the use of telematics or provide information and guidance to smaller operators.

Government policy can influence the adoption of telematics. The NTC (2018b, p. 3) has highlighted many mechanisms for accelerating the uptake and use of telematics, including: technology trials, awareness campaigns, adoption of technologies into vehicle and design standards, updating government fleets and through offering regulatory, financial and productivity incentives. In the heavy vehicle sector, various national initiatives encourage the use of telematics through the National Telematics Framework. These include the Intelligent Access Program, Intelligent Speed Compliance, On Board Mass Monitoring, Certified Telematics Service, Intelligent Speed Management and Electronic Work Diaries (ITS Australia 2017, p. 58).

TIC (2016b) is exploring options for increasing the uptake of telematics and other technologies for regulatory and revenue collection purposes.

Data for regulatory and policy purposes

As discussed above, transport data can be highly useful for regulators and governments. The NTC argued that:

> A flexible approach to technology and data for regulatory purposes should facilitate innovative business practices, improve knowledge and encourage voluntary uptake of technology at a faster pace. (2019a, p. 49)

Some stakeholders argued that national regulators should play a larger role in the sharing, collection, management, and use of logistical data. One issue relates to whether each of the national regulators has access to all of the data it requires to fulfil its role in safety regulation. For example, the Commission's report on Agriculture Regulation (PC 2016b, p. 363) highlighted significant information gaps faced by the NHVR relating to permit decisions, as some data were held by State and Territory regulators. The NHVR (2018, p. 3) also noted that its access to data on road accidents was limited:

> [BITRE] administer the National Crash Database on behalf of the states, however the NHVR is currently unable to access this information. The NHVR is seeking jurisdictional permission to access this data for use in better identifying a picture of national safety.

Another way in which transport data could be used by government agencies is for compliance and enforcement. There may be a need to increase the data access powers of regulators and enforcement agencies (such as police departments) so that they can adequately assess compliance with relevant regulations. Enhanced use of telematics could improve safety through improved monitoring, and potentially enforcement, of various safety requirements. Independent accident investigators such as the Australian Transport Safety Bureau (ATSB) would also require access to data in order to effectively undertake no blame investigations into transport safety accidents. However, the potential for telematics to be used as a tool for compliance has reduced the uptake of the technology by operators (chapter 9).

There is a need to clarify the data access powers of regulators, enforcement agencies and accident investigation bodies. Regulators should have access to data at an adequate level to monitor compliance. Accident investigators should have access to data to determine the cause of accidents in no blame investigations and, in some cases, the party responsible. These issues are discussed in more detail in chapter 9.

Data privacy and security issues

A potential barrier to the widespread uptake of telematics and the use of data for regulatory purposes is the concern by some stakeholders that private or commercially-sensitive information will not be protected. In the 2017 inquiry into Data Availability and Use, the Commission argued that a 'lack of trust by both data custodians and users in existing data access processes and protections and numerous hurdles to sharing and releasing data are choking the use and value of Australia's data' and identified improving trust

community-wide as a key objective (PC 2017, p. 2). There may be a role for governments to establish rules regarding data access and use with respect to transport, including cyber security measures (box 8.3).

Box 8.3 Cyber security issues

Cyber security provides protection against unwanted access, control, damage, or theft of private digital property by unauthorized third parties and is critical to the successful implementation of many transport technologies, including data and analytics technologies.

The increasing creation and use of transport data is likely to bring increased cyber security risks. The interconnectedness of intelligent transport systems, such as vehicle-to-infrastructure and vehicle-to-vehicle communications, means that transport systems may become more vulnerable to cyber-attacks. Malicious algorithms and data discovery attacks are also expected to become more frequent. The manipulation of vehicles or transport network control systems by malicious third parties could result in potentially catastrophic outcomes for moving vehicles. Cyber security measures will therefore become increasingly important.

The Transport and Infrastructure Council (TIC) recommended the development of a 'national deployment plan' for security management of connected and automated vehicles by Australian, State and Territory governments in its *National Land Transport Technology Action Plan (2020–2023)*. TIC also identified the need for a Security Credential Management System (SCMS) — a system that verifies transport devices — as a measure that has been used overseas and that could be used for telematics and C-ITS in Australia. Queensland Government trials of SCMS, and research into the potential use of SCMS by transport authorities by the iMOVE Cooperative Research Centre, are expected to be completed by 2022.

Regulators should ensure measures (including physical and/or digital firewalls) are established to limit potential harm, where it is practicable to do so. The Commission's 2016 research study into digital disruption found that, while cyber security measures are important to protect citizens and facilitate trust, risk cannot be entirely eliminated, and it may not always be cost effective or socially desirable to do so. The business case for public cyber security investments should be properly scrutinised to ensure public money is delivering a net benefit.

Sources: Deloitte (2018); ITS Australia (2017); PC (2016a); TIC (2016b).

During consultation for this inquiry, participants indicated that heavy vehicle drivers had expressed privacy concerns around the use of telematics 'black boxes' in their vehicles. TCA argued that freight operators have concerns around the use of telematics data for purposes other than statistical aggregation (Anderson et al. 2019b, p. 44). There are some data privacy issues that are unique to transport and mobility. Deloitte argued that regulators should factor in the ability to track a person's movement when considering privacy protections (2018, p. 13). According to ITS Australia (2017, p. 48):

> It is critical that there is public acceptance that data sets about their personal travel are secure. To do this, we need to be transparent about why we need this data and what the benefits are to the individual as a result. This holds true for anonymised cellular data as well, which is now being widely used for travel information. While this data will likely be used for the next generation of traffic control systems, we need to be very careful in preserving individual privacy as we move into these areas.

When it comes to safeguarding the privacy of transport data, the interests of governments and the private sector may not be aligned. For example, some private transport operators not abiding by the national laws may benefit from a lack of transparency around their telematics data.

Privacy protections for transport data may also be inadequate in some areas. For example, there is no regulatory framework covering the handling of data created by autonomous technologies. This has led to uncertainty around how government agencies would access automated vehicle data (NTC 2016b, p. 9). Given the potential range of benefits of the widespread use of telematics, resolving privacy issues and providing clarity on how data are accessed and used by third parties will be critical.

DRAFT RECOMMENDATION 8.2

The Australian Government should co-operate with stakeholders including Transport Certification Australia when developing the National Freight Data Hub. The Hub should include a regulatory framework for the collection, storage, analysis and access of transport data, including telematics data. This framework should specify the data access powers of regulators, enforcement agencies and accident investigation bodies, and should enable these bodies sufficient access to undertake their respective tasks, while protecting privacy and confidentiality.

Implications for each mode

For the heavy vehicle sector, industry, regulators and other government bodies should co-operate in the establishment of the National Freight Data Hub as outlined above. If implemented successfully, the Hub will allow for improved data access and analytics in the heavy vehicle sector.

For the rail sector, ONRSR is developing the National Rail Safety Data Strategy in collaboration with the Australasian Rail Association and rail industry representatives to 'achieve relevant, consistent and quality national rail safety data that is readily available to stakeholders' (ONRSR, sub. 21, p. 6). One unresolved issue relates to the confidentiality of information in the Rail Safety National Law. Section 244 of the Rail Safety National Law prohibits ONRSR from disclosing information identifying a person without consent. This inhibits ONRSR's ability to share learnings from investigations and other relevant data with the wider rail industry. ONRSR is reviewing this section of the Act as part of the National Rail Safety Data Strategy.

For the maritime sector, there may be less scope for data reform. From 1 July 2018, AMSA became solely responsible for managing the data for the National System. Previously, AMSA received data from State and Territory regulatory bodies but this information was often of poor quality and incomplete. AMSA has said it is working to address data gaps as a priority (AMSA, sub. 35, p. 8).

8.3 Automation

Automation has been used in the transport sector in a variety of ways, and further automation has the potential to generate large productivity, safety and environmental benefits. However, automation also presents new challenges, including new safety risks.

Automation in the transport sector

Autonomous technologies have the capability to respond to real world conditions without human assistance. Such technologies have the potential to disrupt all modes of passenger and freight transport, and are already having an impact in Australia and overseas (box 8.4). However, it is not a binary choice between person-controlled and fully autonomous technologies — technologies can also incorporate a range of semi-autonomous functions, and autonomous features have existed for many years, such as autopilots on aircraft. These functions range from autonomous braking and lane-changing features (already available in some new vehicles), to fully driverless operation.

The 'level' of automation can be defined according to the SAE International Standard J3016, which outlines six levels of driver automation (figure 8.3). Similarly, the International Maritime Organisation (2018) has defined four degrees of maritime autonomy, including: automated processes and decision support, remotely controlled ships with crew on board, remotely controlled ships without crew on board and fully autonomous ships.

Some major vehicle manufacturers expect vehicles capable of fully autonomous driving (SAE level 3 or above) to become commercially available between 2019 and 2021 (figure 8.4). However, it is uncertain when such models will be made available in the Australian market, and when they will become a mainstream product offering (NTC 2019b).

While the regulation of automated technology is in its early days, tensions are already emerging between traditional public governance structures and the code-based decision making processes of automated technology (OECD 2019). Governments need to ensure regulatory frameworks are designed to ensure safety without imposing unnecessary regulatory burden or stifling productivity- and safety-enhancing innovation.

Box 8.4 Some examples of autonomous transport technologies

In the *heavy vehicle* sector:

- BHP, Fortescue and Rio Tinto have operated fully autonomous trucks on various mining sites in the Pilbara for over five years
- start-up Embark uses fully autonomous heavy vehicles (with human supervision) to deliver commercial freight in the United States via the 'longest automated freight route in the world'
- manufacturers including Daimler and Volvo participated in 'European Truck Platooning Challenges' in 2016 and 2019, successfully using autonomous platooning technology across various European transport routes
- trials of autonomous shuttle buses have occurred in various Australian states and territories, including at the Tonsley Innovation District in South Australia and Kangara Waters retirement village in the ACT.

In the *rail* sector:

- Rio Tinto established the first automated heavy-haul long distance rail network in the world in the Pilbara in 2018
- the Sydney Metro driverless passenger train commenced operation in 2019.

In the *maritime* sector:

- various small autonomous vessels are being used in Australia for surveying by the military, oil and gas industry and surveying companies
- Rolls-Royce and towage operator Svitzer developed a remotely operated tugboat, which operates commercially in Denmark
- Yara Birkeland is the world's first autonomous and zero-emission container vessel, scheduled to commence operation in Norway in 2020.

In warehousing and freight handling more broadly:

- Autostrads — driverless machines that move shipping containers between cranes, trucks and container stacks — have been rolled out by Patrick at its terminals at the Port of Brisbane (commencing in 2005) and more recently at Port Botany (2015)
- Toll has an 'Advanced Retail and eCommerce Fulfilment Centre' in Prestons New South Wales with a fleet of fully autonomous forklifts
- in the United Kingdom, XPO Logistics is creating a 'warehouse of the future' with collaborative robots, an advanced sorting system, and indoor drones.

Sources: AMSA (2017); Embark Trucks (2019); France-Presse (2016); Gleeson (2019); Henderson (2018); Jervis-Bardy (2019); PC (2016a); Rio Tinto (2014); Rio Tinto (2018); Sanda (2019); Tonsley (2018); Toll (nd).

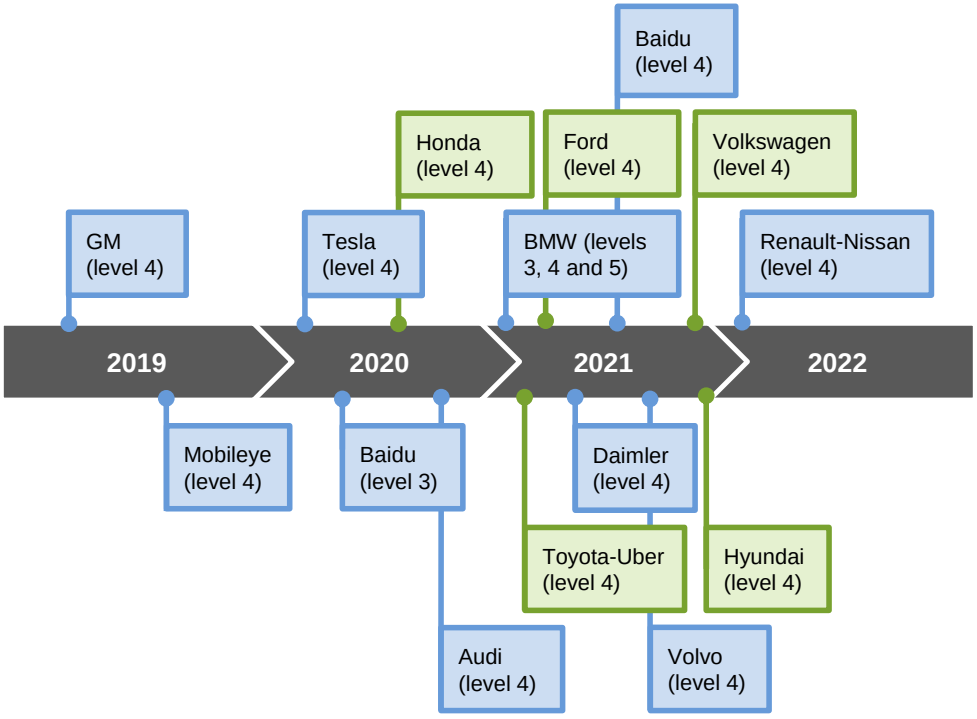
Figure 8.3 SAE J3016 levels of driving automation

	SAE Level 0	SAE Level 1	SAE Level 2	SAE Level 3	SAE Level 4	SAE Level 5
What does the human have to do?	You are **driving** when these features are engaged – even if you are not using the pedals or steering.			You are **not driving** when these features are engaged – even if you are in the "driver's seat".		
	You must **constantly supervise** these features. You must steer, brake or accelerate as needed.			You must **drive** when requested	These features will not require you to take over driving	
	These are **"driver support"** features			These are **"automated driving"** features		
What do these features do?	Provide warnings and momentary assistance	Provide steering OR acceleration/ brake support	Provide steering AND acceleration/ brake support	Can drive the vehicle under limited conditions. Will not operate unless required conditions are met.		Can drive the vehicle under all conditions
Examples	Automatic emergency braking, blind spot warning	Lane centring OR adaptive cruise control	Lane centring AND adaptive cruise control at the same time	Traffic jam chauffeur	Local driverless taxi, possibly with no pedals/ steering wheel	Same as level 4, but operates everywhere in all conditions

Source: SAE International (2019).

Figure 8.4 Automated vehicles timeline

Based on manufacturer's predicted release of automated vehicles



Source: NTC (2019b, p. 103).

Potential benefits of automation

Automation offers many productivity benefits. Removing the need for human operators will reduce some labour costs and eliminate the need for fatigue management. Automation also enables vehicles to travel closer together, and to use ITS to automatically find optimal routes. Communications between connected vehicles and road-side infrastructure could allow traffic management to be optimised, reducing congestion and pollution. Automated vehicles could also be summoned on-demand for more convenient first and last mile trips (DITCRD 2017, p. 18).

Automation also offers a number of potential safety benefits. For example, automation can be expected to significantly reduce or eliminate safety risks caused by human error. Autonomous vehicles are better able to drive within the speed limit, have faster reaction time for braking in the presence of an obstacle, and eliminate distracted driving and impaired driving caused by alcohol or other drugs (City of Melbourne 2016, p. 21). Fully autonomous vehicles could dramatically reduce the number of accidents caused by driver inattention or error. According to TIC (2016a, p. 10):

> [Autonomous emergency braking] is estimated to prevent 20–40 per cent of certain crashes. In the future, higher levels of automation, including vehicles that require no human control, may significantly reduce the number of road deaths, potentially by as much as 80 or 90 per cent.

Industry groups estimate that the economic benefits to Australia of introducing autonomous road vehicles alone could be as high as $95 billion per annum — with the total 'avoidable costs' from crashes and congestion equal to around $80 billion (ADVI 2019).

There are clear safety benefits from removing people from dangerous work environments. In 2017, the transport sector accounted for the highest number of worker fatalities (Safe Work Australia 2017) (chapter 5), and therefore automating part or all of the high-risk task could provide significant benefits. Automation also provides the ability to respond to hazards instantaneously, and enables a quicker response when safety incidents do occur. For example, 'eCall' is an autonomous feature (mandatory in all new cars sold within the European Union from April 2018) that automatically notifies emergency services when a vehicle has been involved in an accident (European Commission 2015).

Autonomous transport technologies may also provide social benefits, such as improved mobility for those unable to operate non-autonomous vehicles (including the young, some elderly people and some people with a disability). This will become increasingly important as Australia's population ages and lives longer, and the number of non-drivers grows (TIC 2016a, p. 13).

Potential costs and risks of automation

Automation creates some new safety risks. For example, autonomous systems can fail, and international experience suggests that some significant public safety issues exist during the trial phase and early adoption, when technologies and protocols are still being developed.

The safety results for autonomous road vehicles have been mixed so far. Uber has had considerably more incidents requiring human intervention than other companies, with trials showing that their cars required human intervention at least once for every mile driven while Waymo and Cruise were able to drive thousands of miles before intervention was needed (Myles 2019; Wakabayashi 2018). The number of collisions due to autonomous trial vehicles in the United States is increasing over time as more trials are undertaken (Myles 2019). Some fatalities involving (level 3) autonomous vehicles operated by Tesla have occurred in recent years, while a (level 4) autonomous vehicle trial undertaken by Uber resulted in the first pedestrian fatality caused by an autonomous vehicle (Schmelzer 2019).[20]

Autonomous technologies can also bring some new safety risks, even when operating effectively. For example, Google research suggests that, in semi-autonomous vehicles, drivers can be inattentive and not ready to resume control when required due to 'passive fatigue' and distraction (PC 2016a, p. 181). This is consistent with an experiment involving Volvo employees, which found that only a third of drivers applied emergency brakes promptly when in an emergency situation (Victor et al. 2018). Similarly, a trial in Canberra found that reaction times more than doubled when the automated function was engaged (NTC 2019b, p. 29). Through consultation with heavy vehicle operators, the Commission heard that autonomous braking has caused some problems (such as seatbelt injuries) by activating unexpectedly or without cause and that drivers have reported a loss of 'feel' as heavy vehicles have become more automated.

As discussed above, autonomous technologies rely on connected networks, sensors and telecommunications, and are therefore potentially vulnerable to cyber security risks.

Automated technologies can be disruptive to existing industries and may lead to some job displacement. Increasing automation is likely to create some new, highly technical jobs but may also displace some low and medium skilled jobs (PC 2016a). The Commission heard from heavy vehicle operators that, while truck drivers may require some additional training to work with autonomous technologies, human operators will continue to be important for undertaking non-driving tasks (such as loading freight and interacting with customers). Some maritime operators have made similar arguments regarding autonomous vessels (NFAS 2019). Despite a reduction in average crew sizes, having a crew on board is likely to remain important for particular tasks, such as assisting passengers in emergency situations.

Regulation of autonomous technologies

Autonomous transport technologies create a range of challenges for governments. Some existing regulatory and legal frameworks do not adequately provide for the safe operation of

[20] In March 2018, an autonomous vehicle with a human emergency driver behind the wheel struck and killed a pedestrian who stepped onto the road while walking a bike. Uber and other companies temporarily suspended autonomous vehicle testing following the incident, and Uber's trials remain 'dramatically reduced' (ABC News 2019).

autonomous technologies, and these technologies may introduce new safety risks that will not be eliminated by market forces (NTC 2019b, p. 33).

Transport regulations may be required to recognise algorithms or autonomous pieces of equipment as entities in their own right (that is, as the driver), and algorithms will need to be coded to comply with transport regulations. Governments must also consider carefully how to approach the quality assurance task, to ensure adequately safe designs. Even with regard to lower levels of automation, there may be complications around determining legal liability when autonomous driving systems breach legislation or cause harm.

There is risk too in excessive regulatory caution. It is possible for regulatory barriers to impede Australia's progress in adopting autonomous vehicles, potentially to the detriment of overall safety outcomes. Governments will need to ensure regulatory frameworks are designed to ensure safety without imposing unnecessary regulatory burden or stifling productivity-enhancing innovation. A range of policy research and work is underway, particularly regarding the regulation of driverless vehicles (table 8.1).

Table 8.1 **Current policy research and initiatives for autonomous vehicles**

Stage	*Initiative*	*Owner*	*Status*
Import and manufacture	Harmonisation with UN vehicle standards	Australian Government	Ongoing
	Safety criteria for first supply of automated vehicles	Australian Government	Ongoing
Registration and licencing	Framework for registration and licencing of automated vehicles	Austroads	Ongoing
	Integrating advanced driver assistance systems in driver education	Austroads	Ongoing
On the road	In-service safety for automated vehicles	NTC	Ongoing
	Operation of automated heavy vehicles in remote and regional areas	Austroads	Complete
	National enforcement guidelines for automated vehicles	NTC	Complete
	Regulating government access to C-ITS and automated vehicle data	NTC	Complete
	Review of motor accident injury insurance and automated vehicles	NTC	Ongoing
Infrastructure	Infrastructure for automated vehicles: freeways and highways, traffic signs, line markings	Austroads	Ongoing
	Road authority data for connected and automated vehicles	Austroads	Ongoing

Source: NTC (2019b).

Regulation of algorithms

Governments and regulators will be required to assess the safety of transport technologies that are fully or partly reliant on algorithms to operate. When assessing the safety of an

autonomous technology for registration, there may be a need to examine the software as well as the physical state of the technology as with 'traditional' registration checks.

However, there may be challenges in determining the adequacy of the algorithms underpinning automated technology. Automation relies on algorithms, which can be designed to constantly update based on new data (through machine learning). If a regulatory agency approves the use of a particular autonomous technology, the underlying code may evolve over time and become entirely different to the initially approved code (OECD 2019). Code is also often created in environments that are not open to scrutiny and over time algorithms may become increasingly complex, preventing regulatory agencies (and the wider population) from assessing their function (OECD 2019). It may be difficult to predict how a machine learning algorithm will respond to a new environment or data in a form it did not encounter during development or testing. These issues pose a challenge to both manufacturers and regulators.

The Organisation for Economic Co-operation and Development (2019) has released a report on governing transport algorithms, which contains a number of recommendations, including:

- making policy 'algorithm-ready' and transport policy makers 'algorithmically-literate' and using algorithmic systems to regulate more dynamically and efficiently
- ensuring that oversight and control of algorithms is proportional to impacts and risks
- building in algorithmic auditability by default into potentially impactful algorithms and converting analogue regulations into machine-readable code
- establishing robust regulatory frameworks that ensure accountability for decisions taken by algorithms. These should ensure that algorithmic systems are conceived and built in such a way that they can be trusted to operate as intended. Those responsible for deploying the algorithmic system should be legally accountable for its decisions
- establishing clear guidelines and regulatory action to assess the impact of algorithmic decision making, and compare performance with human decision making.

One potential solution could involve certifying the 'behaviour' of an autonomous system through a process of practical testing, rather than attempting to certify the complex underlying code. As a first step, regulators should identify the risks posed by the use of algorithms in transport technologies, and should employ staff who possess the relevant skills to enable the assessment of algorithms and autonomous transport systems.

Road rules and licencing

Automation means that human operators are no longer wholly in control of a particular transport technology or the underlying decision-making process. This has implications for the traditional rights and responsibilities held by transport operators and manufacturers. For example, various legislative changes may be required to enable the legal operation of autonomous technologies. More than 50 Commonwealth and State legislative changes would be required to enable driverless vehicles to operate on Australian roads (NRMA 2017).

Australian road rules assume a human driver, and the NTC released a policy paper on *Changing driving laws to support automated vehicles* in May 2018. Drivers' licencing schemes will also need to change. Autonomous transport technologies require different skills to operate, and 'traditional' drivers/operators licenses do not reflect this. Governments will need to specify cases where traditional licenses are not required, and how licences for autonomous vehicle passengers will differ from traditional drivers' licences. Austroads explored some potential options in the report on *Registration, Licensing and CTP Insurance Issues Associated with Automated Vehicles* (Austroads 2017).

Accidents involving autonomous technology

There are community concerns around the safety of some autonomous technologies[21], and the potential ethical issues around how fully autonomous vehicles would respond in emergency situations (PC 2016a, p. 181). These issues revolve around how algorithms will make decisions involving moral judgments, such as the weight placed on the safety of vehicle passengers compared to other road users. There may be a case to regulate these algorithms to ensure they reflect community values.

There are also unresolved questions around legal liability when autonomous driving systems breach legislation or cause harm. In the case of a fully autonomous technology it may no longer make sense for the occupant of a vehicle to be held legally liable for an accident. In such cases, liability may instead lie with the manufacturer, who is responsible for the design and safe operation of the automated system. This problem could be addressed by the introduction of a general safety duty (discussed below).

Insurance policies that assume a human driver today will also need to change. The United Kingdom has already made legislative changes to address some of the issues around insuring automated vehicles, through the *Automated and Electric Vehicles Act (2018)*. Section 4 of this Act provides that insurers may exclude or limit the insurer's liability arising as a result of software alterations made by or with the knowledge of the insured which are prohibited under the terms of the policy, and the insured's failure to install safety-critical software updates that the insured 'knows, or ought reasonably to know, are safety-critical'. The NTC is considering options for the insurance of autonomous driving systems (NTC 2018a).

Agencies responsible for investigating accidents involving autonomous technologies will need to determine the extent to which an accident was caused by an operator or by an issue with an autonomous system and/or its manufacture. An investigator would likely require highly specialised knowledge, and access to relevant data. There may be a case for expanding the role of ATSB to investigate accidents involving autonomous vehicles (chapter 9).

[21] A poll conducted by Roy Morgan (2017) found that only 46 per cent of Australians would be willing to travel in an automated vehicle. Responses varied significantly with age, with 83 per cent of 18-24 year olds indicating willingness to travel in a driverless car compared with 27 per cent of those aged 65 and over.

Trials and early adopters

Different regulatory approaches are needed for different stages in the roll-out of autonomous technologies and different levels of automation. Regulation should be adaptive and responsive to changes in the relevant industry and technological advancements over time.

Trials

While much of the expected productivity benefit of automation is likely to be associated with mature technologies, international experience suggests that some significant public-safety issues exist during the trial phase and early adoption, when technologies and protocols are still in development (Merkel 2018). At the same time, these early phases are key in ensuring investment in such technologies and associated infrastructure.

Various States and Territories have undertaken autonomous vehicle trials under State legislation (box 8.4). South Australia was the first Australian jurisdiction to introduce legislation for facilitating autonomous vehicle trials, although explicit legislation is not necessary to facilitate trials (PC 2016a, p. 186). The NTC identified the potential for inconsistent conditions for on-road trials across jurisdictions as an issue and proposed a set of national guidelines to support a consistent approach. Rather than embedding trial requirements in legislation, the guidelines provide a performance-based framework that 'supports innovation and gives certainty to governments and industry' (NTC 2017, p. 3).

By developing these guidelines, the NTC aims to make Australia a 'global testbed' for automated vehicles (NTC 2017, p. 3). A potential risk is that jurisdictions could compete in a 'race to the bottom' to have the most lax regulations in order to attract investment. This has implications for public safety.

Regulation of partially automated technologies

Applications such as mining, freight handling and rail offer relatively immediate scope for the adoption of autonomous transport technologies. By contrast, fully autonomous heavy vehicles are potentially many decades from implementation due to the technology, the state of infrastructure, social acceptability and regulatory impediments (NTC 2016a). However, it is not a binary choice between driver-controlled vehicles and fully autonomous ones — vehicles can also incorporate semi-autonomous functions that automate parts of the driving task.

Clarity is needed around the regulation of partially-automated technologies. In the heavy vehicle space, Australian regulations can enable vehicles with partial or conditional automation, but rules around 'control' of the vehicle are unclear (NTC 2016b). For instance, it is unclear who is in control of an automated vehicle when the human driver must monitor the automated driving system and intervene if requested. The current interpretation by enforcement agencies of 'proper control' requires a human driver to have at least one hand

on the steering wheel, however this interpretation is likely to become outdated as autonomous technology improves (NTC 2016b, p. 8).

Different regulatory approaches will be required for different stages in the development and roll-out of some autonomous technologies. As discussed above, the 'trial phase' will be important for collecting data and determining how technologies work in practice, but raises unique regulatory issues due to the imposition of public risk. Early adopters of autonomous or partially-autonomous technology will also face some unique challenges. These users will likely be required to operate in environments that involve interactions with users of non-autonomous technologies, and associated safety risks (for example, autonomous heavy vehicles operating on highways with non-autonomous vehicles). Governments should not regulate too early — which could create artificial barriers to emerging technologies — or regulate too late and stop proven safety related technologies from being deployed. There is a need for a phased and flexible reform program (NTC 2016b).

General safety duty

The NTC released a consultation paper on *In-service safety for automated vehicles* as part of its reform program to enable the uptake of autonomous vehicles in Australia (NTC 2019b). In this paper, the NTC put forward a range of possible options for the regulation of autonomous road vehicles, including a new in-service general safety duty enforced by a single national regulator through State or Territory applied law.

Such a law would impose an overarching and positive duty on Autonomous Driving System Entities[22] (ADSEs) to ensure the safety of autonomous vehicles so far as reasonably practicable. The duty could also apply to an ADSE's executive officers, and potentially repairers of autonomous vehicles. In order to satisfy the duty, an ADSE must show it has established systems to respond to safety risks. Such systems could involve policies to ensure the quick detection of software errors, or mechanisms preventing an autonomous vehicle from operating when it is unsafe to do so. A statutory safety duty could help to:

- 'codify' duties against negligence into legislation, and attach a criminal sanction for breaching the duty
- provide greater clarity about what constitutes negligence in the context of automated vehicle regulation
- allow regulators to monitor compliance and enforce the duty in a proactive manner.

General safety duties can be efficient and effective, because parties have both the freedom and incentive to innovate. They can solve safety risks particular to their role, rather than needing to comply with prescriptive rules far removed from the risk itself. A general safety duty would also ensure that in-service safety risks and hazards that are not identified through

[22] An ADSE is a legal entity that certifies that an Automated Driving System (ADS) can safely perform the driving task in place of a human driver. Under the proposed NTC scheme, an ADSE will self-nominate by seeking type approval for the ADS under the *Road Vehicle Standards Act 2018* (Cwlth) (NTC 2019b).

the safety assurance system process are managed, and that unsafe behaviours that are not otherwise captured by prescribed offences are prevented.

The Commission considers that a general safety duty (similar to the approach adopted by workplace health and safety legislation) should apply to all parties with a significant influence over the safety of the operation of an autonomous transport technology. Such parties would include manufacturers, users and potentially repairers and maintenance and service providers of automated transport technologies.

However, it may be desirable for such a safety duty to be supported by some more prescriptive rules around various aspects of autonomous operations. Prescriptive regulations can be effective when they do not interfere with innovation, and when a high degree of standardisation is preferred (NTC 2019b, p. 88). For example, there may be benefits in maintaining existing rules around high-risk activities such as the transportation of dangerous goods, as well as drug and blood alcohol laws for users of autonomous technologies operating at level 4 and below.

DRAFT RECOMMENDATION 8.3

The Australian Government should impose a general safety duty on all parties with a significant influence over the safe operation of autonomous transport technologies. The creation of a general safety duty should not preclude the use of prescriptive rules where the assessed risks are high.

Implications for each mode

Different regulatory approaches will also be required for different modes and functions of autonomous technologies. For instance, autonomous trains operate in highly controlled environments and autonomous maritime vessels often operate in environments involving little interaction with other vessels or the general public. Each of these technologies are likely to involve less risk than autonomous heavy vehicles operating in highly complex environments and among many non-autonomous vehicles and pedestrians.

Heavy vehicles

For the heavy vehicle sector, many laws and regulations will need to change to accommodate increasing automation. Some of these changes are being considered by the NTC and could be incorporated as part of the review of the HVNL currently underway.

In November 2018, the NTC recommended that a safety assurance system for automated driving systems be administered by a government authority, preferably on a national basis. Approval decisions could be made on the advice of a single national government panel consisting of Australian, State, and Territory Governments, the NTC, the NHVR and Austroads (NTC 2018c).

In November 2016, Australian transport ministers agreed to a phased program so that 'conditionally automated vehicles' (with a supervising human driver) could operate safely and legally before 2020, while highly and fully automated vehicles could do likewise from 2020. In addition, DITCRD is leading the *National Land Transport Technology Action Plan*, which aims in part to keep ADRs relating to automated vehicles up to date with international standards.

Rail

For the rail sector, the NTC found that there are no regulatory barriers to automated rail (including light rail) in Australia (NTC 2016b). ONRSR approved an autonomous freight rail system used by Rio Tinto on a private network in 2018 (Smartrail World 2018). Given that this train operates on a private rail network, the productivity benefits are captured by the owner of the network, and any risks to community safety are relatively contained. Similar technology has been used for the development of autonomous passenger trains for the Sydney Metro, which commenced operation in 2019 (Sanda 2019; Wiggins 2018).

ONRSR (sub. 21, p. 45) argued that its co-regulatory arrangements already accommodate for new technologies as seen with the recent introduction of driverless trains. As it is a risk-based model, new technologies can be assessed, with risks identified and managed with rules, processes and procedures, supported by training and development. The current regulatory arrangements for rail therefore appear acceptable for managing the risks of emerging, autonomous technologies.

Maritime

For domestic commercial shipping, there may be some regulatory barriers to the introduction of autonomous vessels. The International Maritime Organisation (2019) is conducting a regulatory scoping exercise to determine whether existing regulatory settings are appropriate for autonomous vessels, and has approved some interim guidelines to facilitate trialling of the technology.

AMSA (2017, p. 19) has identified a number of unresolved technical and regulatory issues including mandating collision avoidance technology, enabling remote or automated operation of switches, valves and other controls, and other issues around autonomous vessel design, registration, certification and operation. AMSA's current approach is to assess autonomous vessels on a case-by-case basis, and grant regulatory exemptions where the technology is deemed safe. This approach appears to be operating well, but it will need to change when the number, size and complexity of autonomous vessels increase.

In the short term, AMSA should aim to enable trials of autonomous vessel technologies in order to build an evidence base and inform how regulations should change. There may be scope to use a 'regulatory sandbox' approach (chapter 9) to enable the safe testing of innovative technologies and facilitate mutual learning by regulators and operators.

9 A reform agenda for safer transport

Key points

- The role of government in influencing transport safety outcomes is much broader than a single regulatory regime. A 'system-wide' view is needed when considering how to improve safety in the three modes of transport. Policy, regulation and culture all influence safety outcomes.
- With national regimes for heavy vehicles, rail, and domestic commercial vessels now in place, further regulatory reform will be logical incrementalism; shaping the system to exploit new innovations, filling gaps, and streamlining administration all with a view to safety and productivity.
- Over time, the system should give operators more opportunities — and incentives — to develop effective, lower cost safety solutions as a voluntary alternative to prescriptive regulation. This approach will encourage a stronger safety culture in industry focused on outcomes rather than compliance.
- Competitive pressures can prompt risk taking by some operators. Chain of responsibility obligations help address this risk as do industry initiatives such as the Master Code for heavy vehicles. Co-regulation in the rail sector shows how industry standard setting can improve safety.
- In some instances, road and rail compete directly to carry freight. There may be safety implications from the choice of mode though the costs and benefits are difficult to estimate. In any case, policy should be neutral so that competition leads to optimal outcomes for the community. Allocative efficiency between the modes of freight transport requires consideration of various aspects of productivity (discussed in chapter 10), and should ensure high levels of safety.
  - Telematics data can be harnessed to improve decision making and incentives for safety. Such data are already in limited use in vehicle insurance, on an opt-in basis. This has potentially mixed consequences for safety.
  - Data would be better used to improve safety-related policy decisions, rather than providing regulators with more intrusive enforcement powers.
- The safety culture in the fishing industry would benefit from better coordination between transport safety, work health and safety, and fisheries management. Winding back grandfathering and targeted education of high risk groups are also important.
- Initiatives aimed at improving driver skills, including drivers of light vehicles, are important to improve safety on Australia's roads.
- The full potential of incident investigation has not been realised in the system. The Australian Transport Safety Bureau should be given the responsibility and resources to conduct no-blame investigations in all three modes.

9.1 Introduction

This chapter identifies opportunities for safety reforms in the three transport modes.

Safety outcomes are determined by much more than the actions of drivers of vehicles and trains, or the masters of vessels. They are directly and indirectly influenced by the decisions of transport operators and others in the supply chain; the behaviours of people outside the transport industry, including the general public; the state of equipment; and the adequacy of infrastructure (figure 9.1). Policy and regulation aim to influence these factors in order to achieve the underlying objective of improving safety outcomes. Or, to put it another way, policy and regulation are required to the extent that the key drivers fail to deliver adequate safety. These dynamics are important in considering how the roles of governments and regulators should evolve over time.

The 2009 COAG reforms focused on establishing three national regulatory regimes. However, the role of government in influencing safety outcomes is much broader. The so-called 'regulatory system'[23] for transport safety is comprised of multiple regulatory regimes, including economy-wide regulation (for example, industrial relations and workplace, health and safety regulation). A range of public institutions are involved, at all levels of government. This 'system-wide' view is valuable when considering how the many aspects of regulation and policy might work together to improve safety outcomes.

This chapter considers aspects of safety policy and regulation beyond either the scope or the timeframe of the COAG harmonisation agenda. It outlines a broad, new agenda for governments and regulators to improve safety, including discussion of new conceptual approaches, emerging challenges, as well as opportunities for reform and further harmonisation. The chapter first considers how transport safety regulation might improve and evolve, taking into account the characteristics of each mode (section 9.2). It then considers the impact of competitive pressures on transport safety (section 9.3), the potential of data to improve safety regulation, and other avenues to improving safety (section 9.4).

The chapter also considers interactions between transport safety regulation and other regulatory regimes (section 9.5). It discusses the regulation of heavy vehicle driver competency, which lies outside of the Heavy Vehicle National Law (HVNL) (section 9.6). Finally, it explores opportunities to improve the evidence base for regulation and policy through improved incident investigation (section 9.7).

[23] As discussed by the New Zealand Productivity Commission report on Regulatory Institutions and Practices (2014).

Figure 9.1 **The roles of government in influencing safer practices**

9.2 Evolution of transport safety regulation

Transport safety regulation has an important influence on the actions of drivers, operators, and other businesses in the supply chain, which are key objectives of safety policy and regulation (figure 9.1). To this end, the COAG harmonisation agenda sought to implement new regimes in each of three modes of transport. While implementation continues, and there are ways to better implement the regimes, the establishment of these regimes has all but been achieved.

With national regulators now established, the logical next step for policy makers and regulators is incremental improvement of the regimes, often referred to as 'regulatory stewardship'. The focus shifts from the large-scale institutional changes involved in harmonisation to improving the newly established national laws. In some ways, the stewardship of the national transport safety regimes has already begun, with the National Transport Commission (NTC) reviewing the HVNL.

Many submissions to this inquiry have discussed the merits of prescription in regulation, as well as risk-based compliance and enforcement, in response to questions posed in our issues paper (box 9.1). Similar themes were raised by the NTC in its issues paper on risk-based regulation in the HVNL (NTC 2019a).

Choosing the right approach

The choice of regulatory approach is not binary (figure 9.2). A mix of prescriptive and principles-based regulations, as well as risk-based compliance and enforcement, may be required to reflect the nature of the safety risks and the capabilities of regulators and businesses in each mode. As these risks and capabilities are dynamic, an effective 'system' will need to adapt accordingly.

Ensuring regulations are not too prescriptive

Different regulatory approaches are often described in terms of how the regulations are written. As discussed in chapter 2, some regulations set out in detail how regulated entities should behave, stipulating precisely what they can or cannot do (i.e. prescriptive or rules-based regulation). For example, the Australian Road Rules prescribe that motor vehicle drivers and passengers must wear a seatbelt. In contrast, principles-based regulation sets an overall objective or standard that must be achieved, rather than prescribing in detail how businesses and individuals should comply. For example, section 18 of the Australian Consumer Law requires that business not engage in misleading or deceptive conduct, but does not specify in detail what steps businesses should take in order to be compliant.

Box 9.1 Stakeholder views on approaches to regulation

Several stakeholders commented on the various approaches to regulation that have been implemented by the national safety regulators:

> It is important to note that the [Rail Tram and Bus Union] does not support a total reliance on prescriptive rules. Rather, prescriptive rules are simply the building blocks for developing and maintaining a strong safety culture – specifically a safety culture that fosters positive and collaborative relationships between workers and their employers. (Rail Tram and Bus Union, sub. 10, p. 5)

> It would appear the current prescriptive versus a risk-based assessment approach have both been effective when aligned correctly to the size and number of operators in each of the markets. It is [Grain Trade Australia's] view the [National Heavy Vehicle Regulator's] initial prescriptive approach which now also includes (with the recent change to the HVNL) a risk-based approach is becoming more effective across the diverse portfolio of supply chain participants in this sector.

> The initial wholly prescriptive approach by the NHVR was supportive of a relatively smooth implementation of the HVNL, especially with the larger organisations within the road transport sector. With the evolution to a risk-based approach the NHVR is addressing adoption by both smaller entities within the road sector as well as other participants within the supply chain. (Grain Trade Australia, sub. 38, p. 5)

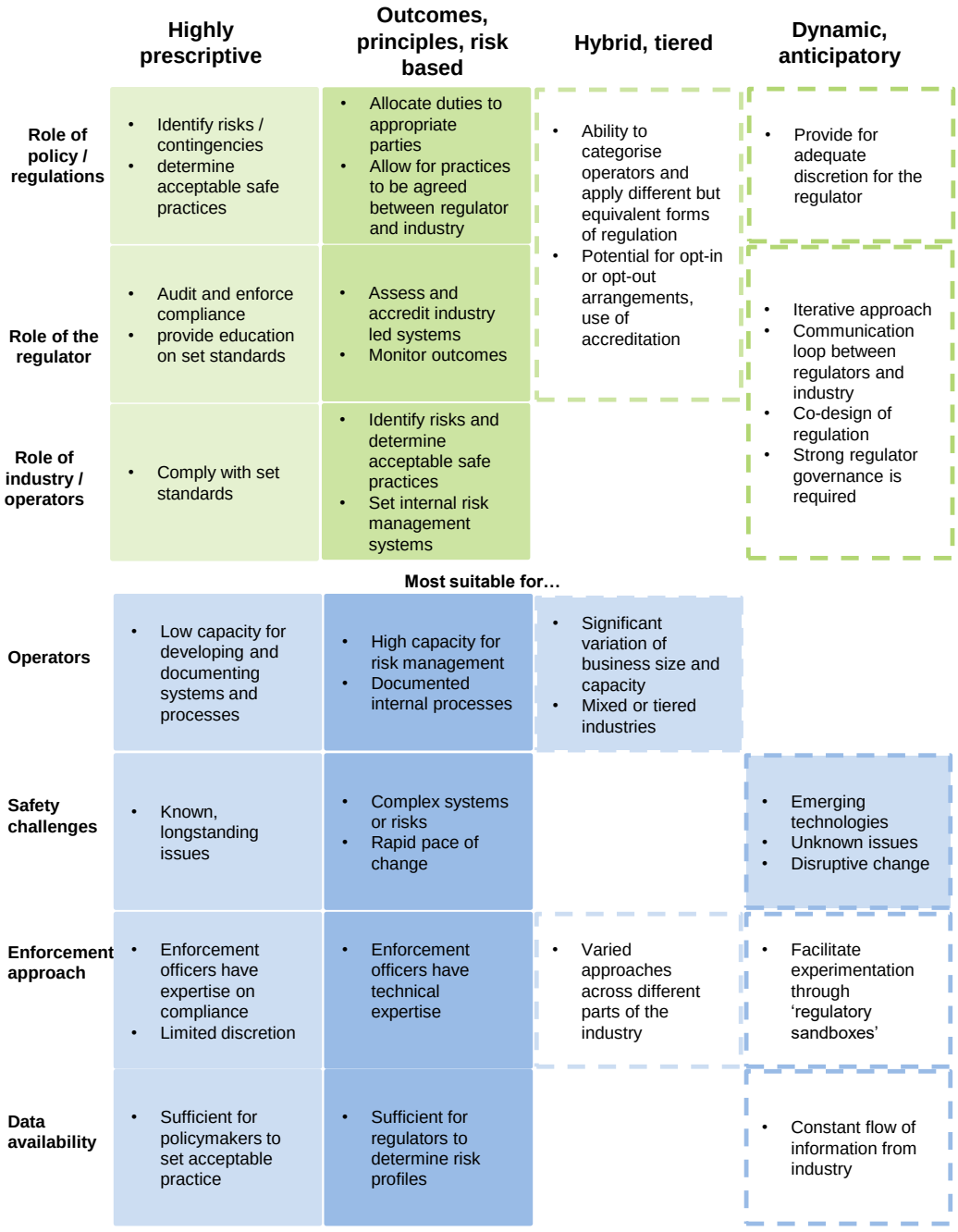
> The [National Farmers' Federation] has traditionally supported risk-based approaches to regulation because, in theory, risk-based approaches should enable those subject to that regulation to implement their obligations in a way that best suits their particular circumstances. Risk-based approaches should also obviate the need for rules that seek to address all possible situations. Related to this, risk-based approaches should also reduce the need to be fully cognisant of all requirements – even those not relevant to your business – thus reducing the regulatory burden. What became apparent in the Chain of Responsibility awareness campaign was that the fear of prosecution meant those subject to the rules sought clear guidance on what constituted compliance. Users were concerned that they would have to wait for prosecutions to obtain this kind of certainty. (National Farmers' Federation, sub. 36, pp. 3–4)

> … the HVNL does not currently resolve the tension between certainty by way of prescriptive requirements and the adaptability of performance based requirements. … the HVNL seems to have a bet each way, forcing all operators and regulated parties to run a safety management system in a prescriptive regulatory environment. This must change with a greater focus on enforcement that is suitable to a modern, efficient industry. The HVNL is a poor piece of legislation. In particular the HVNL is different in scale and style from comparable laws. The HVNL is unduly large and highly prescriptive, with a lot of detail in the primary legislation. (NatRoad, sub. 7, pp. 3–4)

Given that prescriptive regulations dictate particular actions and behaviours, they tend to work better in cases where risks are static and well understood, and there is a singular, desirable solution. In such cases, prescriptive rules may have the advantage of being simpler to enforce. For example, requirements around seatbelts have been longstanding, and enforcement of these rules is straightforward.

In other cases, there may be too many complex risks (and solutions) for the regulations to stipulate appropriate behaviour. It may be the case that there are several possible approaches, each providing adequate safety assurances. It may also be the case that policy makers are not in a position to understand how best to manage a particular safety risk. As far as possible, the regulatory approach should take into account which party is best placed to understand, manage, and control the safety risk.

Figure 9.2 **Various models of safety regulation relevant to transport**



Increasing the use of risk-based compliance and enforcement

A separate but related factor is the regulator's approach to compliance and enforcement. A risk-based approach to regulation focuses on risks associated with non-compliance, and allows regulators to deploy resources in proportion to the risk or outcomes to be achieved. When a regulator employs a risk-based approach, it is recognising that different regulated

activities or environments present different levels of risk (in this case, to safety outcomes). Regulators can then tailor the delivery and administration of regulation so that compliance costs are proportionate to the benefits of addressing those risks.

Placing more emphasis on risk-based regulation will require regulators and industry to develop stronger skills in some areas (for example, risk assessment, accreditation). They will also need to apply data-driven strategies to identify and manage risks, and to create effective risk profiles for industry participants.

In order to adopt a risk-based approach, regulators also need flexibility in how they enforce the law. Policy makers need to ensure that the degree of prescription in regulation does not unduly constrain regulators in how they respond to breaches, or preclude the use of some tools that may be necessary for effective and low cost compliance strategies.

A tiered approach to transport safety

Like other industries, transport has a combination of large and small operators; and inexperienced and experienced operators. In particular, there are many small businesses operating heavy vehicles and domestic commercial vessels of varying capabilities. Given this mix of businesses, there is value in offering a two-tiered approach to regulation, with minimum effective standards prescribed in legislation (offering certainty to operators) complemented by the option of seeking accreditation from the regulator for in-house safety management systems which may better suit the circumstances of the business.

This balance is most advanced in rail due to its co-regulatory approach.

Many stakeholders have commented on the level of complexity and prescription in the HVNL, which is presently the focus of an NTC review (NTC 2019a). Some flexibility is available through accreditation, where heavy vehicles accredited under the National Heavy Vehicle Accreditation Scheme are exempt from some prescriptive measures. The effectiveness of accreditation would benefit from better coordination of different schemes and regulatory exemptions, and from some level of mutual recognition (chapter 5). However, accreditation aside, there are likely to be benefits from reducing the degree of prescription in the HVNL.

For domestic commercial vessels, a tiered surveying regime could be used to improve safety with survey requirements for vessels set according to risk-profiling. A key impediment to this targeted approach is that the Australian Maritime Safety Authority (AMSA) does not yet have adequate data to create risk profiles for domestic commercial vessels (chapter 5).

It is important that regulators embrace opportunities to reduce their reliance on prescriptive regulation, taking into account risks and their capabilities. Over time, it can be expected that experienced smaller operators would seek to embrace a more risk-based regulatory system as being a more effective and less burdensome form of regulation. The outcome — improved safety — is the key measure, not enforcement or following detailed prescriptive regulations.

Dealing with rapid change and complexity

A frequent (and valid) criticism of prescriptive regulation is the danger that detailed rules will stifle innovation. Regulations which focus on achieving outcomes rather than prescribing processes or actions will usually allow businesses to find more efficient alternative ways to achieve safety.

While many transport safety issues are longstanding, many parts of the sector are likely to be disrupted by emerging technologies (for example, autonomous vehicles, vessels, and trains). Even modest innovations, such as electronic log books as an alternative to paper log books, may not fit current prescriptions in the HVNL.

Different approaches are available to regulators dealing with emerging technologies (box 9.2). In some circumstances, it is sufficient for regulators to advise industry of how to comply with existing regulations. In other cases, innovations may not fit into existing regulatory requirements.

Box 9.2 Advisory, adaptive, and anticipatory approaches

Armstrong, Gorst, and Rae (2019) outline different approaches to dynamic regulation:

Advisory

Advisory approaches are designed to make it easier for businesses with new products or services to approach regulators and work with them to test and then adapt the product or service under existing regulations. Innovators benefit from temporary relaxations in the full regulatory regime to test the potential impacts of their products or services, but the final goal is to fit within existing regulation. The regulator is able to play a more proactive, engaged role in the development and testing of new innovations in that sector.

Adaptive

Adaptive approaches are employed when a regulator wants to help facilitate the development of new products or services but existing regulatory frameworks may have to be adapted to do so. In this case, the objective is to first better understand the value of these new products or services by testing them in a restricted environment, then work to adapt both the innovation and/ or existing regulations to bring the product or service to market. As with advisory approaches, participants are given regular advice and granted temporary regulatory relaxations. Unlike the advisory approach, if necessary regulatory barriers are identified, then permanent changes to the existing regulations can be explored – generally on a case-by-case basis.

Anticipatory

The primary goal of anticipatory approaches is to better understand what the impacts of an emerging technology (which may not be developed enough for use) might be on the economy and society and, therefore, what the potential regulatory needs will be. It is more forward-facing than either advisory or adaptive approaches, meaning regulators have to deal with more uncertainty, less evidence and a greater number of possible risks. Here the regulator is not only playing a more active role in supporting innovation but also in building an information and evidence base via direct research activities.

Source: Armstrong, Gorst and Rae (2019, p. 20).

Where it is clear how best to regulate the innovation, changes can be made to regulations through the usual policy channels. However, where the technology is still developing, and

where the associated regulatory challenges remain unclear, there may be value in taking a more dynamic, anticipatory approach to regulation.

The latter approach requires particular capabilities from regulators, and ongoing co-operative relationships with industry. The extent to which governments and regulators extend their involvement in developing markets should be considered carefully, as outlined previously by the Commission (box 9.3). Tools such as regulatory co-design have specific risks for regulators:

> Co-design has risks of capture, but the alternative is to either strangle nascent industry to the detriment of the economy, or to let activity that may well need to be regulated (to create a healthy long-term market) go ahead unchecked. Co-design of regulations and the compliance regime is needed for timely action, but good governance is critical to avoid regulatory capture. This must include transparency about the co-design process (who, what, when and how). (PC 2017b, Supporting Paper 14, p. 43)

Other tools require support for regulators from governments, and flexibility in legislation. For example, 'regulatory sandboxes' have been used effectively by regulators such as the Australian Securities and Investments Commission (ASIC), to facilitate the development of digital services in finance (that is, 'fintech'). Similar approaches are possible in transport — for example, AMSA has used its discretion to make regulatory exemptions when dealing with autonomous vessels, ahead of any permanent changes to regulations (chapter 8). In heavy vehicle regulation, by contrast, the National Heavy Vehicle Regulator (NHVR) deferred approving the use of electronic work diaries until it had developed a permanent regulatory framework for electronic work diaries (in 2018), and has undertaken case-by-case approval processes (ongoing).

Box 9.3 Determining the extent of market development activity by governments and regulators

The potential role of governments in market development should be informed by answers to the following questions.

- Can industry work together to resolve the problem? If they can, then government's job is to set the parameters they must achieve, not to intervene.
- What is the risk of regulatory capture? Co-design of regulations with industry can help shift the regulatory attitude from a 'No, but' to a 'Yes, if' approach, as industry will be better than regulators at understanding the risks that can arise and what parameters will work to mitigate these risks.
- Which markets are being held back by current regulation and regulator behaviour? Industries where technology is moving rapidly and introducing new risks and opportunities could find themselves hamstrung by regulatory regimes that were designed for a very different world.

Source: Adapted from PC (2017b, Supporting Paper 14).

Overall, it is important to recognise that regulators across the various modes of transport face challenges ranging from known, longstanding issues to complex and emerging issues.

Governments must ensure that national laws allow sufficient flexibility for regulators to use appropriate tools.

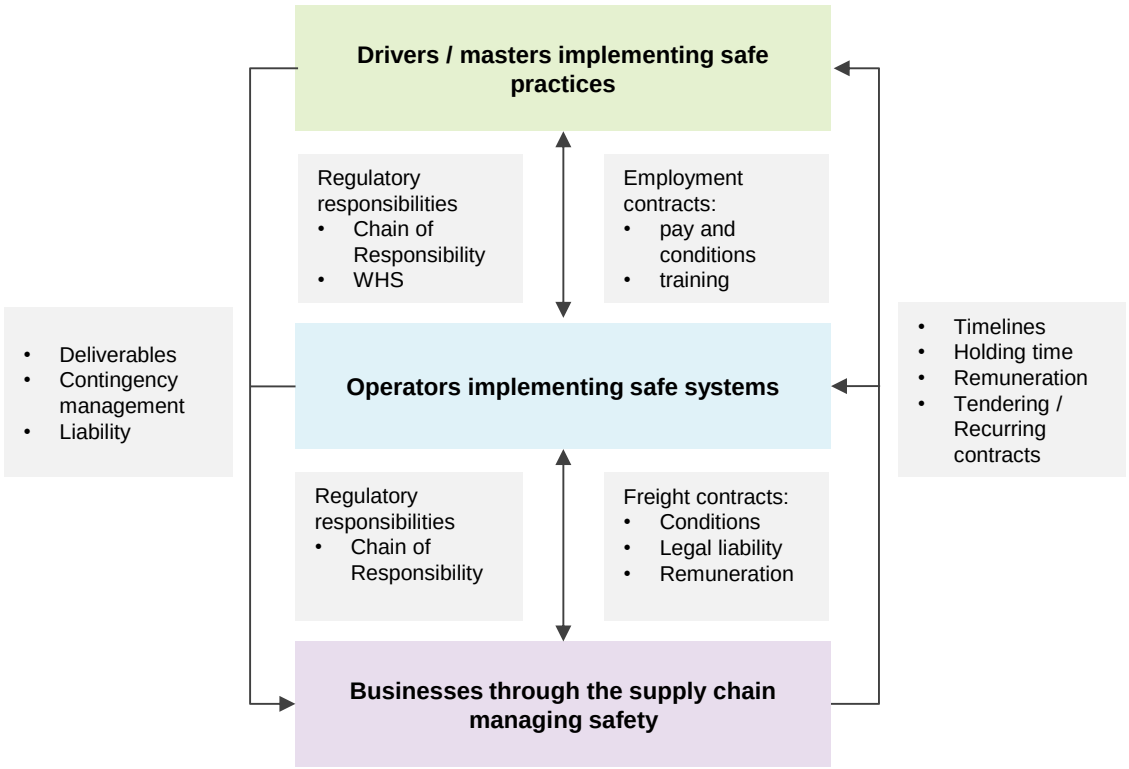
9.3 Market dynamics and safety

Two broad aspects of commercial dynamics have been raised with regard to transport safety. One involves the respective duties of businesses across the freight supply chain, and the relationships between them. The other relates to the degree of competition between modes of transport in freight.

Commercial contracting in heavy vehicle freight

In freight transport, there are many parties in the supply chain whose actions contribute, directly and indirectly, to safety outcomes (figure 9.1). These parties do not operate in isolation — their decisions and actions are often co-dependent. Regulation needs to address these commercial dynamics that have safety implications (figure 9.3).

Figure 9.3 **Commercial dynamics in freight**



Remuneration of heavy vehicle drivers is one issue where views differ about the impact on safety. The Commission's report into the Regulation of Australian Agriculture found no

evidence of a link between remuneration and safety and supported the abolition of the former Road Safety Remuneration Tribunal (PC 2016, p. 28). Indeed, even the Regulation Impact Statement for the creation of the Tribunal stated that it would lead to net costs (PC 2016, p. 15). The Commission found:

> The road safety remuneration system (including the former Road Safety Remuneration Tribunal) imposed costs on businesses, including farm businesses, without commensurate safety benefits, and its abolition has reduced this burden. (PC 2016, Finding 9.2)

The NTC's *Safe Payments* report also noted the lack of direct evidence linking payments to safety incidents, but also noted that the discussion of remuneration should not be 'limited to a simple analysis of crash data', given that economic pressures would generally have implications for safety (NTC 2008, p. 19).

A study by Elkington and Stevenson (2013) considered specific types of payment, using a sample of over 500 safety incidents and a control group of similar size. The sample included heavy vehicle drivers across New South Wales and Western Australia, where drivers were undertaking trips in excess of 200km from their work base. They found that:

> There were no significant differences between cases and controls on the types of payment schedules they were being paid under for the week prior to the crash (for cases) or the week prior to the interview (for controls) except for the category 'other' which comprised things such as payment by the palette, tonnage, or a mix of different payment types packaged together. … the major payment types were payment schedules based on a kilometre rate, trip rate or flat hourly rate, the latter being one of the only payment schedules that compensates drivers for delays due to things like traffic, or at the loading dock. (Elkington and Stevenson 2013, p. 23)

Other aspects of commercial contracting may be relevant to safety, such as the impact of scheduling practices and fatigue management. Elkington and Stevenson found higher risks of safety incidents were associated with trips beginning between 6am and noon, or four or more hours after a driver's last break (2013, p. 42).

INFORMATION REQUEST 9.1

The Commission is interested in further information regarding the safety implications of commercial contracts in the industries covered by the Heavy Vehicle National Law (HVNL), Rail Safety National Law (RSNL), and the Marine Safety (Domestic Commercial Vessels) National Law (MSNL). In this regard, the Commission would be interested in understanding the effectiveness of safety duties applying to various businesses through the supply chain (for example, Chain of Responsibility, Workplace Health and Safety).

Intermodal allocative efficiency and safety

In submissions to this inquiry, stakeholders from the rail industry discussed intermodal substitution between heavy vehicles and rail freight, arguing that shifting more of the freight task from road to rail could improve safety and reduce road congestion (box 9.4).

At the outset, it should be recognised that the choice of mode is a commercial decision, and government regulation should be neutral. Businesses will select the mode which best meets their needs. As road and rail transport have different strengths, they are not perfect substitutes. Much of the freight load on major routes will not be contestable, and in many cases road and rail act as complementary modes of transport. Where competition is possible, the relatively agile nature of road transport means that rail will not be suitable for all freight tasks and will be less efficient when there is double and triple handling over relatively shorter distances. As such, it is difficult to estimate the degree of substitutability, particularly as it is not possible to assume that all freight traffic on a given highway could be replaced by rail (as trucks may enter and exit at various points).

Box 9.4 Stakeholder views on intermodal shifts and safety outcomes

Several stakeholders from the rail industry have stated that a shift from road to rail freight would result in improved safety outcomes:

> Overall, Pacific National's experience is there has been no meaningful integration in freight transport markets to create a level playing field between road and rail policy. The best safety improvement would result from reducing rail red tape while significantly reducing rail access charges across all rail networks to encourage modal shift to this far safer, cleaner and community accepted form of freight transport. (Pacific National, sub. 24, p. 4)

> … if governments want safer roads, less traffic congestion during peak commute times, and lower vehicle emissions, it is imperative to work with industry to develop and implement innovative policies and regulations to help advance the rail freight sector. (Freight on Rail Group, sub. 8, p. 3)

> The level of incidents and accidents has fallen steadily over time and rail remains around eight times safer than road on a kilometres travelled basis. (ARA, sub. 26, p. 13)

> In a press release dated 7 November 2018, the Freight on Rail Group (FORG) stated that recognition was required of the rail freight sector's significant contribution to reducing both accident costs and carbon emissions in Australia's transport supply chain. The statement highlighted that for every tonne of freight hauled, road freight produces 14 times greater accident costs. As above, this has been converted to a cost per vehicle km of $0.11; however, the true cost of improved safety is immeasurable. (ARTC, sub. 31, p. 15)

Nevertheless, competition between road and rail does occur on long distance freight routes. In situations where rail freight replaces road freight, there are likely to be safety benefits associated with moving larger amounts of freight on dedicated lines, away from general road traffic. It is difficult to provide meaningful estimates of such benefits, given the limitations listed above and the dynamics of innovation in both rail and road transport. On one hand, stakeholders have noted that on a per kilometre basis, rail could be up to eight times safer than road freight (box 9.4). On the other hand, innovations in safety equipment and safety

technology appear to be progressing more rapidly in road transport due to the volume of road traffic in Australia and overseas.

An efficient outcome in intermodal freight would need to balance many factors relating to the planning and building of freight-related infrastructure; the potential for regulatory costs to cause distortions to intermodal competition; and access arrangements. The balance between these issues, and with externalities such as safety, are discussed in chapter 10. Regulatory measures which seek to shift more freight from road to rail are likely to be counterproductive by imposing large efficiency costs on freight transport and the community. A focus on safety and innovation across all modes of transport will be more effective, less costly, and lead to improved safety.

9.4 Harnessing data and technology to improve safety

As discussed in chapter 8, the various stages of data use (i.e. generation, collection, integration, and analysis) present particular concerns for governments. Common across heavy vehicle, rail, and maritime transport is the increasing potential for data to be used to influence safety outcomes. For example, insurance companies are making increasing use of driver and vehicle data to set premiums and encourage better driving habits. Similar data could also be used by regulators to improve regulation and enforcement (figure 9.1).

Facilitating logistics data generation and sharing

Numerous parties can extract value from data. Regulators in all three sectors need data to identify risks, promote safer behaviour and target enforcement. Businesses rely on data to monitor safety performance. Insurance companies can use driver and vehicle data to offer tailored premiums which reward and encourage safer driving.

At the same time, realising the full value of data will require a mix of facilitating regulation and commercial incentives to generate and share data. In some instances, safety benefits have justified mandating new systems (for example, the Vessel Monitoring System used by some offshore fishing vessels). In other instances, adoption has been voluntary with the result, to date, of patchy take-up by operators (for example, in-vehicle telematics). The risk exists that the full potential of new data technologies will not be realised if industry participation is limited.

Concerns about data use and its value proposition

The willingness of businesses to invest in generating and sharing their data will depend on how the data might be used. As the Commission has previously noted:

> People and organisations are more willing to share information when they trust how it is being used and can see personal benefits stemming from access to their data that go beyond the immediate service they access … (PC 2017a, p. 373)

The Commission has heard relatively consistent anecdotal evidence of recent experiences with data systems, showing that industry may have concerns that:

- generating and sharing data would require imposition of further compliance costs for businesses
- the use of data in safety regulation could lead to heavier-handed, more interventionist enforcement
- sharing sensitive data may benefit competing firms or may have other commercial implications, such as benefiting competing firms
- the costs of contributing data may be shared more equally than the benefits of the system.

In particular, concerns about the use of data for regulatory enforcement have been longstanding. For example, at the introduction of the Intelligent Access Program (IAP) for heavy vehicles, it was labelled as 'big brother stuff' by a representative of the Australian Trucking Association, and as a 'policing device' by the Australian Road Train Association (Whittaker 2008). These concerns have likely led to lower participation in the IAP system, with only three jurisdictions requiring IAP as a prerequisite for operating at higher mass limits (chapter 6).

In terms of technological progress alone, there is likely to be great potential for telematics and similar data systems to be used to enhance enforcement capabilities. In principle, technological capabilities alone should not set the approach to regulatory enforcement. Regulators should consider how best to use data in the context of the overall evolution of safety regulation, which would put less reliance on 'command and control' enforcement where possible. Data-sharing arrangements could be designed to allay industry concerns about heavier-handed enforcement. This could involve legal assurances restricting the allowable uses of data.

Using data to improve risk management and safety regulation

Logistics and safety data can be used to better inform industry decisions. The Australian Rail Risk Model (ARRM) is an example of data being harnessed to provide industry with better decision-making tools (box 9.5). The ARRM was developed by the Rail Industry Safety and Standards Board (RISSB), using safety incident data reported by operators. Data-sharing has allowed the model to be developed based on industry-wide information.

It may not be feasible to replicate the ARRM model in other modes. However, access to high quality, industry-wide data will help regulators and industry create risk management tools and advice. Using data effectively is likely to become essential as regulations become more risk-based, and operators become more responsible for safety management.

Box 9.5 **Australian Rail Risk Model**

The origins of the Australian Rail Risk Model (ARRM) predate the COAG reforms:

> … RISSB has, for many years, championed the idea that a step change in safety risk management maturity can be catalysed with the development of a national railway risk model. These sentiments have been echoed as follows:
>
> - In 2008 the National Transport Commission published its National Strategy for Rail Safety Data recommending that the rail industry consider developing a rail safety database and a safety risk model.
> - In 2012 the Governments of Australia commissioned Tony Taig to review RISSB. Taig recommended that 'The Australian rail Industry needs to act collectively and urgently to improve its cross-industry safety risk knowledge … This will require a) establishment of a shared national database of industry safety incidents and occurrences, b) development of risk assessment tools and capability building on that database … '.
> - In 2013 the Office of the National Rail Safety Regulator commenced operations and in its Statement of Intent (2013 to 2016 and then again from 2014 to 2017) it was 'encouraging industry to develop an industry owned national rail safety risk model'. (Baker 2015, p. 1)

The ARRM is a model of safety risk on Australian railways (excluding light rail, heritage railways and cane railways), built around safety incident data. Its risk estimates are informed by reports on incidents provided by industry. The ARRM was developed for the Australian rail industry, to allow rail transport operators to examine the safety risk of their own operations and to compare their risk with an aggregation of other RTOs. Some businesses may also compare their rail safety risk at the national level. The purpose of the ARRM is to help the industry assess rail safety risk and, in the longer term, understand trends in rail safety risk leading to safety improvements.

Source: RISSB (2019).

Data is essential for research and policy development — particularly in improving safety regulation. Agencies such as the NTC, the Bureau of Infrastructure, Transport, and Regional Economics (BITRE), and the national regulators themselves will benefit from government-industry investments in data. Maritime transport appears to be the least well-served by public research agencies aside from the regulator itself. At the time of writing, the NTC website shows no evidence of research into maritime transport, while the publication of maritime data and research by BITRE is limited to sea freight. Neither does maritime transport benefit from a body similar to RISSB in rail — as discussed in chapter 7, AMSA is unusual in the breadth of its remit. There is likely to be value in having public agencies besides the national regulator conducting research into maritime safety.

DRAFT FINDING 9.1

While some of the potential benefits of logistics data are specific to the individual operator, there are larger, broader benefits from the collection and integration of data across many operators. These broader benefits risk being underprovided if data generation and sharing are not facilitated.

DRAFT RECOMMENDATION 9.1

Governments (and their agencies) and industry should consider how best to harness logistics and telematics data to improve incentive-based safety regulation, with the aim of influencing behaviours that increase safety and productivity.

Governments and regulators should aim to facilitate the adoption of technologies by operators to generate and share data by:

- providing legal assurances about the acceptable use of such data
- clarifying the value proposition to individual operators of their participation in data sharing regimes.

Driver data and vehicle insurance

While vehicle insurance premiums have been based on driver data (such as age, address, claims history, and driving record), there is increasing potential for providers to set premiums based on new sources of personal data (such as from linked commercial databases) and from on-road telematics data (such as real-time vehicle location, timing of vehicle use, and amount of vehicle use) (PC 2017a, p. 87). The latter may provide drivers with more direct financial incentives for safer on-road behaviour, thereby reducing safety risks.

This use of data by vehicle insurers could have significant implications for heavy vehicle safety, as it could be used to influence behaviours not only of heavy vehicle drivers, but of road users more generally. The latter is particularly relevant, given the high proportion of heavy vehicle incidents caused by third parties.[24]

While the uptake of telematics-based insurance is largely commercially driven, it is also limited by regulation of vehicle insurance markets. Unlike general vehicle insurance (covering damage to third party property) which is open to competition, compulsory third party (CTP) vehicle insurance (covering third party bodily injury) has various regulatory restrictions, including constraints on pricing linked to the risk profiles of drivers:

[24] Among fatal multi-vehicle incidents involving a heavy vehicle in 2017, where an insurance claim over $50 000 was made to the National Transport Insurer, 83 per cent were caused by third parties and not by the heavy vehicle (NTARC 2017, p. 23).

> … CTP premiums are largely not priced according to risk. In all jurisdictions except NSW, the premiums within a vehicle class (e.g. passenger vehicles) are fixed regardless of driver behaviour and vehicle choice. Thus, for example, the CTP premium will be the same for a heavy car that is driven recklessly and frequently and for a compact car that is driven rarely and carefully. (Tooth 2017, p. 2)

As such, within the current model of vehicle insurance, telematics could conceivably be used to price optional forms of cover (covering damage to own vehicles and third party property), as well as mandatory CTP insurance in New South Wales (within set pricing restrictions). A small number of insurers are implementing this approach to pricing[25], but it does not appear to account for a large proportion of insurance policies.

The potential effect on safety

There is no clear Australian evidence on the effectiveness of telematics-based insurance to date. One provider of telematics-based insurance in the United Kingdom found that drivers were much less likely to be involved in a safety incident in the twelfth month of their insurance policy compared to the first month. The likelihood of being involved in an accident reportedly reduced by between 35 and 40 per cent for drivers aged 17–21 over the first year of the policy, which the provider attributed to the telematics-based incentive scheme (Insure the Box 2012). Incentives may indeed be stronger in the United Kingdom than in Australia, as insurers are not bound by the same restrictions around CTP.

It is difficult to speculate on the potential effectiveness of insurance-based safety incentives, particularly given that policies will differ in design. For example, financial incentives could be set to be relatively minor, resulting in little behavioural change. Neither is it clear whether drivers would respond to incentives by improving their behaviour or by changing providers (to a less risk-based insurer).

If telematics-based insurance could provide sufficient financial incentives to influence drivers' behaviours, it remains a question as to what extent such an incentive regime could be expected to improve safety outcomes. While the commercial incentives for insurers are largely aligned with reducing safety risk and improving safety outcomes, there are complications tempering the potential for insurance alone to produce better safety outcomes (box 9.6). It is not straightforward to design accurate, measurable proxies for safe driving practice that apply consistently. There are various ways in which punitive measures could apply to safe drivers, or where they may fail to apply to a risky driver, thus weakening the ability of the incentive regime to provide for safer outcomes.

25 Ubicar (2019b) cites a total of three providers of telematics-based vehicle insurance in Australia, noting that it is not offered by 'the majority of insurers'.

Box 9.6 Would data-based insurance provide better safety incentives?

The use of telematics and other data should allow insurance providers to more accurately estimate and price risk. Providers generally have the commercial incentive to price sufficiently high to cover the level of risk for each driver, and sufficiently low so as to remain competitive. While it is in the interest of insurance providers to reduce the risk of safety incidents among its customers, their ability to influence safety outcomes faces various complications.

Type or behaviour?

The use of personal data by insurance companies is potentially broader than telematics, and may not necessarily relate directly to on-road behaviours. For example, data from transactions or online activity could be used to classify drivers according to categories of similar expected risk, similar to the longstanding use of parameters such as age and address. Woolworths have previously noted their use of retail transactions data from customer rewards programs in order to determine insurance premiums, citing that customers who purchase more milk and red meat were better insurance risks than those purchasing pasta, rice, and spirits (Wallace and Whyte 2013; PC 2017a). While this information may allow the insurer to price more accurately on average, it would not in itself provide drivers with any additional incentive toward safer on-road behaviours.

Situation-based penalties

The use of telematics may identify driving situations that are riskier than others. For example, some telematics-based insurers consider the time of day (i.e. driving at night) as a risk factor (Tooth 2012, p. 3). While this information may allow the insurer to more accurately set prices for those driving during day and night hours, it may not be possible for drivers to simply change their hours of operation. Moreover, for those driving at night, a time of day penalty does not provide incentives to adopt better on-road behaviours when driving at night.

Quantity or safe practice?

Insurance offerings tend to account for the distance travelled by a driver in a given year — this can be done much more accurately with the use of telematics, and may consider factors such as time of day, and length of journey. It stands logically that more time spent on the road increases the likelihood of a safety incident. As such, the quantity of travel may be a relevant consideration when attempting to price risk more accurately. However, this use of telematics does not provide incentives for safer behaviours for drivers once they are on the road. Rather, it rewards drivers for driving less (or provides an additional cost per distance travelled).

(continued next page)

Box 9.6 (continued)

Ambiguous indicators of safe practice

For insurers to provide incentives for safer driving, they would need to identify a set of behaviours as risk factors. While some driver behaviours, such as alcohol consumption, are unambiguous indicators of reduced driver capacity (and therefore higher safety risk), other factors are less equivocal. For example, several telematics-based insurers provide incentive schemes that punish drivers for sudden, harsh braking (Tooth 2012; Ubicar Australia 2019a). Such braking could reasonably be associated with accidents (given its urgent nature), but is not necessarily proof of poor safety practice by the driver (given the importance of context). It may be the case that drivers who regularly brake suddenly do so in reaction to dangerous or erratic behaviours of other road users. In this sense, it may make sense to price their insurance higher to account for a riskier environment. However, it provides no further incentive to drive more safely.

Imperfect coverage of unsafe behaviours

The potential for telematics-based insurance to influence safety outcomes may be muted if the incentive scheme does not choose appropriate risk variables. While insurers would be well placed to determine which variables are causal factors for safety incidents, they may be unable to monitor all relevant behaviours through positional telematics alone. For example, the National Truck Accident Research Centre (2019) assessed the behaviours of heavy vehicle drivers that were associated with safety incidents involving insurance claims over $50 000. They found that, where the safety incident was primarily caused by the behaviour of heavy vehicle drivers, the main behaviours included keeping inadequate following distance (30 per cent); inattention or distraction (27 per cent); inappropriate vehicle positioning (18 per cent); and failure to give way (7 per cent). Monitoring some of these behaviours may require not only location-based telematics, but also external sensors and driver-monitoring technology.

Financial incentives to drive less

At the extreme, insurance-based incentives could simply encourage drivers to reduce the distance they travel in total (to the extent that their travel is discretionary). As long as any reduction in distance travelled is somewhat aligned with drivers' safety risk profiles, the result would be an improvement in aggregate safety outcomes. However, increasing the cost of travel would have implications for productivity, including positive effects (such as reducing road congestion) and negative effects (such as reducing economic activity for individual drivers).

Moreover, the effectiveness of financial incentives may impact on drivers differently, due partly to their ability to pay. Some drivers that present a higher safety risk may not be sensitive to marginal changes in price.

The potential for telematics-based incentives to be more effective in driving safety outcomes may require a focus on the few variables that are most directly relevant to safety incidents. The Commission understands that, for heavy vehicles, one of the most effective uses of telematics is to use speed and g-force data to assess cornering behaviour, as this has a direct causal relationship to rollover incidents. Such data may be useful outside the realm of insurance incentives, such as in continuing driver skills training.

Would more emphasis on risk be fair and affordable?

While telematics-based insurance may provide imperfect incentives for safety, there would also be questions as to whether the increasing use of risk-based insurance pricing may lead to outcomes that society may find undesirable. The Actuaries Institute noted that:

> Increasing the sophisticated analysis of large data sets will create significant issues of insurance access and affordability for society and for policymakers. A key issue is whether society wants individuals to pay a 'fair price' for insurance that reflects risk or does it want everyone to have affordable access to insurance regardless of the risk. (2016, p. 5)

As mentioned above, CTP insurance in Australia tends to be regulated in favour of affordable access, largely regardless of risk. One reason for this is that there are significant advantages with mandatory insurance for third party injury (and, conversely, disadvantages with non-insurance). On the other hand, insurance for damage to an individual's own car or property is regulated in favour of a 'fair price', with insurance optional and priced according to the risk profile of the driver.

In any case, allowing a more risk-based approach to CTP insurance would represent a fundamental shift in Australia's general approach either to vehicle usage or to third party insurance. Such a shift does not appear to be warranted at this time, given the many questions raised in box 9.6. In the absence of such a change, telematics-based incentives are more likely to be used in Australia with regard to non-compulsory forms of vehicle insurance, where different products are available to consumers.

Insurance-based incentives and regulatory enforcement

Telematics-based insurance differs from regulatory enforcement in some important aspects. For example, telematics-based insurance is based on constant, highly accurate monitoring. This allows for punitive measures to be applied incrementally, for each instance of a particular behaviour (for example, a single instance of harsh braking). In other words, there is a 100 per cent chance of being caught. This contrasts with regulatory and legal enforcement, where punitive measures are more severe, but the probabilities of being caught are less predictable. It also contrasts with other forms of insurance, where the only behavioural incentives are associated with incidents and claims. In this way, financial incentives based on telematics may be more effective in influencing behaviours than other methods of enforcement.

However, insurance-based incentives are unlikely to replace the need for regulatory enforcement. This is partly because telematics-based insurance is designed to associate punitive incentives with behaviours that were not otherwise considered a breach of law or regulation (such as harsh acceleration and braking). At the same time, such insurance regimes currently do not apply punitive measures to various breaches of the law, such as exceeding blood-alcohol limits, failing to give way, or failing to stop at red lights.

Potential roles for government in data-based insurance

If transport-related insurance becomes progressively risk-based, particularly with the increasing transparency of user characteristics and behaviours, this may result in areas of market failure. For example, the Actuaries Institute notes that governments may have a role to play when competitive markets fail to deliver affordable insurance cover for consumers, particularly if the underlying risk is beyond the consumer's control:

> Determining how to protect consumers whose increased risk profiles are becoming more transparent by virtue of new data will be a critical public policy issue for government. Some policy considerations to establish protection for consumers with uncontrollable risks (e.g. genetic factors), include:
>
> - Impose restrictions on pricing as happens with CTP.
> - Develop new risk sharing mechanisms akin to the health risk equalisation scheme.
> - Confirm Government as 'insurer of last resort' as it is for uncertain potentially expensive risks such as terrorism events and longevity (which includes Age Pension costs). (2016, p. 5)

Whether governments will need to respond to the impacts of telematics-based insurance will depend largely on future commercial developments. In Australia, it at least appears unlikely that telematics-based insurance will affect mandatory CTP insurance. In other areas of vehicle insurance, the use of telematics is still in its early stages.

Telematics data in the hands of operators, reducing insurance premiums

A much simpler benefit may be possible if telematics systems are installed by operators and the data are used and analysed in such a way that allows operators to train and educate their drivers, or to help in recruiting better drivers. This may involve more investment in telematics by the operators themselves, separate to the involvement of any insurance companies. The role of insurance companies in encouraging such behaviour could simply involve adjustments to premiums for those operators who use telematics to better manage the cornering behaviour of their drivers.

9.5 Aligning regulatory regimes to improve safety

As noted in section 9.1, transport operators are subject to multiple regulatory regimes, including more than one set of safety regulations. Even in cases where regulations are nationally consistent, the intersection of different incentive regimes may have implications for safety. The relationship between Workplace Health and Safety (WHS) and transport safety is discussed in chapter 5. This section considers safety regulation in the context of agricultural and environmental regulation.

Agricultural regulation and heavy vehicle transport

There are areas where the HVNL conflicts with other regulatory regimes applying to the agricultural sector. One example raised by inquiry participants relates to inconsistencies between the fatigue management regulations under the HVNL and animal welfare requirements for livestock transportation.

The HVNL sets out requirements for maximum driving times and minimum rest periods to manage risks associated with driver fatigue (chapter 5). At the same time, the Australian Animal Welfare Standards and Guidelines for Land Transport of Livestock stipulate requirements to minimise the risks of harm to animals, particularly during long trips. These include maximum periods that water may be withheld from live animals as well as other requirements such as the prompt unloading of livestock upon arriving at the destination.

Conflicts between these two regulatory regimes can occur when, for example, heavy vehicle drivers are required to take a long rest break under fatigue regulations, which requires leaving livestock contained in the vehicle, when the driver is not far from a suitable destination to unload the animals. Other external factors, such as weather conditions, may also affect a transport operator's ability to comply with either regulatory regime.

In September 2015, the NHVR introduced the Livestock Transport Fatigue Management Scheme. The scheme provides a pre-approved template Advanced Fatigue Management accreditation system designed to give livestock and rural transporters the flexibility to respond to the dynamic, uncertain and complex livestock transport task (NHVR 2019). The templates can allow drivers to work to a 14 or 28 day schedule (with minimum days of stationary rest) or up to 15.5 hours across a 72 hour period.

To the extent that this scheme increases flexibility and reduces administrative burden, it should make it easier for operators to comply with both livestock transport and fatigue management regulations. However, there still may be occasions where circumstances outside the control of heavy vehicle operators (such as extreme weather events) may warrant further flexibility for transport operators, provided the NHVR continues to be satisfied that fatigue risks are being suitably managed.

Vessel safety, workplace safety, and the regulation of fisheries

Among domestic commercial vessels, operators in the fishing industry are likely to be subject to unique and significant safety issues (chapter 5). The main causes of accidents in fishing are adverse weather conditions and mechanical failures, as well as collisions between industrial and other fishing vessels (Remolà and Gudmundsson 2018, p. 2). One study of Australian Occupational Health and Safety data from 1983 and 2008-09 noted that:

> Overall, the resounding finding is that a lack of awareness of occupational health and safety, or safety culture, still fails to be effectively dealt with across all States of Australia. The [Occupational Health and Safety] data identifies that the commercial fishing industry has rates of claims that are average for the overall Agriculture, Fishing and Forestry sector, but that claims

> for fatal injuries in aquaculture and non fatal in marine (or wild capture) fisheries are both increasing. The most 'at risk' group in the industry are those between the ages of 20 to 24 years, with those aged 45–54 years being the next most at risk group, who will receive injuries from non powered hand tools to their upper bodies. (Brooks 2011, p. xii)

Past reports by the Australian Transport Safety Bureau (ATSB) have noted the relationship between crewing, working hours, chronic fatigue, and on-water decision making. For example, one ATSB report on a safety incident involving a trawler noted:

> … a collision between a bulk carrier and a fishing vessel on 2 February 1999 was the eleventh investigation conducted since June 1995 into such incidents. The report mentioned that in nine of those incidents, the fishing vessel had failed to maintain a proper lookout. On two of three fishing vessels at anchor, the crew had gone to bed and no lookout had been maintained.
>
> … The number of crew typically employed on fishing boats was two or three, which, for a sustained 24-hour operation is insufficient to fish and maintain a proper lookout required by the Collision Regulations. (ATSB 2004, p. 2)

While the MSNL does provide some restrictions on minimum crewing, this applies only to vessels 12 metres in length or greater (AMSA 2018). Issues such as fatigue and working hours were outside of the scope of COAG reforms in marine safety, and are not covered by the MSNL (they are addressed in detail in both the HVNL and RSNL). Rather, they are covered in part or whole by other regulatory regimes.

Roles and jurisdictions of multiple regulatory regimes

Australia's fishing industries are subject to multiple regulatory regimes for safety and fisheries management (box 9.7). As discussed above, while memoranda of understanding exist between WHS regulators and national transport regulators such as AMSA, there are overlaps. For example, a vessel operating with insufficient crew (that is, a breach of the MSNL) may also breach the fatigue requirements of WHS laws. Setting aside the confusion around which regulator should investigate any resulting incidents, there is the more important question as to how both safety regimes can help to foster better work practices in the same industry. The likely solution to such safety issues may not lie with the MSNL alone.

Box 9.7 Regulatory regimes that apply to the fishing industry

Multiple regulatory regimes are relevant to safety in the fishing industry.

- AMSA administers the *Marine Safety (Domestic Commercial Vessels) National Law 2012* (Cwlth) across all commercial fishing vessels that operate solely within Australian waters. Regulations include aspects of vessel maintenance, safety equipment, and crewing requirements (for vessels over 12 metres).
- WHS laws are largely based on model laws developed by Safe Work Australia. These model laws have been implemented in all jurisdictions aside from Western Australia and Victoria. WHS laws are administered by State and Territory agencies including: SafeWork NSW; Workplace Health and Safety Queensland; WorkSafe Victoria; WorkSafe ACT; SafeWork SA; NT WorkSafe; WorkSafe WA; and WorkSafe Tasmania.
- Boat licenses for commercial fishing vessels are issued by State and Territory regulators, based on jurisdiction-specific regulations.

In addition, various regulatory regimes may apply to fishing businesses, depending on their operation.

- The Australian Fisheries Management Authority (AFMA) is a Commonwealth agency that manages and monitors commercial fisheries operating from three nautical miles out to the extent of the Australian Fishing Zone. AFMA aims to ensure Australian fish stocks and the Australian fishing industry are viable.
- State and Territory regulators are responsible for fisheries management among recreational, commercial coastal and inland fishing and aquaculture, based on jurisdiction-specific legislation.

Safety incentives, crewing, and input quotas

The regulatory incentives from the various regimes may not align with safer outcomes. For example, crewing requirements from AMSA are minimal for vessels under 12 metres, and may not even apply given grandfathering provisions (AMSA 2018). This situation places more onus on operators to determine safe crewing arrangements.

The same operators may be subject to a range of 'input' or 'output' quotas, administered by Commonwealth, State, and Territory fisheries regulators (box 9.8). Where 'input' or 'effort' quotas apply, there may be restrictions on the number of licenced fishers per boat, the size of boat, the time at sea, or the type of gear allowed when catching particular species. Restricting the number of fishing crew is likely to discourage hiring further crew, as they may only be permitted to operate the vessel and not assist with any fishing tasks.

Box 9.8 **Quota managed fisheries**

The Queensland Government (2019) provides the following explanation of quotas used in fisheries:

> *Controlling catch for sustainable fisheries*
>
> An important way to achieve sustainable fisheries is to limit how many fish are caught.
>
> This can be done through input controls, such as number of boats, number of pots, length of net or number of fishing days. These controls aim to limit the number of fish caught by limiting fishing effort.
>
> However, as technology improves, fishers are able to catch more with less effort. This increases the risk of overfishing and doesn't allow fishers to be flexible or innovative in the type of gear they use or the amount of time they spend fishing.
>
> On the other hand, output controls such as quota units limit the total amount of catch. Quota-managed fisheries define a maximum amount or weight of fish that can be caught in a single year. It doesn't matter how many days this takes, the size of the boat or the type of gear.
>
> Some quota units are based on effort rather than catch. Trawl effort units convert to a fishing day based on the hull size of the boat being used (e.g. the East Coast trawl fishery).
>
> So while it may not be possible to remove all effort controls, quota-managed fisheries give fishers greater choice in how they run their business.
>
> *How quota units work*
>
> Quota units are used in commercial fisheries across Australia to manage the sustainability of fish stocks, and improve catch rates and profitability by reducing competition.
>
> A quota unit is not a fixed weight of fish — it is a fixed percentage of fish.
>
> It's like owning a share in a company.
>
> Each commercial fishers is allocated a number of shares in a fishery — which can be bought, sold or leased (a simple process that can be done online at no cost).
>
> These shares, or quota units, are a percentage of the total allowable commercial catch (TACC) for that fishery.
>
> The TACC is the total catch limit for the commercial sector in a fishery. It doesn't include fish caught by recreational or Indigenous fishers.

Source: Queensland Government (2019).

INFORMATION REQUEST 9.2

To what extent are changes needed to the administration of the Marine Safety National Law, workplace health and safety regulation, and environmental regulation of fisheries? How might the interface between regulators and operators be made more effective?

9.6 Heavy vehicle driver skills

The ability of vehicle drivers to implement safe decisions and practices is a key objective contributing to better safety outcomes (figure 9.1). The NTC points to data from the National Transport Insurer (NTI) showing that one in five crashes is due to driver error; and notes that, among significant heavy vehicle safety incidents involving one particular major carrier,

driver competency was a causal factor in about 15 per cent of incidents between April 2018 and March 2019 (NTC 2019b, p. 32). While there is ample expertise in the heavy vehicle industry, there is also considerable concern in the industry about the skills and capabilities of some drivers (box 9.9).

Drivers' skills are largely outside the scope of the HVNL, as there is no provision (or mention) of driver competency. Regulation is limited to State and Territory licensing regimes. A question is whether there is sufficient focus on testing and monitoring driver skills by the States and Territories.

Box 9.9 Industry concerns about driver skills

Several stakeholders have raised concerns about heavy vehicle driver skills:

> There is a recognised issue across the road transport industry in regards to the absence of training requirements and competency development to become a truck driver, which in turn impacts on the professionalism of the industry. This can result in sub-optimal safety outcomes, with drivers on the road with little or no experience. The Council suggests that there is an opportunity for the NHVR to take a proactive leadership role in working with State Governments, the industry and training organisations to develop minimum requirements for training and ongoing skills development. (Freight and Logistics Council of Western Australia, sub. 22, pp. 4–5)

> Effective training is an important contributor to improving safety outcomes. Well trained drivers are more likely to display safety related attitudes, manage fatigue and make fewer technical driving errors. (QLD TMR 2019, p. 4)

> For many decades the road transport industry has suffered with a shortage of skilled and professional drivers. The road transport industry has not been seen as an industry of choice or one that an individual will develop as a career. This issue has meant that the road transport industry has not been accepted within stakeholder environments as an industry that can lead and determine its own development or direction. … There is no doubt that one of the reasons that the industry fails to attract and retain professional people is due to the levels of qualification and experience needed to start within the industry. At present, these levels are very low and there is little recognition of experience, knowledge and responsibility within a road transport company. Many workers remain at the same level of recognition and remuneration after decades of hard work and therefore do not gain the elevation and rewards that are often seen in other industries. (Victorian Transport Association 2019, p. 7)

> Toll believes that more needs to be done to articulate and promote driver competencies, attributes, behaviours and skills that make for safe people and practices. Where drivers are concerned, there are gaps between the expectations set by the licensing system, the HVNL, workplace health and safety laws and state-based road rules. Unless a driver completes a qualification within the transport and logistics training package it is likely that their formal training is limited to the functional competencies required to drive a vehicle and to understanding the road rules. (Jones 2019, p. 4)

Licensing and behind-the-wheel experience

Heavy vehicle licensing operates on the basis of mutual recognition, where each jurisdiction implements their own combination of knowledge tests and practical assessment of competency, and drivers move freely across jurisdictions, regardless of where they were licensed (table 9.1). Even among the jurisdictions that have implemented the National Heavy

Vehicle Competency Framework, different combinations of assessments are used in licensing.

Table 9.1 **Heavy vehicle licensing frameworks by jurisdiction[a]**

[a] Green cells indicate full implementation and/or compulsory attainment. Yellow cells indicate partial implementation or availability with restriction, condition, or optional attainment. Clear cells indicate a lack of implementation or availability. [b] For MC Licences in NSW, the competency assessment consists of a Final Competency Assessment only.

Source: Adapted from Austroads (2018).

There has been some criticism of licensing frameworks that emphasise competency tests over behind-the-wheel experience, such as:

> … licensing arrangements which allow provisional licence holders to apply for a heavy vehicle licence. The heavy vehicle industry has raised concerns about these arrangements. Industry believes they're not conducive to ensuring authorised drivers are competent. This is because drivers can hold a class of licence and pass a basic competency test to get a higher class of licence. They don't have to have any behind-the-wheel experience. (NatRoad 2019)

This points to a broader issue of the respective roles of licensing and experience, and the maintenance and testing of skills (such as is common in aviation where pilots are subject to regular flight reviews). While it would be useful for common standards to exist for licensing, this would still only relate to requisite skill levels for drivers to *begin* driving vehicles of a

particular class. The Commission heard in consultation with drivers that they develop much of their capability *after* obtaining their licences, generally through experience, on-the-job training, courses offered by the Vocational Education and Training sector, and informal guidance from more experienced drivers.

In terms of building driver capabilities after licensing, experience behind the wheel is often seen as being just as important, if not more important, than formal training courses. In their consultation with industry stakeholders, Austroads (2018, p. 7) found that between 45 and 50 per cent of respondents would prefer to employ a driver who had practical on-road experience, compared to between 35 and 40 per cent who would prefer to employ someone who had undergone a training and assessment program, with the remainder having no preference. As such, it appears that some combination of formal and informal training has served as the basis of developing driver skills, in addition to licensing.

There are several ways that operators can ensure that driver skills are sufficient, including training, checking credentials and experience when recruiting, and regular monitoring of skills. The latter task is complicated by the lack of a national database, as well as the privacy restrictions applying to operators for access to state systems:

> Toll must potentially access 12 separate systems across Australia in order to acquire the information about heavy vehicle driver licences in totality. This number rises to 19 systems when dangerous goods bulk licences are taken into account. With the exception of Western Australia, all states and territories require driver consent to access licence status and demerit point information. No state with the exception of Victoria makes licence history available to operators. In all cases (except Victoria) only the driver can access this information. South Australia makes it legally possible for a police officer to advise an operator of cases of careless driving, excessive speed, reckless and dangerous driving, and driving under the influence of drugs or alcohol. (Jones 2019, p. 6)

Mutual recognition of overseas licences

Australian States and Territories generally recognise overseas licences. Drivers who hold overseas heavy vehicle licences can operate heavy vehicles within Australia, without undertaking the further assessment outlined in table 9.1. However, this is limited to people holding temporary visas, which is itself limited as truck driving is not listed as an allowable occupation for Temporary Work (Skilled) visas (subclass 457). Any holder of a permanent visa must transfer to an Australian licence within 3 months (or 6 months in Victoria), at which point their overseas qualification may be recognised in part or full, depending on the jurisdiction.

The Commission is not aware of empirical evidence indicating the proportion of heavy vehicle drivers with overseas licences, or whether these drivers are more or less of a safety

concern. However, reference was made by several stakeholders, including in a Senate review, to a widely reported incident in 2016 involving:

> … an over-height B Double combination stopped northbound in lane 4 of the M5 incident Motorway (General Holmes Drive, Kyeemagh). The incident was attended by representatives from [Roads and Maritime Services], including a number of Inspector Enforcement Officers (IEOs), Traffic Emergency Patrol Staff (TEPS), and NSW Police. The heavy vehicle was found to be over-height measuring in at 4.6 metres. The driver had stopped before the M5 East Tunnel (which has a 4.4 metre low clearance restriction). While the driver held a Queensland heavy vehicle licence, he was unable to reverse the vehicle to a point where the heavy vehicle could be moved off the Motorway. A TEPS crew member reversed the vehicle to relieve the traffic congestion and allow an investigation to take place. (Senate Standing Committee on Rural and Regional Affairs and Transport 2016, p. 15)

The driver in question received their HR licence in Queensland, having passed both a written road rules test and a practical driving test. The NTC noted this as a case study showing that there is 'no rigorous testing of international drivers' (NTC 2019b, p. 37). The Senate Standing Committee on Rural and Regional Affairs and Transport (2016) recommended that all visa holders undergo driver skill tests before their heavy vehicle driving licences are recognised in Australia (2016, p. viii).

A way forward on heavy vehicle licensing

It is clear that no single solution suggested so far would resolve all issues around driver skills. In licensing, the standards held in one jurisdiction affect public safety in every jurisdiction. Yet, without an agreed best practice with regard to testing practical competency (employer preferences vary significantly), there is unlikely to be further harmonisation.

There appears to be good reason to implement changes to the recognition of overseas licences although, without more empirical evidence, the effect of such changes on safety would seem unlikely to be significant. All drivers benefit from experience so any changes to licensing would still leave questions of how to ensure driver skills are maintained and improved over the course of a driver's career. More stringent requirements would overlook the number of drivers and operators who participate in regular upskilling, and have built their capabilities through experience. However, if evidence suggests that informal avenues of training are failing, there may be a public safety argument for a new approach.

Austroads recommended a mixed approach, involving formal and informal aspects, and which included licensing and ongoing training:

> [G]reater emphasis should be placed on the development of skills in responding to contingencies — options such as simulators, off road skid pans, video and associated tests could be considered. Even with suggested strengthening, the Framework competencies and Licence to Drive units will not cover all the skills and capabilities required to make a person job ready. Certificate level courses are offered by the [Vocational Education and Training] sector and industry based training programs provide options for broader skill development. There is also a responsibility on

> employers to ensure their drivers are capable and trained to undertake the specific duties and circumstances of their role. (2018, p. 35)

The NTC will provide comment on driver skills via its review of the HVNL, and in relation to its issues paper on Safe People and Practices (NTC 2019b). However, solutions to the issues may lay outside the HVNL.

INFORMATION REQUEST 9.3

To what extent are heavy vehicle drivers receiving adequate on-the-job training, and informal guidance from more experienced to less experienced drivers?

If a more formal training system were to be devised, what would this look like, and should training requirements target the newly licensed or should it also include incumbent, experienced drivers?

9.7 Improving incident investigation

This inquiry has already noted the importance of data for better safety regulation and infrastructure management. Draft recommendations in chapter 5 would support better collection and use of data by the national regulators, while draft recommendations in chapter 8 and earlier in this chapter focus on the generation and sharing of logistics data. Incident investigation is another important source of data.

When transport incidents occur, they may be investigated:

- by police forces, to determine any immediate criminal liability
- by State and Territory coroners' offices to determine legal liability and to examine extenuating circumstances in the case of fatal incidents
- by bodies such as the ATSB to determine the technical causes of the accident, and to publish findings and policy recommendations.

Each type of investigation is critical to improving safety by preventing future accidents. The first two involve 'finding fault' as part of enforcing the criminal law. An ATSB investigation focuses on identifying any lessons from the incident for future policy development. As described by the Australian National Audit Office:

> … the ATSB focusses on the prevention of future accidents and the improvement of safety. It is not a function of the ATSB to apportion blame or provide a means for determining liability. The ATSB does not investigate for the purpose of taking administrative, regulatory or criminal action. (ANAO 2019, p. 7)

This 'no-blame' or 'no-fault' form of investigation can provide valuable information to policy and regulatory decision makers, contributing to improved safety regulation in the longer-term.

Jurisdiction of incident investigation

The ATSB is Australia's only national transport incident investigator, though its legislated jurisdiction is limited to maritime, rail, and aviation — it does not include road transport. Within New South Wales and Victoria respectively, the Office of Transport Safety Investigations (OTSI) and the Office of the Chief Investigator, Transport Safety (CITS) have jurisdiction to investigate incidents involving passenger buses, rail and light rail, as well as and marine incidents.

Investigation of heavy vehicle incidents

The lack of involvement of the ATSB in road accidents may appear counterintuitive, given there are more serious incidents in road transport than in any other mode and heavy vehicle freight is among the workplaces at highest risk of injury in Australia. However, the relatively large number of serious incidents in heavy vehicle transport complicates the potential implementation of a no-blame investigation regime.

Several stakeholders have called for some form of no-blame investigation into heavy vehicle incidents (box 9.10). At present, such investigations are conducted only by NSW and Victorian agencies. Some stakeholders have suggested that the ATSB could fulfil this role, as it does in other sectors.

Box 9.10 Calls for no-blame investigation in heavy vehicle transport

Several stakeholders are in favour of no-blame investigation for heavy vehicle safety incidents:

> The ATSB could have an expanded role that included some heavy vehicle related incidents, providing it was not mandatory and that these investigations were complimentary [sic] to other investigations, such as those conducted by Coroners. These could provide valuable transport expertise to the investigation of incidents such as the spate of trucks that lost breaking power descending the South Eastern Freeway into Adelaide in 2014. (SAFC, sub. 6, p. 8)

> It is NatRoad policy that a dedicated authority such as the Australian Transport Safety Bureau (ATSB) be given power to promptly and fully investigate serious truck accidents and to share the results and recommendations publicly so that all industry participants can take the appropriate action to reduce the road toll. That role should also encompass better research on trends and causal factors, such as a growing difference between the level of improvement in the safety record of articulated trucks when compared with heavy rigids. (NatRoad, sub. 7, p. 7)

> The existing investigation system is not suitable to the need to investigate the causes of the accident with relevant experts, including where technology and software needs investigation. This will be an increasing issue as the level of automation in vehicles increases. … It is critical that ATSB-style investigations are conducted by an independent agency and are not included in the role of existing agencies involved in heavy vehicle regulation such as the NHVR. (ATA, sub. 32, p. 12)

The Commission believes that no-blame investigations are likely to yield valuable information on safety risks. Recognising the high number of heavy vehicle accidents each year, the Commission proposes that the ATSB should undertake a clearly defined pilot of incident investigation for heavy vehicle transport, with adequate additional resourcing for

the task. This would involve analysing safety data to define a narrow set of potential incidents for investigation.

DRAFT RECOMMENDATION 9.2

The Australian Government should direct the Australian Transport Safety Bureau (ATSB) to undertake a defined, targeted trial of incident investigation for heavy vehicles, with adequate additional resourcing for the task. Subject to the successful outcome of the trial, the Government should amend the *Transport Safety Investigation Act 2003* to confirm investigation of incidents involving heavy vehicles as a function of the ATSB.

Investigations of rail incidents

Investigation of rail safety incidents is within the remit of the ATSB on a national basis, as well as with OTSI within New South Wales, and CITS in Victoria. The three bodies have been party to a collaboration agreement since 2013, next due for renewal in 2022 (OTSI, sub. 40, pp. 3–4).

The arrangements in New South Wales and Victoria effectively mean that governments in those jurisdictions are contributing extra resourcing to incident investigation within their states. NSW and Victorian Governments are also able to retain some control over investigation, in that they may wish to investigate incidents that would not fall into the ATSB's basket.

While stakeholders have generally voiced their support for the ATSB, concerns have been raised about the timeliness of ATSB reports (box 9.11). A recent audit by the Australian National Audit Office (ANAO) acknowledged the ATSB's focus on clearing backlogs of cases, and recommended that strategies be used to improve timeliness (ANAO 2019). Such improvements will likely come through processes already in train, however, given substantial backlogs and historical underfunding of the ATSB, even greater resourcing is likely to be required in order to meet industry's expectations.

Box 9.11 Stakeholder views on incident investigations in rail

Participants were generally supportive of the role of the ATSB in rail incident investigations. For example:

> The ATSB is responsible for 'no fault' investigation for rail and ONRSR has procedures in place so that relevant safety critical information is received from the ATSB for verification and action as appropriate. This model works well for rail as it protects the identity of reporters but still allows ONRSR to remedy any safety issue that needs addressing. (ONRSR, sub. 21, p. 41)

However, some also made comment on the timeliness of the investigations:

> ARA members are particularly concerned by the timeliness of ATSB feedback and reporting. We also understand that the ATSB has been engaged in processes to improve timeliness, for example through seeking further funding. … Nonetheless, the ARA remains concerned that too little is being done in this regard. (ARA, sub. 26, p. 32)
>
> Arc is highly supportive of retaining the ATSB with its current mandate to perform no fault accident investigations as required. That said, Arc acknowledges that there is room for substantial improvement on the part of ATSB, particularly with regard to the timeliness of findings. … If the ATSB were to perform its role more effectively, Arc believes that national safety outcomes could be further improved. The ATSB should be more active in the WA rail sector, and should seek to streamline its internal processes to ensure that findings from investigations are delivered in a timely fashion. (Arc Infrastructure, sub. 17, p. 14)

Incident investigation of domestic commercial vessels

The ATSB has had a longstanding role in investigating major maritime safety incidents, and received 238 marine notifications in 2017-18 alone. However, its historical role related only to 'civilian interstate and overseas shipping', involving: Australian-registered ships (anywhere in the world); foreign ships in Australian waters; and foreign ships en route to Australian ports (ATSB, sub. 39, p. 3).

The ATSB did not have an agreed jurisdiction for domestic commercial vessels before the COAG reforms of 2009, and no such role was formally given to the ATSB as part of that process. As such, the MSNL does not specify a role for incident investigation bodies. While AMSA could investigate, there are clear advantages from having investigations independent of the regulator.

As discussed in chapter 5, there is a dearth of reliable information about domestic commercial vessels, partly due to the different approaches to data collection before the COAG reforms. As a priority, a role for the ATSB to investigate marine incidents involving domestic commercial vessels should be formalised and fully resourced.

DRAFT RECOMMENDATION 9.3

The Australian and State and Territory Governments should:

- formalise the role of the Australian Transport Safety Bureau to investigate all serious incidents involving domestic commercial vessels, and agree a funding model to support this role
- agree to a funding model to enable the Australian Transport Safety Bureau to adequately carry out its established role in the investigation of rail safety incidents.

While no-blame investigations may be able to identify problematic actions, practices, work cultures, or incentives, they are also particularly useful in the context of emerging technologies. In the field of aerospace, recent investigations by organisations such as the National Transport Safety Board (NTSB) in the United States were able to identify problems stemming from newly introduced technologies in Boeing 737 MAX aircraft, leading to the grounding of all such aircraft and accountability for manufacturing processes (NTSB 2019).

As noted by some stakeholders, similar in-depth investigations may be appropriate in the future if new technologies (such as self-driving, autonomous technologies) may have contributed to a major incident. In Australia, the ATSB could choose to investigate any such incidents, subject to the limits of its remit to aerospace, rail, and maritime. However, the same is not true of heavy vehicle transport (and road transport more generally), which are increasingly subject to emerging technologies. As discussed in chapter 8, autonomous vehicle technology is progressing for both heavy and light vehicles, with trials occurring in each jurisdiction, and the Transport and Infrastructure Council (TIC) agreeing to the development of a national safety assurance scheme (NTC 2018). An appropriate mechanism for incident investigation should be required of both the trial and early adoption phases.

DRAFT RECOMMENDATION 9.4

The remit of the Australian Transport Safety Bureau should be extended to include any incident where autonomous technologies at or above SAE level 3 autonomy may have been involved.

Incident investigation and the national regulatory systems

Recommendations made by the ATSB are given some level of authority under the law. Section 25A of the *Transport Safety Investigation Act 2003* (Cwlth) specifies that anyone subject to recommendations made by the ATSB must return a written response within 90 days, detailing whether (and why) they accept the recommendations. As such, ATSB investigations can be expected to have some impact on those parties involved in serious incidents that have been subject to investigation.

However, ATSB findings are more likely to be valuable where they inform widespread practices, as opposed to the practices of individual operators. This may be particularly true for any findings made in relation to heavy vehicles or domestic commercial vessels, where businesses range in size, include owner-operators.

Relationships between the ATSB and national regulators

It may be valuable to have the national transport regulators play a role in ensuring that lessons drawn from incident investigation are disseminated across industry. It may be inefficient for the ATSB to replicate the level of industry consultation undertaken by the national regulators. It may be more difficult as a relatively small, multi-modal agency to have the same presence as regulators that were designed to be a one-stop-shop for operators.

As highlighted in 2009 by the NTC, there is considerable value in having an incident investigator statutorily independent from both governments and regulators (NTC 2009). However, such independence should not mean that regulators do not work constructively with the advice provided by investigators. For example, the memorandum of understanding between the Civil Aviation Safety Authority and the ATSB specifies aspects of accountability for the regulator above what is required (section 25A), with response deadlines varying according to the seriousness of investigation (section 9).

National regulators in heavy vehicle, rail, and maritime transport should be similarly accountable. For example, an ATSB finding in relation to a rail incident may prompt a response from the Office of the National Rail Safety Regulator in clarifying whether the accredited Safety Management System was operating as expected.

At the same time, the ATSB may find greater ability to inform policy development rather than complete it. The role of the ATSB in highlighting issues should not extend to an ability to dictate regulatory decisions.

10 A reform agenda for transport productivity

Key points

- Transport productivity is dependent on a number of issues related to infrastructure provision and management.
  - Infrastructure managers balance various objectives, including the demand for infrastructure and the cost of providing it, with consideration for road users' needs and their willingness to pay.
  - For heavy vehicle access management to function well, infrastructure managers must make timely decisions based on the size, capacity and condition of their road assets. This requires sufficient knowledge of those assets, as well as sufficient engineering skills and decision-making capabilities.
  - Resourcing for road managers goes beyond the procedural efficiency of approval processes. Funding mechanisms should help road managers make informed decisions, providing a better balance between sometimes competing objectives.
- Improving rail and heavy vehicle productivity requires considered, informed investment.
  - Work is underway by a range of bodies, aimed at addressing the current problems with infrastructure funding, particularly for roads.
  - Making better use of existing transport infrastructure by reducing congestion on road and rail networks is essential to improve productivity.
- Substitutability between rail and road is limited. In many cases, road and rail act as complementary modes of transport. An efficient outcome in intermodal freight would need to balance many factors. Governments should:
  - take an intermodal perspective in choosing projects (in addition to the use of cost-benefit analyses for each project)
  - be committed to minimising compliance costs where possible
  - be open to improving access management in each mode; to better reflect infrastructure demand and supply; and to adequately fund infrastructure maintenance and provision.
- Advances in transport and data technologies, including data collection and sharing, would improve transport productivity.
  - Data are necessary for informed planning and decision making by a range of bodies including governments, regulators, infrastructure managers, and businesses.
  - In order to facilitate a greater collection and usage of data, the right data infrastructure is required.
- The design of institutional frameworks is important in fostering innovation and driving policy change. Many responsibilities lie with bodies other than the national safety regulators.

10.1 Introduction

Chapter 6 assessed the productivity gains achieved to date as a result of the 2009 Council of Australian Governments (COAG) transport reforms. This chapter discusses further opportunities for productivity reform, much of which lies outside the competency of the national regulators.

Lifting productivity is no less important today as in 2008. The volume of freight is expected to grow by over 35 per cent (urban freight alone is forecast to grow by nearly 60 per cent) over 20 years to 2040 (TIC 2019, p. 6). Higher productivity growth will allow this freight task to be delivered more efficiently and safely, reducing the number of heavy vehicles on roads. As such, the productivity of transport, across all modes and in the freight supply chain, is of critical importance.

Policy and regulatory levers to unlock further productivity gains

Productivity in the transport sector is influenced by many factors, including technological change, innovation, competition, regulator behaviour, institutional inertia, and government policy and regulation. Through policy and regulation, governments can foster some of the conditions for more rapid productivity growth, including broader market dynamics (figure 10.1).

Governments and regulators can improve productivity by minimising regulatory burdens and investing in new and existing infrastructure widely. As already discussed, evolving regulatory practices should lead to better safety outcomes and lower compliance costs (chapter 9).

Governments can also remove regulatory hurdles to adopting new technologies (for example, restrictive design approvals) and sponsor infrastructure such as data hubs to ensure industry-wide benefits flow on from new technology (chapter 8).

The supply of skilled labour is an important factor in driving (or constraining) transport productivity. It is an area largely driven by market factors, such as wages and conditions, competition for labour from other industries, and the choices and preferences of prospective transport workers. However, government involvement may occur indirectly in terms of licensing, education, the recognition of skills in safety regulation (chapter 9), and general industrial relations legislation and institutions.

Figure 10.1 **A range of factors are involved in improving productivity in transport**

One of the most important contributions governments can make to lifting transport productivity is through efficient public infrastructure investment — building new infrastructure while improving and maintaining existing infrastructure. This includes the sound management of infrastructure, either by the private sector or government. It is especially important in network industries such as road and rail.

In assessing significant new project investment, it is important that governments undertake transparent cost-benefit analysis to inform project selection while looking across the entire transport network to ensure that the investment achieves the best network-wide returns. In addition, while governments finance infrastructure projects directly or through public-private partnerships, much of the actual construction and maintenance of infrastructure is undertaken by the private sector. As such, governments must have strong skills in negotiating and managing contracts, to limit optimism bias and ensure that risks are allocated to parties most able to manage the risk. Governments should not pay to transfer risks which cannot be credibly transferred to the private sector.

The efficient use of infrastructure depends partly upon regulation such as access regimes and congestion management and partly on signals that link user value with government decision making (section 10.3). Decisions on these issues will affect intermodal choices between road and rail freight transport (section 10.4). These issues are largely outside the scope of the national regulators and the terms of reference for this inquiry. Nevertheless, they are major factors affecting the efficient planning and use of infrastructure.

The information extracted from large transport datasets, including telematics, can improve the efficiency of safety regulation, infrastructure provision, access arrangements and generally improve productivity across the supply chain (section 10.5). The ability to translate information into better policy and regulation requires an institutional framework which allocates roles and responsibilities to the parties best placed to manage them (section 10.6).

10.2 Heavy vehicle access management

As already discussed, the most substantial productivity gain expected from the COAG reforms was greater access to the road network for heavy vehicles (chapter 6). To this end, the COAG reforms introduced a more accountable and rigorous process for local governments when assessing applications for heavy vehicle access to local roads. The Commission recognises that local government must balance the productivity gains from greater access with other factors such as public safety, amenity and infrastructure costs.

Are road managers sufficiently resourced?

While infrastructure managers had long held responsibilities for granting heavy vehicle access to local roads, the 2009 COAG reforms formalised their place at the heart of the new decision making regime. The Heavy Vehicle National Law (HVNL) gives road managers a hierarchy of instruments to manage heavy vehicle access, including individual permits, pre-approvals, and gazetted notices allowing as-of-right access. However, many road managers lack the resources, expertise and financial capacity to deliver against their role in the reforms — this appears to be particularly true of local government (box 10.1). Ensuring that local governments have adequate resources for their functions as road managers has

long been a challenge for state and local governments, and has involved various adaptations and solutions (see for example BTE 1985).

Box 10.1 **A lack of skilled resources to process access applications**

There is a widespread view that local governments are not sufficiently resourced to process heavy vehicle access applications in a timely or skilled manner:

> Councils are not sufficiently resourced to process multiple permit applications and provide access consent as quickly as industry would like. The volume of permits received by council road managers has increased dramatically, particularly within high infrastructure growth areas and major projects. However, councils have received no additional resource[s] and staff have had to add the permit approval task to their existing wider duties. (MAV, sub. 15, p. 7)
>
> … the VTA believes that local councils are under resourced and in many cases lack the appropriate and trained staff to address many of the local road management issues in a timely manner. Access processes for larger vehicles are cumbersome for councils and the technical qualification needed to suitably assess applications does not sit within Council administration structure. (VTA, sub. 23, pp. 8–9)
>
> Ongoing issues with attraction and retention of suitably qualified engineering staff results in a loss of knowledge at the local level meaning that the task of assisting councils with capability development is an ongoing exercise. (LGAQ, sub. 33, p. 9)
>
> Unfortunately, the involvement of local government in heavy vehicle access approvals has in many cases failed to contribute to increased efficiency or productivity. … It is clear that many rural local governments lack the resources and expertise to sufficiently evaluate the impact of road access decisions on the supply chain. For example, many regional shires in South West Victoria have very few b-double gazetted local roads despite the increased production of grain within their regions necessitating heavy vehicle movements. Indeed, within the entire Pyrenees Shire only one small section of the Avoca-Bealiba Road less than a kilometre long is currently gazetted for b-double access. (Victorian Farmers Federation, sub. 18, pp. 1–3)

However, some larger councils are able to handle the task:

> Due to its size, [Brisbane City] Council has the resources, access to data and expertise to process applications quickly and efficiently. However, it recognises that many other local authorities do not have similar resources and any extra assistance by state and Federal authorities to local governments would be beneficial. (Brisbane City Council, sub. 27, p. 3)

Diversity and resourcing

It is difficult to generalise across local governments, given their substantial diversity. Across 537 local governments (ALGA 2019), sizes range from Brisbane City Council which employs 8233 employees, servicing over 1.2 million residents across 1342 square kilometres (Brisbane City Council 2019, pp. 9, 40), to the Shire of Peppermint Grove which employs 23 staff, servicing 1636 residents across an area of 1.36 square kilometres (Shire of Peppermint Grove 2018, p. 4). In addition, local governments differ in terms of their functions, legislative and governance frameworks, and associated resourcing. As such, the degree to which local government resources are sufficient or inadequate for their functions must be assessed on a case-by-case basis.

This diversity translates to access management approaches. Local governments differ wildly in their knowledge of assets, technological capabilities and assessment techniques; some

have robust management systems using data sources, while others rely on paper-based systems (MAV, sub. 15, p. 9).

Therefore, the efficiency of road access management relies in part on local governments, of varying sizes, possessing sufficient technical skills and resources to perform their role. However, not all solutions will apply easily to all local governments.

Responsibilities have been expanding, revenue sources remain narrow

In general, there has been a trend of expanding responsibilities for local governments. As noted by the Commission in its report *Shifting the Dial*, local government responsibilities have evolved over the past 30 years to include an increasingly sophisticated set of functions, including engineering and infrastructure, property, planning and development, environment and health, and recreation (PC 2017b, Supporting Paper 16, p. 5). This reflects greater devolution of State and Territory functions over time and the desire of local governments to fill real or perceived gaps. It also results in tension between local preferences and an increasing number of responsibilities and requirements delegated to local government by other levels of government (PC 2017b, Supporting Paper 16, p. 6).

In the context of an increasing range of responsibilities overall, the advent of the HVNL 'elevated' the role of local governments as asset managers (LGAQ, sub. 33, p. 6). This is partly due to the formalisation of their place in a national system, and partly due to the increase in permit applications that accompanied the institutional changes.

While the role of local governments appears to have expanded, the scope of their revenue sources have not. Local governments have three main sources of revenue: property rates (their only source of tax revenue), fees and charges on the goods and services they provide, and grants received from other levels of government or the private sector (PC 2017b, Supporting Paper 16, p. 9). Local governments do not raise any direct revenues from road users apart from parking fees, with road-related fees and charges levied by the Australian and State and Territory governments (PC 2017b, Supporting Paper 9, p. 5).

In aggregate, local governments undertake their work while being more than 80 per cent self-funded (ALGA, sub. 34, p. 4). With the smallest revenue base of all the tiers of government (ALGA, sub. 34, p. 4), there is 'considerable variation in the own-source revenue raising capacity of local governments, with those in remote areas having fewer sources of revenue and greater reliance on grants' (PC 2017b, p. 206).

This is exacerbated where State governments impose restrictions on revenue raising, affecting the ability of local governments to improve their financial capacity alone. Local governments must either find another revenue source (such as increasing local fees and charges or higher grants from other levels of government) or reduce their expenditure, in order to deliver all their required services (PC 2017b, Supporting Paper 16, p. 9).

These trends do not establish whether any particular local government has a lack of resourcing, relative to its functions. They do show that changes in the nature of local government responsibilities have not always come with any new sources of revenue (as is the case with access management under the HVNL). As such, local governments may face increasing disconnection between demand for their services and the funding of their provision. This may be problematic in cases where revenue sources are largely local, but potential productivity gains from local government activities, such as access management, extend beyond the local area.

Does resourcing make a difference?

In terms of procedural efficiency, the relationship between resourcing levels and processing times is complicated. The National Transport Commission (NTC) found, based on National Heavy Vehicle Regulator (NHVR) data, that road manager performance is not obviously tied to population and therefore resource levels (NTC 2019, p. 41). Rather, operational and functional differences between road managers were significant: those with high volumes of permit applications tended to make decisions more quickly, regardless of their size. This is supported by anecdotal evidence. For example, as described by the City of Greater Dandenong:

> The biggest issue is likely to be when specialised knowledge is required for issue[s] which may not occur often enough (e.g. structural assessments) for local government to justify keeping the expertise and resources on hand. (sub. 3, p. 2)

While it is important for road managers to be sufficiently resourced, this is likely to be easier to accomplish when the nature of the access management task is large and consistent — in other words, where there are economies of scale. This does not obviate the importance of adequate resourcing, and does not provide solutions for local governments for which heavy vehicle access management is infrequent or inconsistent.

The importance of resourcing for road managers goes beyond procedural efficiency, as it also affects whether an efficient level of access is granted overall. As noted above, road managers must balance a number of objectives, including productivity gains associated with access; public safety and amenity; and the cost implications for public infrastructure provision and maintenance. For these decisions to be made well, road managers require adequate technical skills and data. Some stakeholders have suggested that these are lacking, including that many councils had a poor understanding of the engineering and design standards of their own roads (MAV, sub. 15, p. 8). It has been suggested that access decisions from road managers often lack evidence of risks to infrastructure (ATA, sub. 32, p. 18).

DRAFT FINDING 10.1

Some local governments are struggling to deliver timely heavy vehicle access assessments. While resourcing is important, more resources alone will not guarantee greater efficiency. Other factors including access to data and appropriate technical skills, and economies of scale in permit applications also contribute to greater efficiency.

Other means of improving capacity and capability

Many stakeholders believe that local governments should introduce fees for heavy vehicle access applications, as this would allow road managers to invest in improving their capabilities and resourcing specific to the task (for example, SAFC, sub. 6, p. 8; City of Greater Dandenong, sub. 3, p. 3). Depending on the scale of the task for a given infrastructure manager, a fee-for-service regime would also provide an incentive for local governments to undertake the task in a more efficient and productive manner. It would also be consistent with prevailing cost recovery principles; carriers applying for road access stand to gain private benefits (that is, from access) and should thereby be subject to a fee.

At the same time, the use of fees could substantially undermine any incentive for road managers to grant access through alternate means, such as notices (chapter 6). It would be difficult to design a permit processing fee that could adequately cover the resourcing needs for access management, without impeding progress towards as-of-right access via notices.

The NHVR acts as an intermediary between heavy vehicle operators and individual local governments, facilitating the heavy vehicle access approval process. Various stakeholders have suggested that there may be other roles that the NHVR could play in building the capabilities of road managers, to better enable the discharge of the statutory obligations imposed on them under the national law (Roads Australia, sub. 11, p. 6). These may include:

- introducing an asset management framework and a system for recording infrastructure data (MAV, sub. 15, p. 6)
- working with road managers to provide guidance on access and resources to council road managers, including independent bridge and route assessments (MAV, sub. 15, p. 7)
- providing improved data and enhanced technology management support systems to collect and analyse data to develop a regional freight approach and more effectively identify and prioritise freight routes (MAV, sub. 15, pp. 7–9)
- giving access to data, via mandatory telematics or other sources, to ensure compliance and aid the planning, delivery and maintenance of road corridors (LGAQ, sub. 33, p. 9).

The NHVR has signed agreements with two Local Government Associations to collaborate with local governments on road access issues. In 2017, the NHVR signed an agreement with the South Australian Local Government Association to work with local governments across the state to ‘improve the permit system and information available at the local level’ and help

streamline heavy vehicle access to local government-controlled roads, improving safety and productivity (NHVR 2017). The agreement involved providing local governments with information sessions, training in the NHVR's Road Manager portal, assistance during the transition of certain permit applications and further route assessment training (NHVR 2017). Similarly, the Local Government Association of Queensland (LGAQ) engaged in a partnership with the NHVR in 2016 to 'provide the necessary assistance to councils as they strive to fulfil their role in improving the safety and productivity of the local freight network' (LGAQ, sub. 33, p. 6). The partnership involves a dedicated NHVR resource at the LGAQ (NHVR 2018, p. 20). The LGAQ described the arrangement as resulting in 'significant progress', and has:

> … ultimately led to individual councils being empowered to make appropriate access decisions for their local road network considering available funding, condition of existing infrastructure, its capacity to support heavy vehicle movements along and community expectations'. (sub. 33, p. 9)

No other jurisdictions have entered into such arrangements with the NHVR (NHVR 2018, p. 20).

Improved data collection and access by both local governments and regulators, including the use of data hubs and data-related organisations is discussed further in section 10.5.

Local government incentives to improve heavy vehicle access management

An alternate perspective on local government capability relates to the incentives they face around their own performance. Generally, the performance of local governments is assessed through elections by the local community, public scrutiny of processes and finances, State government audit processes, and in some cases, regular reporting on agreed performance indicators (PC 2017b, Supporting Paper 16, p. 13). However, parties such as the heavy vehicle industry, who seek better performance from local governments in relation to a specific task, have a limited ability to effect change through these mechanisms.

Incentivising local governments to build capacity can also be achieved through increasing accountability. Information about the scope, quality and efficiency of service provision should be collected and accessible, so as to allow for better comparison across local governments, pushing local governments to improve, including with regards to community engagement (PC 2017b, p. 207).

Data on local government performance, to be effective, should be available in a consistent, accessible and easily comparable format to a variety of users, including other levels of government, taxpayers, the local community and industry (PC 2017b, Supporting Paper 16, p. 16). The use of data to improve industry productivity is further discussed in section 10.5.

As previously recommended by the Commission, it would be valuable for State and Territory governments to draw on Victoria's experience and require more meaningful and comparable performance reporting by local governments, providing support for this where needed.

Improving procedural efficiency of access management

The efficiency of access management outcomes may require different solutions to those aimed purely at improving the efficiency of approval processes. For instance, road managers require the capability for longer term planning, and may also benefit from exploiting different institutional arrangements in order to achieve economies of scale.

The need for institutional change?

Efforts to increase efficiency or capability have sometimes involved the amalgamation of smaller councils into larger entities, allowing for economies of scale in delivering services, and the pooling of resources and technical capabilities. Amalgamations are usually contentious (PC 2017b, Supporting Paper 16, p. 7), and improving road access is not a sufficient reason to consider such broad institutional change.

Collaboration and aggregation does not always require wholesale amalgamation (box 10.2). For example, the Australian Local Government Association supports the concept of regional road funding arrangements and the establishment of regional road groups of councils across Australia. Work is being done to develop regional local government and road groups nationally to better support a coordinated approach to road provision and planning (ALGA, sub. 34, p. 6).

Box 10.2 **Aggregation for heavy vehicle access in Tasmania**

The Tasmanian Government has implemented a collaborative approach to assist its local governments in tackling the heavy vehicle access task:

> In response to the national reform, the Tasmanian Government has taken a proactive approach to heavy vehicle access through the commitment of budget resources and strong collaboration and partnering with Local Government, the heavy vehicle industry and the NHVR. This collaborative approach … led to:
>
> - a comprehensive State-wide understanding of road and bridge assets, in the context of heavy vehicle access;
> - enhanced and simplified heavy vehicle access across the State Road Network, through pre-consented heavy vehicle networks via gazetted Notices, with a significant reduction in red tape;
> - expedient road manager responses which enable faster issue of permits by the NHVR; and
> - for the first time in Australia, an on-line tool for heavy vehicle operators to map routes for specific vehicles against pre-consented networks and conditions of access. (Tasmanian Government, sub. 41, p. 5)

The Tasmanian project has garnered significant interest and support from local government associations (for example, MAV, sub. 15, p. 8; ALGA, sub. 34, p. 13), who cite collaborative and streamlined decision-making, increased knowledge about their infrastructure, quicker and safer freight movement via prompt access permit decisions as benefits.

Another option involves voluntary collaborative arrangements to share resources and provide shared services (PC 2017b, p. 206). Regional Organisations of Councils (ROCs) are one example of such an arrangement. ROCs are voluntary, geographically-based groupings

of local governments which are formed and managed by their members, who collaborate on matters of common interest (Gooding 2012, p. 3).

The first ROC was established in northern Tasmania in 1922, and there was a significant increase in the number of ROCs during the 1970s (Marshall, Dollery and Witherby 2003, p. 170). There are now more than 30 major local government regional road groups involving in excess of 320 local councils across Australia (ALGA, sub. 34, p. 6), each with differing operating models. ROCs range from small unstaffed groupings of councils concentrating on a small number of issues and projects, to large organisations which play substantial roles in shared service delivery, procurement, advocacy and governance (Gooding 2012, p. 3). ROCs enable smaller neighbouring local governments to achieve economies of scale and provide centralised resources to draw from when required.

For local governments' heavy vehicle access responsibilities, there is growing support and desire for aggregation and collaboration between local governments, with an emphasis on centralised resources (Victorian Farmers Federation, sub. 18, p. 3; City of Greater Dandenong, sub. 3, p. 3).

The success of such arrangements depends on the size, number and financial position of participating governments, as well as the level of commitment and leadership involved (PC 2017b, Supporting Paper 16, p. 7). Generally, with regard to the task of access management, there is likely to be value in centralising resources across multiple local governments.

In addition, secondments and staff movements between levels of government and the private sector provide an opportunity to broaden the skills and experience of staff, and develop capability, both at an individual level, and across the workforce more broadly (PC 2017b, Supporting Paper 16, p. 13).

DRAFT RECOMMENDATION 10.1

The Council of Australian Governments should provide support to ensure local government has the financial and technical capacity to deliver its role as asset manager for local roads. Transparency and accountability of performance should accompany any additional support, particularly with respect to processing times for access permits and the use of notices to gazette heavy vehicle routes.

This should be pursued in the context of broader changes under the Heavy Vehicle Road Reform agenda.

Long-term strategic planning to improve access management

The Commission has noted that local governments should continue to gain a better understanding of their asset and infrastructure base (PC 2017b, Supporting Paper 9, p. 20).

For example, with improved data on road assets and projections of future traffic flows, local governments would be able to better plan for maintenance and renewal (MAV, sub. 15, p. 8). In addition, the efficiencies gained from longer-term planning may help reduce road managers' overall resourcing requirements (City of Greater Dandenong, sub. 3, p. 3). A better understanding of road assets and traffic flows could help local governments to increase their use of as-of-right, gazetted or pre-approved heavy vehicle access, thus improving the productivity of the industry as well as asset managers. The importance of data and technology in improving productivity outcomes in transport is further discussed in section 10.5.

Access permit decisions focus on single events, and are reactive to the needs at a particular time and place. A risk of focusing resources on this task alone is that it may take priority over longer term strategic planning. Such planning would allow road managers to better understand how infrastructure management should adapt to changes in freight flows and volumes, as well as new technologies (Australian Academy of Technology and Engineering 2019, p. 6). While this is true of access arrangements, it is particularly relevant to the provision, maintenance, and use of roads.

10.3 Road infrastructure provision

In general, State and Territory road agencies are responsible for the capital, operational and maintenance expenditure on arterial roads, while local governments are responsible for expenditure on local roads (PC 2017b, Supporting Paper 9, p. 7). However, each level of government has its own prioritisation, assessment and selection framework for roads, with differing strategic priorities for roads. Decisions made in this area have a significant effect on long-term productivity, as noted previously by the Commission:

> … arrangements for road service provision are highly vulnerable to poor decisions and outcomes. The long-lived nature of road assets mean that any sub-optimal decisions can materially, and permanently, reduce community welfare relative to what it would otherwise be. (PC 2017b, Supporting Paper 9, p. 12)

Where transport infrastructure is lacking, this may not only constrain access to parts of the road network for some heavy vehicle routes, but in aggregate, it may reduce the ability of land-based transport to accommodate the projected increases in freight volumes. The strategic challenges for road managers include consideration of immediate concerns about route access; longer term planning of land use; intermodal competition between infrastructure projects; and interactions between passenger and freight transport.

In the Commission's *Public Infrastructure* inquiry, the institutions and processes that contribute to efficient decisions on infrastructure provision were examined (PC 2014). In the context of roads, infrastructure managers must make decisions about the investment and maintenance of their assets, considering factors such as the current and future freight and passenger flows; the potential impact on public amenity and safety; and the future maintenance needs of any new infrastructure projects. The provision of new infrastructure

must be appropriately balanced against the maintenance and renewal requirements of existing essential assets, and occur in the context of detailed asset management plans (ALGA, sub. 34, p. 3).

Long-term planning to improve infrastructure provision

One of the intended outcomes of the suite of reforms recommended by the Commission's report on Public Infrastructure was a more coherent, economically justified pipeline of projects (PC 2014, p. 19). As reiterated more recently by the CEO of Infrastructure Australia, the establishment of a more coherent pipeline would not only benefit infrastructure provision, but also investment in other areas including workers' skills (Davies 2018, p. 67).

In describing governments' approaches to infrastructure provision, Davies notes that:

> It is fair to say we have moved away from long-term planning in recent years and have become very focused on the short term — largely on major projects. (2018, p. 66)

On the latter point, Terrill (2018, p. 57) pointed to data showing that small and medium-sized infrastructure projects across Australia tend to have higher benefit-cost ratios than many of the 'mega projects' that are 'so appealing to so many governments'. This supports the extensive research which found a systematic bias to 'mega projects' which tended to have exaggerated benefits and understated costs (Flyvbjerg 2009; PC 2014, p. 713).

These findings suggest that many of the issues around the planning and choice of infrastructure projects discussed in the Commission's report on Public Infrastructure, including the importance of cost-benefit analyses, remain relevant.

Infrastructure funding

Infrastructure managers are required to strike a balance between various objectives. The provision of road infrastructure requires efficient planning and project selection, relevant not only to heavy vehicles but to all road users. This requires sufficient cost-benefit analysis for each project, as well as adequate consideration of projects across modes (section 10.3).

State and local governments must also determine how best to fund infrastructure provision and management. Two main objectives in designing funding mechanisms for road infrastructure are to achieve adequate funding for the scale of provision and maintenance; and to provide links between user valuation of infrastructure and the cost of its provision. Heavy vehicle-related revenue achieves the latter, by linking the implications of heavy vehicle access for transport productivity and road maintenance costs. While such revenue contributes to the former objective, the overall adequacy of road funding will inevitably be broader than that which relates to heavy vehicles.

Stakeholders note several issues with existing road funding arrangements, including a lack of a direct mechanism for local government fundraising for road construction and

maintenance (ALGA, sub. 34, p. 4), a lack of hypothecation of fuel-based road user and registration charges to service provision by local governments (ATA, sub. 32, p. 18), and a recycling of funding from existing programs for local government services and general access (ALGA, sub. 34, p. 6).

This territory is well traversed in work undertaken by many organisations, including the Commission (for example (PC 2014) and (PC 2017b) and box 10.3).

In the Commission's 2014 report on Public Infrastructure, the Commission pointed to the value of road charging but emphasised it is not a panacea. Road infrastructure will continue to require funding from broader taxation sources. The report also pointed to the importance of governance and institutional structures to deliver increased value (PC 2014, p. 21). In the 2017 *Shifting the Dial* report, the Commission recommended that State and Territory Governments establish Road Funds, initially to better manage heavy vehicle-related revenues and expenditures, and eventually to facilitate broader compositional shifts in road funding sources (PC 2017b, recommendation 4.3).

While previously progress has been slow, acknowledgement of the need to change road funding and investment and proposals to apply charging models to heavy vehicle movements are now gaining traction, especially as revenues from fuel excises continue to fall. The Australian Government is trialling mass-distance charging models over 2019 and 2020 (box 10.3). Work has also been undertaken in designing appropriate pricing mechanisms for heavy vehicle charges, including public consultation on independent price regulation of heavy vehicle charges, as well as multiple reports into Heavy Vehicle Road Reform and a consideration of multiple price-setting models (DITCRD 2018b).

The Heavy Vehicle Road Reform agenda is likely to again change the requirements of local governments (if only by changing the systems within which they operate). For example, Farrier Swier (2017) note that it may be valuable in the context of an independent price-setting mechanism for road managers to be organised less like government departments, and more like government owned corporate entities. There are a number of potential configurations for local governments, as well as a range of important considerations, as discussed in the Commission's report on Public Infrastructure (box 10.4).

The Commission supports the process of trial and evaluation and the National Heavy Vehicle Charging Pilot. Other associated work underway accords with previous Commission findings and recommendations that stressed the importance of institutional arrangements that better connect road demand and supply.

Box 10.3 Progress has been made on several aspects of Heavy Vehicle Road Reform

The reform of heavy vehicle charging and, more broadly, road funding, is underway. As noted by the Department of Infrastructure, Transport, Cities and Regional Development:

> All levels of government in Australia are working together to establish a regulated market for the provision of road services to the heavy vehicle industry. The ultimate aim of this reform is an improved customer focus for heavy vehicle road users, linking their needs with the level of service they receive, the charges they pay and the investment of those charges back into road services where feasible. The economic benefits of this reform are estimated to range from $6.5 to $13.3 billion over the next 20 years (DIRDC 2018, p. 6).

The four intended phases for progressing Heavy Vehicle Road Reform include:

- improving transparency of investment, expenditure and service delivery
- implementing forward looking cost base and independent price regulation
- returning charges revenue to road owners based on use
- implementing more direct user charging where appropriate (DIRDC 2018, p. 9).

A small-scale trial, running for 6 months, covering 140 vehicles from 11 transport operators commenced in July 2019. This stage of trials was designed in collaboration with governments, industry and expert consultants and is intended to determine whether existing installed telematics technology can effectively measure mass and distance. A second larger trial is due to commence in early 2020, lasting 12 months and covering up to 100 businesses and 1000 heavy vehicles. This larger trial will test a wider range of data collection methods and encourage participation across all sectors of the heavy vehicle industry. In both trials, mock invoices will be issued, but no money collected (DITCRD 2019b).

While a regulatory model has not been determined, this too has progressed. For example, Deloitte Access Economics investigated several potential end points for the Heavy Vehicle Road Reform agenda, where:

> … each option involves a form of independent regulatory regime by setting a forward-looking cost base to support more cost-reflective and transparent pricing and introduces expenditure accountability. … A forward-looking approach to setting prices that are reflective of long run efficient costs of road service provision is important for achieving the recovery of efficient costs over the economic life of the road service, avoid distorted price signals and achieve prudent and timely investment decision-making. (Deloitte Access Economics 2017, p. 22)

Progress has also been made on a price-setting model that could be used for heavy vehicle charges:

> A Forward Looking (lifecycle) Cost Base (FLCB) for HV charges is an important element of phase two of the HVRR Road Map. … In November 2016, the Council agreed to the development of a prototype working model for a FLCB based on the Building Blocks Model (BBM) to underpin future HV charge calculations, as part of a package of measures to support phase two of the HVRR. Moving to a FLCB would be a significant change, since HV charges are currently set under the PAYGO approach by establishing a cost base using a seven-year historical average, with the HV portion of total roads costs separated out for recovery through HV charges. (Farrier Swier Consulting 2017, p. 6)

Box 10.4 **Different approaches to road asset management**

There are multiple broad institutional models that are currently used, or have the potential to be used, in the roads sector.

- *Departmental model* — a model of project selection and management and allocation of road funding by governments, with earmarking of road-related taxes and charges used to fully fund roads on an economically sustainable basis.
- *Road fund model* — project selection, and management and allocation of road funding undertaken by a separate dedicated entity that operates at arm's length from government on an economically sustainable basis. This approach is currently in operation in New Zealand.
  - Local governments could choose to adopt a version of the road fund approach using regional road funds established by aggregations of councils. In Queensland, 17 Regional Road and Transport Groups have been established under the Roads and Transport Alliance — an alliance between the State Government, the Local Government Association of Queensland and local governments. These regional road groups are responsible for prioritising, investing in and delivering regionally significant road and transport infrastructure. In Western Australia, Regional Road Groups provide recommendations concerning funding priorities for various projects, and identify strategic regional issues.
- *Corporatised public road agency model* — public road authorities (integrating all tasks relating to road funding and provision) are run on a more economically sustainable basis using both funding from governments and revenue raised from direct charges on road users, with those charges and road service standards overseen by a regulator. Some countries are considering or have established independent companies for the management of their strategic road networks, including the United Kingdom and Austria.
  - *Regional Organisations of Councils (ROCs)* are one example of such an arrangement. ROCs are voluntary, geographically-based groupings of local governments which are formed and managed by their members, who collaborate on matters of common interest.
- *Private provision model* — private ownership and provision of roads (such as the road concession model).

Variations and hybrids of these models are also possible. For example, the road fund model could also include the tasks of funding and provision of infrastructure services in the one entity, in which case it would have some similarities to the corporatised public road agency model.

Source: PC (2014, p. 307).

The road-reform journey from here

Road funding and regulatory arrangements involve all levels of government, and so effective reform requires sustained commitment by all governments (PC 2017b, Supporting Paper 9, p. 3). This appears to be in place at this stage of the Heavy Vehicle Road Reform process, and the Commission supports the direction of this progress.

In the absence of a new road funding model, infrastructure investment programs from all governments will continue to be vital for maintaining the road network (chapter 6). These investments could be made more effective through the application of clear criteria promoting freight movements and supporting investments to remedy identified weak points in the

transport infrastructure. Existing application arrangements to government grant programs do not necessarily result in investments where they are of the greatest value in improving freight flows because they tend to favour local government areas with the capacity to make the strongest submission. This may not necessarily align with the selection of projects with the highest net benefits.

As road reform is implemented, and pricing mechanisms are established, these trends are likely to present additional reasons to reform the institutional arrangements around road management. Independent accountability and responsibility for road provision will need to be matched by independent oversight of prices, taking care not to provide incentives for gold plated infrastructure provision. Both of these arrangements would be supported by better data collection processes, a consistent theme in this report. Such approaches would benefit from both scale (for example, pooling data) and technical expertise (for example, in data management and analysis).

The challenges ahead in establishing new funding and pricing mechanisms, as well as any associated institutional arrangements, should not be underestimated. It will be important to prioritise thorough implementation processes over arbitrarily set timelines. As has been the case already, priority should be afforded to processes involving stakeholder consultation, determination of appropriate models and institutional arrangements, and trialling of systems. Governments at all levels will need to maintain their commitment and ownership of the process, including through the establishment of any new institutions, and transition to the new framework. Other valuable lessons from government may be learned from the implementation of national safety regulation in transport (chapter 9).

Making better use of infrastructure

The provision of new infrastructure can, at least in part, be offset by improving the use of existing infrastructure. This has increasingly become a focal point for Infrastructure Australia (Davies 2018, p. 67). One key example relates to congestion, which can reduce productivity in the freight transport sector by hindering access to ports and markets, and increasing the time and cost of transporting goods.

Productivity can be improved by minimising congestion, as noted by iMOVE:

> For state and local governments, the question is which investments will allow them to more effectively and efficiently utilise the existing transportation infrastructure. ITS [intelligent transport systems] can potentially save billions of dollars by facilitating better utilisation of existing transportation infrastructure. (sub. 25, p. 18)

The Bureau of Infrastructure, Transport and Regional Economics (BITRE) estimated that road congestion imposed an avoidable social cost of $16.5 billion in Australia's capital cities in 2015 (BITRE 2015, p. 1). These costs have risen over time as Australia's population has grown and become increasingly concentrated in cities, and are predicted to exceed $30 billion per year by 2030 (BITRE 2015, p. 1). Commission estimates place the economic

impact of better transport asset utilisation at a permanent increase in output of around 0.7 per cent of GDP in the long run, aggregated over all capital cities (PC 2017b, p. 137).

Congestion policies

The Government committed an additional $3 billion (bringing total funding to $4 billion over 10 years) to the *Urban Congestion Fund* in the 2019-20 Federal Budget. The fund is designed to support projects that reduce congestion around 'pinch points' in major urban areas and improve 'last mile' access to ports, airports, employment and freight hubs (DITCRD 2019d). However, reducing congestion may require more than building additional transport infrastructure.

Shifting the Dial showed that recent major transport network augmentation and investment projects in major cities, were likely to have provided some relief on congestion in specific areas (PC 2017b, p. 135). However, traffic engineering theory suggests that benefits from increased network capacity tend to only occur in the short term and, over time, are often counteracted by induced demand. Survey evidence was consistent with this theory (PC 2017b, p. 135).

The challenge of determining how best to address road congestion is exacerbated by the lack of an explicit price for road services, and subsequent lack of transparency around the costs of using and providing road services. Road pricing reform may enable better management of demand and more efficient use of the road network. However, no country or state has fully developed and implemented an operational light vehicle road user charging scheme on a network-wide and non-voluntary basis. Heavy vehicle charging (discussed above) alone will not be sufficient to address congestion, which is mostly determined by the use of passenger vehicles (PC 2017b, p. 132). By the same token, congestion charging is not a suitable replacement for heavy vehicle charging, as the two systems differ in their key objectives.

A congestion charge is a form of road user charging where prices increase during periods of peak demand. This can improve the efficiency of transport infrastructure use by sending a price signal which provides an incentive for drivers to travel at off-peak times or use public transport. Congestion charges have been implemented in Singapore, Sweden, Italy and the UK (Terrill and Ha 2019).

Local government decisions around planning and zoning (discussed above) can also have an influence on congestion levels.

Interplay between passenger and freight transport across modes

For passenger transport, the domestic passenger task increased by 8 per cent in the 10 years to 2016 and is estimated to grow an additional 19 per cent by 2026 (NTC 2016, p. 21). The majority of this transport occurs on roads. For example, cars account for the primary method

of travel to work for 82 per cent of all workers, followed by public transport[26] (10 per cent) (NTC 2016, p. 15).

Passenger and freight transport compete for capacity between and within road and rail networks. The level of congestion on one network can therefore influence the movement of people and goods across all networks. As heavy vehicles and rail compete for some freight tasks, the choice of modal split by logistics companies can also have an impact on the overall level of congestion.

For rail, direct competition between freight and passenger services occurs mainly in non-urban areas. This is because urban passenger services tend to operate on standalone rail networks. For example, there is significant segregation between freight and passenger train networks in Melbourne, Brisbane, Perth and Adelaide because the freight uses standard gauge while urban passenger trains operate on local broad or narrow gauge track. By contrast, non-urban passenger services are not standalone networks, and typically share track with urban passenger and freight trains.

Australia's freight rail network mostly carries bulk non-time-sensitive commodities (such as coal and iron ore), while the road network is responsible for the transport of bulk and non-bulk freight and time-sensitive commodities (such as fresh food, construction materials and fuel) (NTC 2016, p. 15). Therefore, it is unlikely that increasing the share of the freight task transported by rail will solve the issue of congestion in cities. Improving allocative efficiency across the modes of transport is discussed in detail in section 10.4.

10.4 Ensuring intermodal competitiveness

Road and rail are largely complementary modes of transport (as discussed in chapter 9 and section 10.3 above), however they are also competitors in the transport of long distance bulk and non-bulk freight (NTC 2016, p. 15). Improving the productivity of both road and rail requires ensuring that each mode carries an efficient proportion of the passenger and freight task.

Increasing the practical substitutability between the modes for end users will encourage greater allocative efficiency between road and rail, whereby rail carries more of the road freight task, reducing road congestion, pollution and potentially safety outcomes (safety is discussed in chapter 9). However, this substitutability requires smooth intermodal links for partial substitutions by end users, and a consideration of the costs faced by operators in each mode which will be passed onto end users, affecting their decision making. Care must be had to prevent a distortion of intermodal choices by end users.

[26] For urban public transport, market share is split between rail (62 per cent), bus (34 per cent), tram (4 per cent) and ferry (1 per cent) (NTC 2016, p. 15).

Modal substitutability: moving between road and rail

As stated by the Commission in 2017, more efficient use of existing transport infrastructure and better integration of transport services is needed (PC 2017b, p. 132). In their submissions to this inquiry, many stakeholders from the rail industry discussed intermodal substitution between heavy vehicle and rail freight, and the implications for the productivity and safety of the overall freight task (for example, FORG, sub. 8; Pacific National, sub. 24; ARA, sub. 26; Aurizon, sub. 30; ARTC, sub. 31).

An efficient outcome in intermodal freight would need to balance many factors. In the planning and building of freight-related infrastructure, it would be valuable for governments to take an intermodal perspective in choosing projects (in addition to the use of cost-benefit analyses for each project). In terms of the potential for regulatory costs to cause distortions to intermodal competition, governments and regulators should be committed to minimising compliance costs where possible.

In terms of access arrangements, governments should be open to improving access management in each mode; to better reflect transport infrastructure demand and supply; and to adequately fund the maintenance of infrastructure. As discussed above, this involves improved data collection and informed decision-making by infrastructure owners:

> It is important that road managers have the data and information available to effectively manage the infrastructure. This supports the value capture of infrastructure, so intermodal terminals and other freight generation points are serviced by the appropriate grade of road infrastructure, thereby facilitating the efficient movement of freight down the supply chain. (Roads Australia, sub. 11, p. 4)

To a large degree, better allocative efficiency across different modes of transport results from undertaking incremental reform to ensure efficiency *within* each mode of transport. This includes, for example, improving the institutional mechanisms for road asset management (discussed above). By doing this, governments are not (nor seen to be) favouring one mode of transport over the other.

It is important to note the bounds of intermodal competition. For example, substitutability between rail and road is limited. In many cases, road and rail act as complementary modes of transport. Where competition is possible, the relatively agile nature of road transport means that rail will not be suitable for all freight tasks (as discussed in section 10.3 above). This makes it difficult to estimate the degree of substitutability, given that it is not possible to assume that all traffic observed on a highway could be replaced by rail (as trucks may enter and exit at various points).

Administrative costs in each mode

Road and rail operators, in setting their transport charges, take into account their operational costs (which include any cost-recovery fees and levies as well as other compliance costs

attributed to the national laws). Differences in price affect the choice made by clients in utilising road or rail, or which combination of the two.

Cost recovery for regulators imposes additional costs onto clients

The COAG reform negotiations intended that ongoing regulator costs would be subject to full cost recovery from operators through charges, fees and other levies, with a progressive move towards full cost recovery in the long term by States and Territories (COAG 2011a, p. 12, 2011c, pt. 6, 2011b, p. 10). In transitioning to full cost recovery, each regulator has been subject to differing government funding arrangements, dependent upon the state of cost-recovery (table 10.1).

Table 10.1 **Government funding provided to regulators 2017–18**

	Government funding	*Revenue from fees, fines and charges*
	$m	$m
National Heavy Vehicle Regulator (NHVR)	152.9[a]	5.0
Office of the National Rail Safety Regulator (ONRSR)	0.0	39.0[b]
Australian Maritime Safety Authority (AMSA)	193.4[c]	13.1[d]

[a] Regulatory income (from the States and Territories) plus grants from Commonwealth, State and Territory governments. [b] Includes fees charged to State and Territory governments. [c] Includes funding for non-domestic commercial activities [d] Fee for service revenue is sale of goods and services plus fees and fines revenue.

Sources: AMSA (2018b), NHVR (2018a) and ONRSR (2018a).

The Australian Maritime Safety Authority (AMSA) retains significant government funding due to the challenges faced in its attempts to implement full cost recovery (chapter 5). Further efforts to move to full cost recovery in domestic commercial vessels has temporarily ceased pending further review (AMSA, sub. 35, p. 15; MIAL, sub. 14, p. 3). Also complicating matters are issues of cross-subsidisation across AMSA's activities, with over-recovery of vessels covered under the Navigation Act cross subsidising AMSA's domestic commercial vessel operations (MIAL, sub. 14, p. 3).

Even in the case of the Office of the National Rail Safety Regulator (ONRSR), which no longer receives government funding, only three jurisdictions are 100 per cent funded by industry (ONRSR, sub. 21, p. 29). In jurisdictions which are not currently fully cost recovered by industry, industry is subject to five per cent increases each year until full cost recovery is reached (ONRSR, sub. 21, p. 29). As a result, 'a number of operators have seen this as an increased compliance cost due to the reform' (ONRSR, sub. 21, p. 29). Ensuring that the national regulators adhere to common principles for cost recovery for their services could serve to minimise any distortionary effect of differing funding methods on intermodal

competition. The Australian Government Cost Recovery Guidelines (CRGs) set out 'an overarching framework under which government entities design, implement and review cost recovered activities provided on behalf of the Australian Government' and apply to 'accountable authorities … of government entities' and 'non-government organisations affected by cost-recovery' (Australian Government 2014, pp. 4–5), such as the national regulators.

> Australian Government entities should generally set charges to recover the full cost of providing specific activities. Partial cost recovery, which occurs when less than the full cost of a government activity is recovered, may be appropriate in some circumstances where: charges are being 'phased in'; full cost recovery would be inconsistent with community service obligations endorsed by the Australian Government; the Australian Government has made an explicit policy decision to charge for part of the costs of an activity. (Australian Government 2014, p. 6)

The NHVR and AMSA are not implementing cost recovery as per the CRGs, though AMSA's cost recovery arrangements are under review (as above). Generally, in a move to cost recovery through fees and levies, the prices of regulated products should incorporate all costs incurred, including the administrative costs of regulation (PC 2001, p. xxix).

There are various exceptions to the cost recovery principles listed above, including where goods are informational with public good characteristics or; cost recovery is not cost effective; inconsistent with policy objectives; or would unduly stifle competition.

The national transport regulators should take approaches to cost recovery that are consistent with the CRGs. These common principles could also minimise the extent to which fees and levies distort intermodal competition. However, the CRGs should not be considered as an avenue to move towards equal fees and levies across the modes. The operational circumstances in each mode differ markedly, as do the roles and remits of the regulators. In any case, changes should be gradual where the impacts to industry are significant.

DRAFT FINDING 10.2

There are different approaches to cost recovery in each of the three modes, from near full cost recovery in rail, to very limited cost recovery in heavy vehicles and maritime. The amount of government funding received by each national regulator reflects these arrangements.

DRAFT RECOMMENDATION 10.2

The national regulators (particularly the National Heavy Vehicle Regulator and the Australian Maritime Safety Authority) should move towards cost recovery arrangements in line with the Australian Government Cost Recovery Guidelines. Consistent arrangements across the three transport regulators will eliminate the risk of distorting intermodal choices.

Derogations to the national laws

Derogations and other legislative inconsistencies (including coverage) result in unnecessary costs from inconsistent regulation across jurisdictions, both in terms of financial and other costs (chapter 4). Removing derogations should be undertaken with regard to the implications for safety. To this end, the Commission has recommended pursuing further harmonisation, particularly where there is no evidence to support the derogation having a positive impact on safety (chapter 5).

The compliance costs associated with derogations and other legislative inconsistencies are predominantly a feature of road and rail, with any maritime derogations being limited, with limited effect reported by industry. The extent of the effect of derogations in road and rail is difficult to compare, with both heavy vehicle and rail operators subject to a similar number of outright derogations (chapter 4). However, reported experiences of operators indicate that rail has a greater number of derogations which result in cost to operators. The extent to which derogations can be removed in each mode will also impact on the potential for competition between rail and heavy vehicle freight.

Differences across rail networks hinder easy substitutability

Chapter 4 discussed the inconsistencies faced by above-rail operators dealing with multiple below-track owners and rail infrastructure managers (RIMs). The inconsistencies in requirements faced by operators hinders the substitutability of rail, adding costs onto end users.

The use of road is not immune from challenges and roadblocks when attempting to traverse across different areas of road owned by different governments. These involve seeking permit approvals (in many cases) from each individual local government affected, however, the system is centralised for operators through the NHVR Portal, and the requirements of operators when using the roads is largely the same across the entire network (governed by the Australian Road Rules). Any differences faced by operators on roads are state-based (in the form of derogations), rather than imposed by asset owners or managers.

In rail, there is no consistency in requirements across the entire network. Individual below-track owners and RIMs are able to dictate their own signalling equipment, rail access conditions, rolling stock standards, recognition of qualifications and technical specifications. These networks are still compliant with the Rail Safety National Law (RSNL), despite not being consistent across jurisdictions, due to the co-regulatory approach adopted in rail. These differences mean that operators are subject to additional compliance costs (for example, adding equipment, training crew in multiple differing standards) the more networks they traverse. These costs would be passed onto end users, potentially making rail a less viable option than road for the transport of certain goods.

Should compliance costs be benchmarked across modes?

While each mode of transport is subject to differing operator and compliance costs, it may not be possible to accurately benchmark or standardise these costs across modes. The three modes are only partially comparable, with differing operating environments and regulatory requirements. Providing the greatest amount of substitutability for end users is likely to best be achieved through ensuring operator costs within each mode are minimised, rather than through making the costs across the modes equal.

Even if there is full cost recovery across all three modes, as intended by the COAG agreements, the fees and levies charged to operators in each mode will still differ. Each regulator has differing roles and delivers differing services at differing costs. It would be unreasonable to force regulators to deliver their regulatory services at a cost equal to their counterparts in differing industries, particularly where it may sacrifice the quality of services provided. The regulators should continue to minimise their regulatory costs as far as practicable, while maintaining quality of service to their operators. One example would be ONRSR's identification of internal efficiencies in 2017-18, which resulted in the reduction of cross-subsidisation between projects (ONRSR, sub. 21, p. 29). There may be merit in some degree of benchmarking of regulator costs against each other to help drive further efficiencies and promote learnings between the regulators.

Generally, the national safety regulators should commit to a systematic approach of actively minimising compliance costs. A good first step would be to require transport safety regulators to monitor and report on compliance costs (draft recommendation 6.5).

10.5 Harnessing data and technology to improve productivity

Advances in transport and data technologies, as well as improved data collection and sharing methods facilitated through new data infrastructure, have the ability to dramatically improve productivity in transport.

Minimising barriers to new technology

The transport sector is experiencing considerable technological innovation, with the development of a range of new technologies such as intelligent transport systems, autonomous technologies, new models of ownership and new physical means of transport (chapter 8). These new areas of innovation and development provide a real avenue by which productivity in transport may be enhanced.

As discussed in chapter 8, the uptake of new technologies and its barriers are mostly an issue in heavy vehicles. In rail, a younger fleet and a risk-based regulatory regime are conducive to the use of new technologies.

The Australian Design Rules affect productivity and innovation

As discussed in chapter 8, all vehicles must comply with the Australian Design Rules (ADRs). These national performance based standards cover issues including vehicle safety, structure, lighting, noise, emissions and braking (DITCRD 2018a). However, the existence of the ADRs may hinder technological innovation and development in Australian heavy vehicles. This is because new ADRs (as well as the review of existing ADRs) are subject to a lengthy formal process, which involves stages of consultation with key stakeholders, public comment, and a possible vote by Transport and Infrastructure Council (TIC) members (DITCRD 2018a).

The requirement that all vehicles must be compliant with 'the relevant ADRs at the time of manufacture and supply to the Australian market' (DITCRD 2018a), along with the time delays attached to the development of new ADRs, reduces the ease of which new innovations and vehicles can be installed and imported into the country. New innovations may not be compliant with existing ADRs, and it may be years before ADRs are amended or new ones created which allow for the new technologies. In the meantime, Australia is missing out on the productivity as well as safety benefits which come from new vehicles with new technologies and innovations. For example, '[g]etting a newer truck would also increase the fuel efficiency of the business, fuel being the most important cost element for road freight businesses' (NatRoad, sub. 7, p. 11).

The Commission has recommended amending how ADRs are used in relation to transport technology (draft recommendation 8.1).

Performance-Based Standards and other access schemes

As discussed in chapter 6, the Performance-Based Standards (PBS) scheme 'offers the heavy vehicle industry the potential to achieve higher productivity and safety through innovative and optimised vehicle design', with vehicles 'designed to perform their tasks as productively, safely and sustainably as possible … matching the right vehicles to the right tasks' (NHVR 2019a).

The PBS provides a trade-off in relation to heavy vehicle access, allowing accredited vehicles to be significantly longer or carry significantly heavier loads as compared with other equivalent vehicles on the roads covered by the ADRs and HVNL. Fulfilment of the PBS for heavy vehicles allows compliant vehicles to sidestep ADR processes (chapter 8), because these larger and heavier vehicles are often those which are newer and fitted with the latest technologies, and they are seen to possess improved safety, performance and design characteristics.

According to the NHVR, there are now over 9500 PBS-approved combinations (NHVR (unpublished)), offering significant productivity benefits:

> PBS vehicles are designed for the task they need to undertake rather than their conventional counterparts, meaning more freight can be moved in the same number of trips … PBS

> combinations offer significant productivity benefits, including: productivity improvements of 15 – 30%, [and] up to 260 million fewer kilometres travelled annually, compared to conventional vehicles. (NHVR 2019b, p. 5)

It will be vital for schemes such as the PBS to provide an efficient gateway for new heavy vehicles to be used on public roads, while ensuring some form of balance between objectives of productivity, safety, and public amenity.

Data as a key enabler of policy reform and improved productivity

Informed planning and decision-making by government requires a solid evidence base, comprised of both research and data. Having access to sufficient data to inform and facilitate policy is an overarching issue, not only relevant to transport.

In the context of transport, the Transport and Infrastructure Council described data as:

> … an additional resource that can be analysed to improve planning, investment decision-making, and transport operations … data can also support the design and delivery of new infrastructure … improving investment and operational decision-making over the entire life of an asset'. (TIC 2016b, p. 11)

As discussed in chapter 8, data in the transport space can be used for many efficiency and productivity enhancing purposes including optimising freight routes and schedules; congestion monitoring and management; enabling the use of intelligent transport systems and autonomous technologies; improving regulatory enforcement and compliance; improving record keeping and reducing operator paperwork requirements; and enabling and enforcing dynamic road pricing.

Data will also have a key role in future productivity reforms discussed earlier in this chapter. In heavy vehicle access management, data will provide local governments and asset owners with more information as to the number and sizes of the heavy vehicles operating on their roads, as well as the routes they take. This information enhances their capacity to make access decisions, and allows governments to adequately plan and implement strategies aimed at improving the productivity of their road networks.

In the provision of road infrastructure, data will allow for more informed decisions by infrastructure owners and managers around infrastructure planning, investment and funding, as well as the allocation between different infrastructure uses based on past and projected trends. Traffic flows and the condition of key infrastructure assets will enable the prioritisation of investments, and feed into charging based on mass and distance.

However, some stakeholders have voiced concern about the apparent lack of data (or its use) by governments in their decision making. For example, the Australian Logistics Council stated that the lack of data is constraining the ability of governments to prioritise investments or to measure their impacts (ALC, sub. 12, p. 9).

The value of data, real-time data and data sharing in transport

An influx of new transport technologies has resulted in the availability of an immense amount of rich real-time and other data. Data is created within vehicles, trains and vessels, as well as by the supporting infrastructure and transport systems (chapter 8). Some of the potential transport-related uses for such data are discussed above. However, it is important to consider that innovation is difficult to predict: new commercial uses for data may develop in ways that are presently unknown.

At times, users of data may struggle to access it, given that they are not likely to be involved in generating or collecting the data. As the Commission stated in 2017:

> Improved data access and use can enable new products and services that transform everyday life, drive efficiency and safety, create productivity gains and allow better decision making. (PC 2017a, p. 2)

A range of bodies are undertaking work aimed at improving productivity through the use of data and technology. For example, work is being done by Austroads to utilise existing telematics data, collected under the Intelligent Access Program (IAP) in order to map freight routes and the road networks used by heavy vehicles in the program (Anderson et al. 2019). Austroads undertook this project as a proof of concept, however the data created about average travel times on these routes has valuable uses for benchmarking road system performance and improving investment decision making.

In order to harness the full productivity-enhancing potential of transport data, adequate infrastructure must be in place. A framework for the handling of data, including managing data privacy and security issues, is discussed in chapter 8.

Data sharing infrastructure

Adequate data sharing infrastructure is required to facilitate and reap the benefits of improved data collection, access and use. The importance of data sharing has been recognised by the Australian Government, who has recently announced funding for the creation of a National Freight Data Hub; as well as to test a data exchange that will provide businesses access to data in real time (DITCRD 2019a). The hub's intended purpose is to 'enhance the collection of and access to freight data, across all modes' to support operators, improve infrastructure decisions, and enable the evaluation of Australia's freight system (DITCRD 2019c).

As discussed in chapter 8, heavy vehicle telematics data are generated and collected from a range of sources, including industry, the regulators, and other government bodies. A framework consisting of multiple disparate databases, managed by differing bodies, may not be conducive to seamless data sharing.

One existing data platform is the National Telematics Framework, managed by Transport Certification Australia (TCA). The National Telematics Framework brings data producers,

providers and consumers (including transport operators, road managers, heavy vehicle regulators, other regulators and other third party business partners) together on a common digital business platform. The platform supports an open marketplace of telematics and related intelligent technology providers (TCA 2019).

In chapter 8 of this report, the Commission recommends that the Australian Government should continue to progress the National Freight Data Hub, and should cooperate with Transport Certification Australia, to develop a regulatory framework for the collection, storage, analysis and access of transport data to enable these bodies sufficient access to undertake their tasks, while protecting data confidentiality via common principles and standards (draft recommendation 8.2).

10.6 Institutional frameworks to drive productivity

As outlined in section 10.1, public institutions have important roles in facilitating and influencing productivity. The role of governments and regulators may extend to facilitating innovations, providing and managing infrastructure, or minimising the extent to which regulation acts as a barrier to innovation from within industry.

The role of safety regulators in driving productivity

Some public institutions are established with a productivity-specific remit, while others are not. Stakeholders have raised a range of issues with regard to how a productivity agenda should be pursued through the freight supply chain, including questions as to whether ONRSR should have a similar productivity remit to the NHVR.

In heavy vehicle transport, the NHVR has both a safety and productivity remit, largely owing to its role in regulating road access for different configurations of heavy vehicles, which directly concerns both safety and productivity. The NHVR is only able to affect heavy vehicle productivity to the extent possible through its functions, including giving effect to the HVNL, administration of access approvals, operator accreditation and PBS (chapter 6). Its involvement with productivity may extend to its general approach to safety regulation, insofar as minimising compliance costs.

Various other decisions related to heavy vehicle productivity, including some aspects of access regulation, are beyond the scope of the NHVR. Infrastructure managers affect productivity in their roles as access managers and infrastructure providers. Governments set policy via the national laws and regulations, as well as other relevant instruments.

In rail, ONRSR is solely a safety regulator, with no remit to improve productivity (although productivity is stated as a guiding principle in section 3(3)(a) of the RSNL). The direct justification of a productivity remit that applies to the NHVR does not apply to ONRSR, given that infrastructure access lies outside the scope of the RSNL. ONRSR is able to affect

rail productivity only to the extent possible via improving rail safety outcomes, and reducing compliance costs associated with safety regulation.

A large number of stakeholders are in support of expanding ONRSR's remit to including productivity in addition to their existing safety focus (box 10.5). Others are opposed to the idea, fearing that additional responsibilities may result in ONRSR compromising on their safety agenda. Grain Trade Australia suggested that any decision to expand ONRSR's remit should consider what data and research would be required to support the regulator's decisions and direction (GTA, sub. 38, p. 8).

The Rail Industry Safety and Standards Board (RISSB) noted that, with ONRSR's current roles and functions, the regulator would not be in a position to directly influence industry productivity. Indeed, several avenues for influencing productivity lie with rail infrastructure managers, governments, and industry generally. As such, it is important not to consider in isolation the binary choice of whether to change ONRSR's remit. Rather, if policy or regulator issues relevant to productivity are not being progressed, it would be valuable to consider which parts of the current institutional framework are not functioning as they should, and whether changes to the institutional framework should be made.

If ONRSR itself were making poor regulatory decisions due to a lack of consideration for productivity, this may be an argument for amending its remit to require consideration of safety and productivity. However, such an issue could be partially addressed by the Commission's draft recommendation 6.5, requiring transport safety regulators to monitor and actively reduce compliance costs. Where the issue depends more on differing views of what constitutes 'good' or 'poor' regulatory decisions, this may reflect differences in value judgments on how safety and productivity should be prioritised. It would be important to consider what societal expectations are likely to be on these priorities, and to what extent these expectations were accurately reflected in the RSNL.

If, on the other hand, there is a lack of progress on productivity-related issues outside the scope of ONRSR's functions, there may be a range of potential solutions, depending on the specific problem. If transport policy were lagging in regard to rail, it would be useful to consider whether there were issues with decision-making processes (that is, by COAG or its members), or with advice provided to policy-makers (that is, by TIC or the NTC), or with the publication of data and research (that is, by the NTC, BITRE, and industry bodies), or with effective policy advocacy (that is, by industry bodies and others). If relevant areas of policy are being rigorously addressed, but the outcomes are disputed, it may be the case that further policy review and debate is required, rather than any institutional change.

Box 10.5 Stakeholders largely agree that ONRSR should have a productivity mandate

As noted by the South Australian Freight Council:

> While the RSNL is clearly delivering excellent safety outcomes, there is a gap in relation to productivity that they could potentially assist in. (sub. 6, p. 5)

Many believe change is required to address the gap in productivity:

> … it is felt that the ONRSR's focus is too narrow, and in addition to safety the regulator's remit should be broadened to include productivity. (Freight and Logistics Council of WA, sub. 22, p. 5)

> … ONRSR has not encouraged rail infrastructure managers to pursue productivity or efficiency reforms to harmonise rail safety requirements, interoperability of systems or greater technological innovation. This is because unlike its heavy vehicle counter-part, it does not have productivity and efficiency enshrined in its legislative objectives. … the Commission should [r]ecommend the reform of the ONRSR to include a productivity and efficiency mandate similar to the National Heavy Vehicle Regulator. (Pacific National, sub. 24, pp. 3–4)

> A common observation from ARA's freight members in the industry workshops in the development of this submission was the need for ONRSR to broaden its remit to incorporate efficiency and productivity of the rail sector. (ARA, sub. 26, p. 29)

> [ONRSR should be] refashioned to not just maintain a focus on safety compliance and enforcement, but also the timely advancement of much needed efficiency and productivity initiatives in the rail freight sector … ONRSR has demonstrated strong commitment and leadership to improving rail safety, and FORG would like to see the Council broaden the vision of the agency to not only continue to deliver safe railways, but also help industry enhance efficiency and productivity. (FORG, sub. 8, p. 5)

On the other hand, there is a risk that delivering productivity outcomes may be at the expense of safety:

> ONRSR's focus should remain on delivering effective safety outcomes in connection with its core responsibilities. Efficiently delivering improved safety outcomes will, in Arc's view, lead to increased productivity outcomes. Arc is of the opinion that requiring ONRSR to focus on productivity in conjunction with rail safety may lead to compromised safety outcomes, as there are likely to be situations in which improving safety outcomes may come at the cost of productivity, i.e., it may not be possible to avoid conflict between productivity and safety outcomes. (Arc Infrastructure, sub. 17, p. 4)

The Rail Industry Safety and Standards Board believes that ONRSR is able to affect productivity outcomes through the avenues already available to it:

> Productivity is affected by many matters and ONRSR can play a role through, for example, ensuring the Rail Safety National Law (RSNL) is truly national. RISSB believes the best way to encourage increased productivity in rail is to provide the opportunity for flexibility in implementing new systems and technologies. ONRSR cannot directly influence industry productivity but they should have a responsibility to ensure their regulatory activity does not unnecessarily inhibit changes industry seek to make to achieve productivity. (sub. 9, p. 8)

INFORMATION REQUEST 10.1

What productivity-related issues could be better progressed in rail freight? What institutional arrangement would be valuable in driving the productivity agenda in rail, and if such changes involve the Office of the National Rail Safety Regulator, what would its role be?

APPENDIX

A Public consultation

The Commission has actively encouraged public participation in this inquiry. This appendix outlines the consultation process.

An advertisement was placed in *The Australian* newspaper and a circular was sent to identified interested parties following receipt of the terms of reference on 5 April 2019.

An issues paper was released on 17 May 2019, to assist those wishing to make a written submission to the inquiry. The Commission has received 44 submissions prior to the release of the draft report (table A.1). These submissions are available online at www.pc.gov.au/inquiries/current/transport/submissions.

The Commission also received eight brief comments which can be read online at www.pc.gov.au/inquiries/current/transport/submissions#brief

As detailed in table A.2, consultations were held with representatives from major stakeholders in the transport industry, including truck drivers around regional Australia.

On Wednesday 4 September 2019, the Commission joined with the National Heavy Vehicle Regulator (NHVR) in 4 regional areas of Australia to meet with truck drivers and to give them an opportunity to express their views.

The Commission welcomes further contributions to the inquiry from interested individuals or groups. Submissions on this draft report close on 15 January 2020 and public hearings will be held during late January/early February 2020. Further details on registering for hearings and making submissions can be found on the inquiry website.

The inquiry final report will be provided to Government by 3 April 2020.

Table A.1 **Submissions**

Participants	*Submission number*
Accord	20
Arc Infrastructure	17
Australian Academy of Technology and Engineering	4
Australian Logistics Council	12
Australian Local Government Association (ALGA)	34
Australian Maritime Safety Authority (AMSA)	35
Australasian Railway Association (ARA)	26
Australian Rail Track Corporation (ARTC)	31
Australian Small Business and Family Enterprise Ombudsman	29
Australian Transport Safety Bureau (ATSB)	39
Australian Trucking Association (ATA)	32
Aurizon	30
Blake, Jason	1
Brisbane City Council	27
City of Greater Dandenong	3
Co-operative Bulk Handling Limited (CBH)	13
Department of Transport and Main Roads (QLD)	28
Di Mauro, Linda	2
Freight and Logistics Council of WA	22
Freight on Rail Group (FORG)	8
Gas Energy Australia	5
Grain Trade Australia (GTA)	38
iMOVE	25
Independent Pricing and Regulatory Tribunal of New South Wales (IPART)	19
Local Government Association of Queensland (LGAQ)	33
Maritime Industry Australia Ltd (MIAL)	14
Maritime Union of Australia (MUA)	37
Minister for Transport, Planning (WA)	43
Motor Trade Association of South Australia (MTA-SA)	42
Municipal Association of Victoria (MAV)	15
National Farmers' Federation (NFF)	36
National Heavy Vehicle Regulator (NHVR)	16, 44
NatRoad	7
Office of the National Rail Safety Regulator (ONRSR)	21
Office of Transport Safety Investigations (OTSI)	40
Pacific National	24
Rail Industry Safety and Standards Board (RISSB)	9
Rail, Tram and Bus Union	10
Roads Australia	11

(continued next page)

Table A.1 (continued)

Participants	*Submission number*
South Australian Freight Council (SAFC)	6
Tasmanian Government	41
Victorian Farmers Federation	18
Victorian Transport Association	23

Table A.2 **Consultations**

Adelaide Flinders Port Holdings
AgForce Queensland
Arc Infrastructure
Australian Transport Safety Bureau (ATSB)
Aurizon
Australian Logistics Council
Australian Maritime Safety Authority (AMSA)
Australian Rail Track Corporation (ARTC)
Australian Trucking Association
Austroads
Boland, Kellie
Bureau of Infrastructure, Transport and Regional Economics (BITRE)
Centres for Road Safety and Maritime Safety
Chamber of Minerals and Energy (WA)
Commonwealth Scientific and Industrial Research Organisation (CSIRO)
Construction, Forestry, Mining and Maritime, Energy Union (CFMMEU)
Department of Infrastructure, Logistics and Planning, Northern Territory
Department of Infrastructure, Transport, Cities and Regional Development (DITCRD)
Department of Planning, Transport and Infrastructure, South Australia (DPTI)
Department of Premier and Cabinet, Tasmania (DPAC)
Department of Premier and Cabinet, Victoria (DPC)
Department of State Growth, Tasmania
Department of the Treasury
Department of Transport, Victoria
Flinders Ports Holdings
Freight and Logistics Council
Harris, Peter
Heavy Vehicle Industry Australia (HVIA)
Landbridge Darwin Port
Linfox
Local Government Association of Queensland (LGAQ)
Local Government Association of South Australia (LGASA)
Local Government Association of the NT (LGANT)

(continued next page)

Table A.2 (continued)

Marine and Safety Tasmania
Maritime Industry Australia Ltd
Maritime Union of Australia (MUA)
Municipal Association of Victoria (MAV)
National Heavy Vehicle Regulator (NHVR)
National Transport Commission (NTC)
National Transport Insurer (NTI)
NT Department of Infrastructure, Planning and Logistics (DIPL)
NT Road Transport Association
NT Worksafe
National Transport Commission
Office of National Rail Safety Regulator (ONRSR)
Pacific National
Port of Darwin
Professional Fishermen's Association
Queensland Department of Transport and Main Roads (DTMR)
Rail Industry Constructions
Rail Industry and Safety Board (RISSB)
Roads and Maritime Services, New South Wales
Shipping Australia Limited
Stone, Marla
South Australian Freight Council
Sydney Trains
Symons Clarke
Tasmanian Transport Association
Toll Group
Torrens Transit Group
Transport Certification Australia
Transport for Victoria
Transport Safety Victoria
Transport Workers Union (TWU)
Western Australian Department of Transport
Wildcatch Fisheries
Woolworths
Worksafe

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