



## **SAFER FREIGHT VEHICLES DISCUSSION PAPER**

### **DEPARTMENT OF INFRASTRUCTURE, TRANSPORT, REGIONAL DEVELOPMENT AND COMMUNICATIONS**

#### **AUSTRALIAN TRUCKING ASSOCIATION SUBMISSION 30 JUNE 2021**

## **1. About the Australian Trucking Association**

The Australian Trucking Association and its member associations collectively represent 50,000 businesses and 200,000 people in the Australian trucking industry. Together we are committed to safety, professionalism and viability.

## **2. Summary of recommendations**

### **Recommendation 1**

The Australian Government should adopt proposed option 2A and increase truck and trailer width to 2.6 metres.

### **Recommendation 2**

If option 2A does not proceed in its current form, the Australian Government should, in the alternative, adopt an amended option 2A (hard 2.6m width).

### **Recommendation 3**

The Australian Government should implement the safety technologies package for wider trucks and trailers and ensure the proposed ADRs continue to be developed (and subject to regular review) in close consultation with industry and with regard for Australian conditions.

### **Recommendation 4**

The Australian Government should implement the proposed ADR amendment package for improving driver vision.

### **Recommendation 5**

The Australian Government should consider the best mechanism for implementing side underrun protection for wider vehicles, including consideration of:

- A. fitting side underrun protection to Australian truck and trailer combinations
- B. exempting regional, remote and off-road transport operations
- C. implementing the technology through in-service vehicle standards and not as an ADR.

### **Recommendation 6**

The Australian Government should implement the axle configurations regulatory package with continued technical consultation, including consideration of expanding the package.

### **Recommendation 7**

The Australian Government should review and increase heavy vehicle mass limits for vehicles with single steer axles, twin steer axles and quad axle groups.

### **3. Introduction**

The Australian Government released its safer freight vehicles discussion paper in April 2021.<sup>1</sup> The paper includes options for:

- vehicles with enhanced devices for indirect vision and/or monitoring devices
- wider vehicles meeting additional safety requirements
- vehicles with more efficient and/or productive axle configurations.

#### **The ATA welcomes the discussion paper and supports the broad direction of proposed reform.**

The case for maintaining Australia's 2.5 metre truck and trailer width rules is weak and growing weaker by the day. The status quo truck width rules:

- do not increase safety
- are inconsistent with international standards in Europe and North America
- increase costs on industry, including productivity losses and the cost of redesigning trucks for the Australian market
- reduce insulation thickness for refrigerated trucks
- limit the early adoption of zero and low emission heavy vehicles, slowing the ability of the transport industry to decarbonise.

Of the proposed options to increase width with additional safety requirements, **the ATA supports option 2A to increase truck and trailer width to 2.6 metres**. This would deliver clear benefits for:

- load restraint and work health and safety
- refrigerated vehicle efficiency
- roll stability
- access to the latest international technology and zero emission vehicles
- the cost of redesigning European and North American trucks for the Australian market, which would be reduced.

Additionally, it would incentivise the uptake of the proposed new safety requirements. A smaller width increase to 2.55 metres would not deliver the same level of benefits.

Similarly, options that exclude trailers would exclude a significant proportion of the freight vehicle benefits. For articulated combinations, it would remove the benefits that would otherwise be gained for load restraint, work health and safety, refrigerated vehicle efficiency and roll stability.

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<sup>1</sup> Department of Infrastructure, Transport, Regional Development and Communications (DITRDC), April 2021. [Discussion Paper: Safer Freight Vehicles](#).

#### **4. The benefits of wider trucks**

The discussion paper identifies that the 2019 Austroads review of heavy freight vehicle dimensions found that vehicles operating up to 2.55 metres in width in New Zealand, the European Union or the United Kingdom, or under permits or exemption in Australia, are not more likely to be involved in crashes.<sup>2</sup> As the paper points out, New Zealand, the EU and the UK have a number of narrow lane widths (including pre-20<sup>th</sup> century designed roads in the EU and UK) and heavy freight vehicles access these roads.<sup>3</sup>

The paper does not identify if the Austroads review appropriately considered vehicles already operating in Australia at 2.6 metres under permit, exemption or performance-based standards. The Austroads review was withheld from industry. Regardless of the content of the 2019 review, governments have not presented any evidence that 2.6-metre-wide trucks present an increased safety risk over 2.55m or 2.5m.

**The benefits of option 2A (2.6 metres for trucks and trailers) are clear and stronger than options which would fail to provide a width increase for trailers (such as option 2B or 1B) or provide a smaller increase in width (to 2.55m).**

A number of the benefits of wider vehicles, including for load restraint, work health and safety, thermal insulation for refrigerated vehicles and availability of zero emission truck models would be reduced (or removed) if the Government decides on a narrower width increase of 2.55m or if trailers are excluded.

If the Australian Government decides against implementing option 2A, it should amend option 2A before considering other options, because there are clear benefits to moving to a 2.6m width.

An amended option 2A could include a hard width limit of 2.6 metres (including permanently fixed webbing assembly type devices).

**It should be emphasised that the ATA supports option 2A in its current form.**

#### **Recommendation 1**

The Australian Government should adopt proposed option 2A and increase truck and trailer width to 2.6 metres.

#### **Recommendation 2**

If option 2A does not proceed in its current form, the Australian Government should, in the alternative, adopt an amended option 2A (hard 2.6m width).

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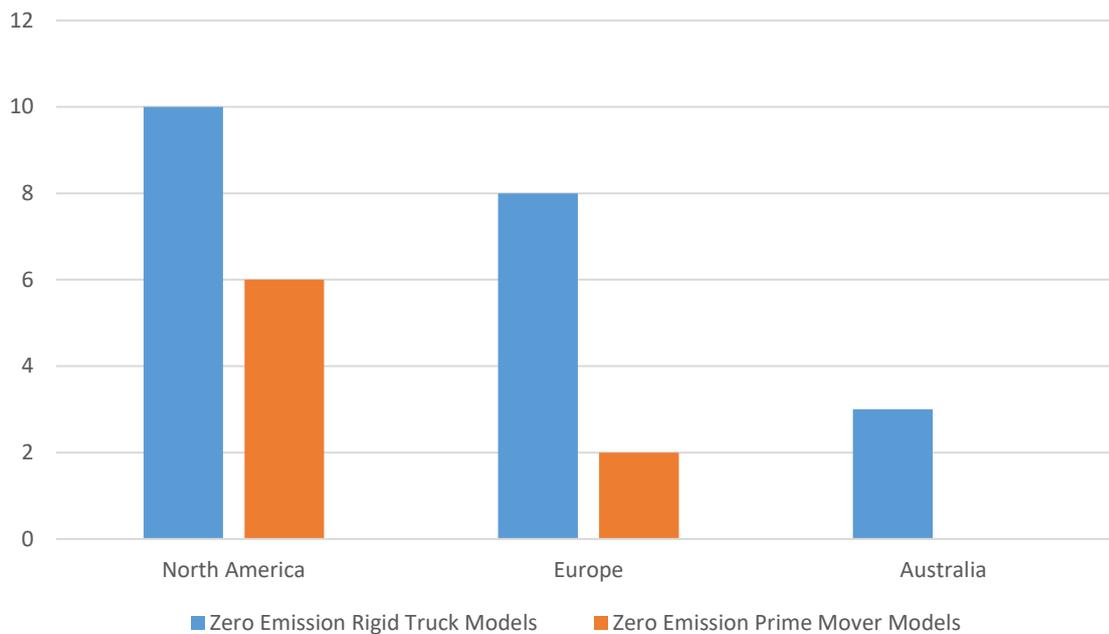
<sup>2</sup> DITRDC, April 2021. 5.

<sup>3</sup> DITRDC, April 2021. 5, 6.

## Access to the latest international technology and zero emission vehicles

Australia's truck width rules, at 2.5 metres, are out of step with the standard in Europe (2.55 metres, with 2.6 metres for refrigerated vehicles) and North America (2.6 metres). This is delaying and restricting the availability of zero emission trucks in the Australian market, as figure 1 illustrates.

**Figure 1: Zero emission production truck models with expected availability in 2021/22<sup>4</sup>**



A shift to 2.55m width would only partially address this issue, with a greater supply of zero emission truck models available in North America where 2.6m width is standard.

The discussion paper notes that vehicles based on EU or US market designs (including Australian made trucks) make up around 60 per cent of new heavy trucks and that the cost of redesigning these trucks for the Australian market is currently estimated at \$15 to \$30 million per year, with further costs in lost productivity and refrigerated vehicle efficiency.<sup>5</sup>

Additionally, the paper identifies that likely future design changes will be increasingly difficult or not economical to adapt to a 2.5m width and the relatively small Australian market. This includes trucks with electric batteries and/or hydrogen systems.<sup>6</sup>

**Australian trucking operators need early market access to both battery electric and hydrogen fuel cell trucks.** Zero emission trucks need to be deployed at scale to reduce costs and ensure that trucking operators have commercially viable options for reducing transport emissions.

<sup>4</sup> ATA analysis of zero emission models available under the California HVIP and from major truck manufacturers in Europe and North America. Analysis is based on production models and does not include manufacturers which apply zero emission drive train technology to existing models (built by alternate manufacturers). Results may not capture every zero emission production truck model.

<sup>5</sup> DITRDC, April 2021. 7.

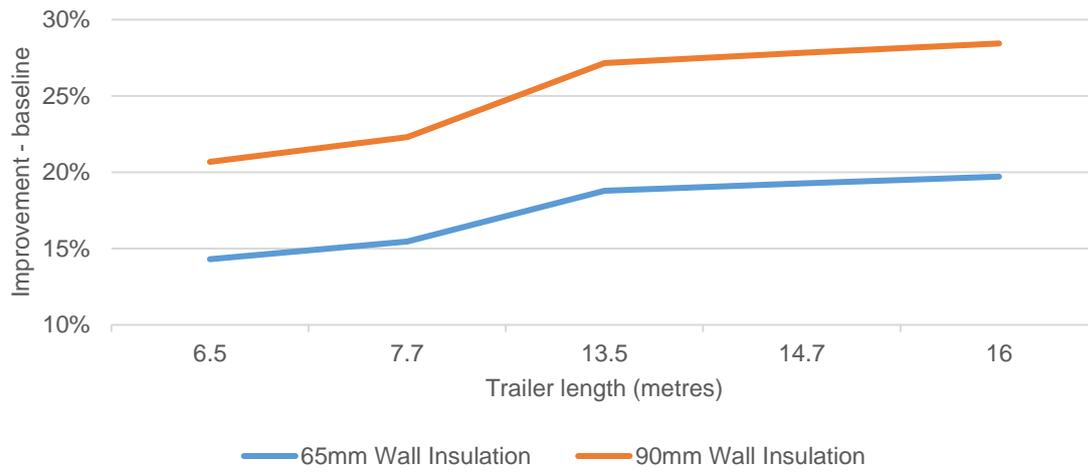
<sup>6</sup> DITRDC, April 2021. 7.

## Refrigeration

Increased width has specific benefits for refrigerated trucks and trailers, improving thermal efficiency without a significant loss of payload.

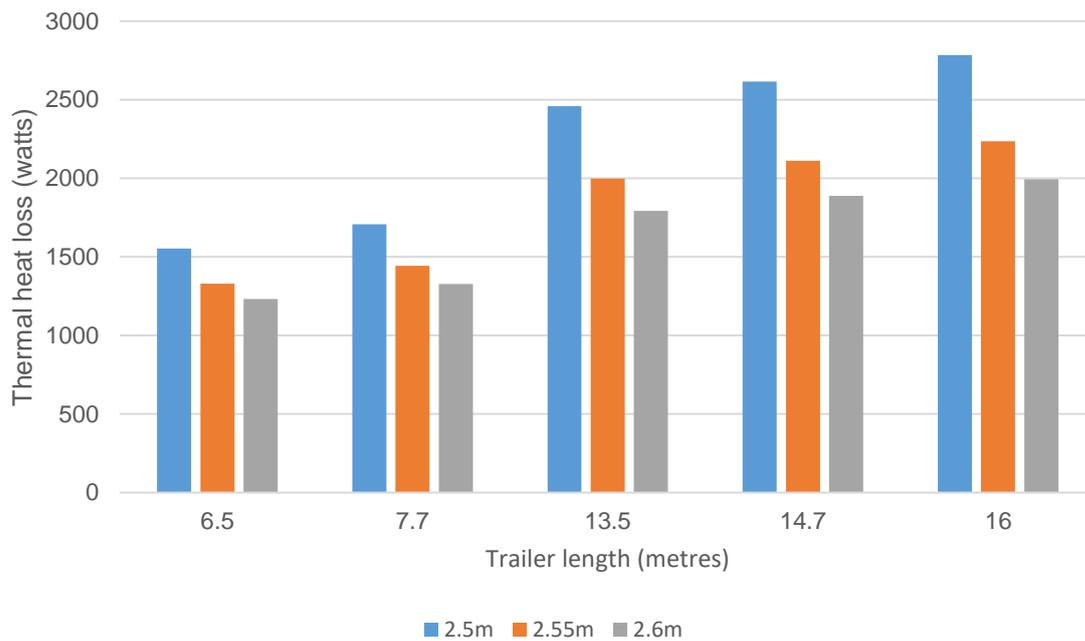
Refrigerated efficiency modelling illustrates the benefits of increased width and the greater benefit of 2.6 metres width. Based on an ambient temperature of 30°C and an internal temperature of 0°C, figure 2 illustrates the thermal efficiency improvement of increasing wall insulation over the existing 2.5 metre refrigerated vehicle with a typical insulation of 40mm.

**Figure 2: Thermal efficiency improvement over typical 2.5m refrigerated truck insulation**



The improvement in thermal efficiency is greatest with 90mm wall insulation, possible with 2.6m wide refrigerated trucks and trailers.

Figure 3 illustrates the efficiency losses (measured in watts) of 2.5m, 2.55m and 2.6m refrigerated trucks and trailers. It illustrates that at various trailer lengths, 2.6m wide refrigerated trailers have the lowest heat leakage.

**Figure 3: Refrigerated truck and trailer heat leakage, 30°C differential**

This modelling is based on a 30°C differential (outside ambient temperature of 30°C and 0°C internal temperature). A higher differential (through either higher outside temperatures and/or freight which requires a lower inside vehicle temperature) would see increased thermal leakage.

Figures 2 and 3 illustrate that greater wall insulation made possible with 2.6m width increases the thermal efficiency of refrigerated trucks and trailers.

It is also critical to recognise that proposed options 1B and 2B, which would exclude trailers from increased width, would not deliver any thermal efficiency improvements for articulated refrigerated transport.

Additionally, the ability to increase the thickness of refrigerated truck and trailer walls would make it easier to incorporate recessed load restraint into truck and trailer design. This would reduce loading and unloading damage (see figure 4) and help ensure that the load restraint equipment could be used in the safest possible way.

**Figure 4: Damaged load restraint in a refrigerated vehicle**

### **Work health and safety**

An increase to truck and trailer widths would allow improved safety for people working on loading and unloading trucks by enabling increased use of fall arrest systems, load restraint and load covering systems. Currently, these systems are not widely utilised due to the existing width restrictions.

**Option 2A (increased width to 2.6m for goods vehicles and trailers) would provide the clearest load restraint and WH&S benefits.** 2.6 metres width would allow increased use of prairie style trailers, with load restraint systems. Truck drivers regularly climb onto and off their vehicle and falls are a cause of serious incidents. If the worker is required to access the load from the top of the vehicle appropriate fall protection needs to be in place.

Prairie wagon style trailers include a frame mounted on rollers, with a cover (figure 5). These trailers provide clear WH&S benefits as they significantly reduce top of vehicle and working at heights issues.

For freight tasks which may not fit in a tautliner or otherwise enclosed trailer, prairie trailers provide for increased loading and unloading options, removing workplace risks and decreasing physical workload. They also allow freight to be covered which would otherwise not be covered (removing the ability of particles from the freight task to fly off / onto other road users).

**Figure 5: A prairie wagon style trailer with a load covering frame mounted on rollers**

Under the existing width rules, palletised freight is difficult to fit on these trailers with sufficient room for load restraint systems including gates.

### Roll stability

Increasing truck and trailer width would allow for:

- an equivalent increase in suspension spring centres
- an equivalent increase in wheel track centres
- access to international axle/suspension standards for trailers.

This would result in a higher static roll threshold (SRT), which would reduce the likelihood of a truck and/or trailer rolling over. SRT is the basic measure of rollover stability, usually expressed as a fraction of the acceleration due to gravity in units of 'g'. Higher values of SRT imply better resistance to a vehicle rolling over.

Rollover stability increases either by increasing width or decreasing centre of gravity height.

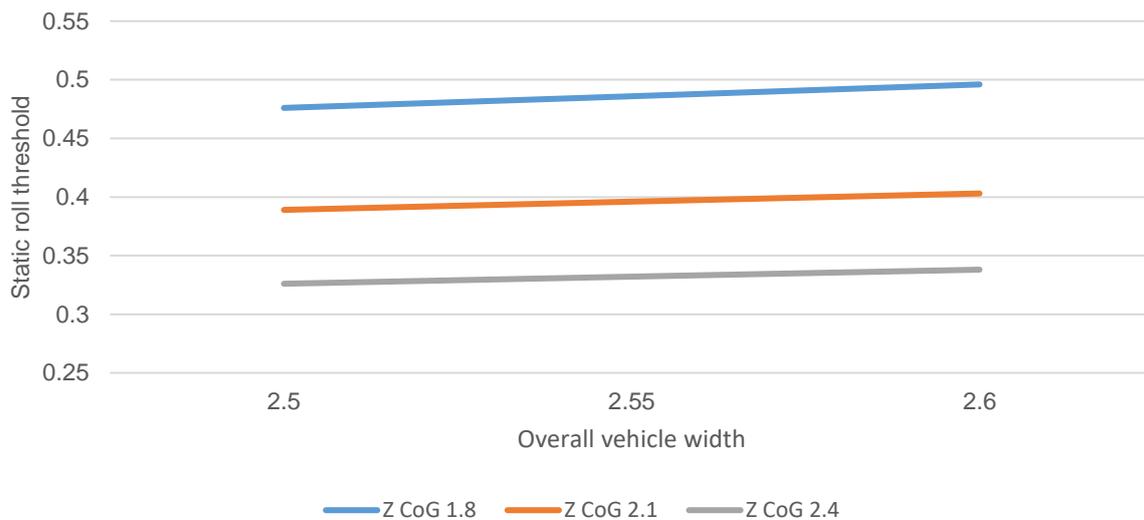
The ATA has modelled the roll stability effects of increasing the width of trailers to 2.55m or 2.6m. The results are set out in table 1 and figure 6.

**Table 1: Roll stability modelling results<sup>7</sup>**

Trailer Overall Width (m)	Suspension centres (mm)	Axle track centre (mm)	Total trailer CoG height = 1.8 m	SRT (g)	
				Total trailer CoG Height = 2.1 m	Total trailer CoG Height = 2.4 m
2.5	1000	1860	0.476	0.389	0.326
2.55	1050	1910	0.486	0.396	0.332
2.6	1100	1960	0.496	0.403	0.338

Note: A higher SRT represents a more stable combination.

<sup>7</sup> Smedley's Engineers provided SRT calculations.

**Figure 6: SRT results by truck width**

The net benefit to static roll threshold from a move to 2.6 metre width is approximately 4 per cent based on maintaining total trailer centre of gravity (CoG) height. For typical bulk products (grains and liquids) increasing width would reduce payload CoG and therefore total trailer CoG.

### Prime mover / trailer combinations

The ATA does not support any proposal to limit wider, safer trailers to being towed by wider prime movers. The ATA notes that this limitation was not included in the options considered in the discussion paper.

Any proposal to limit 2.6m trailers to 2.6m prime movers would unnecessarily restrict the flexibility of truck and trailer combinations, restricting the flexibility of trucking fleets. This would likely reduce the uptake of the safer and wider trucks and trailers.

In Europe, 2.55m prime movers commonly pull 2.6m refrigerated trailers. In Australia, in some applications the transport of hay can operate to a width of 2.83 metres (with a 2.5m wide prime mover).<sup>8</sup> The ATA does not consider that a compelling technical case is present to introduce a wider prime mover condition for wider trailers.

<sup>8</sup> NHVR, 2018. [National Class 3 Drought Relief Dimension Exemption Operators Guide](#). 1.

## 6. Improving heavy vehicle safety

The discussion paper proposes a package of safety technology ADRs that would apply to vehicles wider than 2.5m. These trucks would be safer in their interactions with other road users, cyclists and pedestrians.

These technologies for trucks are:

- devices for indirect vision (new ADR 14/03)
- commercial vehicle brake systems, to extend the scope of mandatory electronic stability control (ESC) to a broader range of heavy vehicles (new ADR 35/07)
- advanced emergency braking (new ADR 97/00)
- lane departure warning systems (new ADR 99/00)
- blind spot information systems (new ADR 105/00)
- side underrun protection (new ADR 106/00)
- conspicuity markings if over 7.5 tonnes GVM (in accordance with ADR 13/00).

For trailers:

- side underrun protection (new ADR 106/00)
- conspicuity markings and reversing lamps in accordance with ADR 13/00.

The ATA supports the package of safety technologies, provided the implementation and technical details are worked through in consultation with industry and with regard for Australian conditions.

### Recommendation 3

The Australian Government should implement the safety technologies package for wider trucks and trailers and ensure the proposed ADRs continue to be developed (and subject to regular review) in close consultation with industry and with regard for Australian conditions.

### Improving driver vision

Between 30 to 40 per cent of Australia's road freight is moved in capital cities and other major urban centres.<sup>9</sup> Urban truck movements interact with other road users, including pedestrians and cyclists, in environments with competing demands for limited space and increased vehicle movements and active travel.

Removing regulatory barriers to devices and systems which either remove or reduce these blind spots is a critical road safety objective. The consultation draft National Road Safety Strategy 2021-30 put forward the need to promote heavy vehicle safety technologies,<sup>10</sup> including by enhancing the driver's field of view.<sup>11</sup>

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<sup>9</sup> Bureau of Infrastructure, Transport and Regional Economics (BITRE), 2019. [Australian aggregate freight forecasts – 2019 update](#). 7.

<sup>10</sup> Infrastructure and Transport Ministers, February 2021. [National Road Safety Strategy 2021-30 Consultation Draft](#). 16.

<sup>11</sup> Office of Road Safety, February 2021. [Fact sheet: Heavy vehicle safety](#).

The ATA strongly supports mirrors and devices to improve driver vision. Following ATA lobbying, new regulations were brought into force in the Heavy Vehicle National Law jurisdictions making front blind spot mirrors legal.

With some model trucks and prime movers, especially bonneted styles, the blind spot immediately in front of the vehicle is significant where even an adult of average height is not readily visible to the truck driver until several metres forward of the truck.

Front blind spot mirrors are mandatory on new trucks in the European Union and are mandatory on all trucks in New York City, but have been rare in Australia. Until the changes made in early 2020 as a result of the ATA's lobbying, a major concern was that fitting a front blind spot mirror would make the truck overlength.

The proposed safety changes to Australian Design Rules (ADRs) include a regulatory package to enable greater supply and take up of vehicles with devices and systems which enable truck drivers to have greater vision and awareness of other road users, including cyclists and pedestrians.<sup>12</sup>

The ADR amendments proposals consist of:

- excluding the following devices and systems from vehicle width measurement:
  - rear vision mirrors (rear-view mirrors)
  - devices for indirect vision
  - any other devices which help the driver to see objects in an area adjacent to the vehicle, including crossover mirrors (front blind spot mirrors)<sup>13</sup> (subject to a total protrusion limit)
  - monitoring devices fitted as part of an automated driving system and/or a system to inform the driver of the presence of other road users in close proximity to the vehicle (subject to a total protrusion limit)
- limit the total protrusion of all devices except for rear vision mirrors, devices for indirect vision, and central tyre inflation systems, excluded from the width of the vehicle to a maximum of 100 mm
- exclude all the following devices and systems, where fitted at the front end of the vehicle, from the measurement of vehicle length:
  - devices for indirect vision
  - any other devices that help the driver to see objects in an area adjacent to the vehicle, including crossover mirrors (subject to a total protrusion limit)
  - monitoring devices fitted as part of an automated driving system and/or a system to inform the driver of the presence of other road users in close proximity to the vehicle (subject to a total protrusion limit)

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<sup>12</sup> DITRDC, April 2021. 17.

<sup>13</sup> Crossover mirrors are a class VI mirror which is fitted to the front of the vehicle, to assist the driver to see what is in the blind spot in front of a truck. Whilst the discussion paper adopts the language of crossover mirrors, the ATA recommends that the term front blind spot mirror provides a clearer description.

- limit the protrusion of all devices except for devices for indirect vision, excluded to the front of the foremost point from which vehicle length is measured, to a maximum of 250 mm.<sup>14</sup>

### **The ATA supports the proposed ADR reforms to improve driver vision.**

The Government should consider and ensure that there is clarity and clear guidance on the language adopted to describe mirrors, blindspot monitoring devices and what is regarded as direct and indirect vision.

Additionally, side clearance and side marker lamps are currently excluded from width. The ATA recommends that this should continue to be the case.

### **Recommendation 4**

The Australian Government should implement the proposed ADR amendment package for improving driver vision.

### **Side underrun protection**

The proposed package of safety technologies represents important policy leadership by the Australian Government.

However, in terms of implementing the package for side underrun protection there needs to be consideration of Australian conditions and the differences in truck and trailer configurations in Australia.

The ATA's Side Underrun Protection Technical Advisory Procedure (TAP)<sup>15</sup> provides several recommendations for fitting side underrun protection for Australian configurations of trucks and trailers. This includes:

- the placement of equipment on the prime mover which should be placed and considered to provide side underrun protection, including tank packages, battery or toolboxes air tanks
- fitment of an appropriate mudguard.

Technical suggestions are further detailed in the TAP.<sup>16</sup>

ECE R73 should not be applied as the default standard, without amendment, of the proposed new ADR. Further technical consultation and consideration of Australian conditions will be required.

This should include consideration of the impact on remote, regional and off-road operations, where side underrun protection is likely to deliver reduced safety benefits but at higher cost. Remote transport operations are more likely to result in damage to side underrun protection systems, due to the harsher operating environment.

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<sup>14</sup> DITRDC, April 2021. 18.

<sup>15</sup> ATA, April 2020. [Side Underrun Protection Technical Advisory Procedure](#).

<sup>16</sup> See section 6 on pages 9 and 10.

The Government should consider the best framework for implementing improvements to side underrun protection, including consideration for exempting regional and remote transport operators. The potential need to provide a regional and remote exemption may mean side underrun protection is best achieved through amending in-service vehicle standards, and not as a result of a new ADR.

### **Recommendation 5**

The Australian Government should consider the best mechanism for implementing side underrun protection for wider vehicles, including consideration of:

- A. fitting side underrun protection to Australian truck and trailer combinations
- B. exempting regional, remote and off-road transport operations
- C. implementing the technology through in-service vehicle standards and not as an ADR.

## **7. Axle configuration**

The discussion paper proposes a regulatory package to increase supply and take up of more efficient and productive freight vehicles, including twin steer axles, retractable axles and quad axles. The proposals include:

- increasing the maximum permissible distance between the centrelines of the axles of a twin steer axle group from 2.0m to 2.5m
- increasing the transition mass limits by which retractable axles must automatically lower to match the general mass limits for heavy vehicle operators
- increasing the maximum permissible rear overhang as a percentage of the wheelbase from 60 per cent to 70 per cent, for goods vehicles over 12 tonnes GVM provided the mass transmitted by the front steering axle(s) to the ground is at least 20 per cent of the total vehicle mass
- allow for the fitment of a quad axle group in which the front and rear axles are more than 3.2m, but not more than 4.9m apart, to semi-trailers over 10 tonnes GTM, provided the front or rear axle of the group is a steerable axle with at least 12 degrees of steering articulation and has an effective automatic centring mechanism
- include transition mass limits by which quad axle groups with one or more retractable axles must automatically transition from 3 to 4 lowered axles.

The ATA supports the regulatory package, provided technical consultation of the details and implementation continues.

There should also be consideration of:

- increasing axle group mass limits (see following section)
- reviewing quad axle road friendly suspension, including the appropriate certification
- promoting single semi-trailers that include quad axles for freight productivity. These should be permitted as general access combinations at GML and HML with the appropriate operating conditions (axle spacing mass schedule)
- updating table 1 in ADR 38/05 to reflect quad axle groups at 24 tonnes (GML).

## Heavy vehicle mass limits

Heavy vehicle mass limits are presently limiting the uptake of safer, cleaner, and more productive heavy vehicles (prime movers and rigid trucks).

Currently, there are deficiencies with the mass limits for:

- prime mover and rigid truck single steer axle
- prime mover and rigid truck twin steer axles
- quad-axle groups in semi-trailers.

The ATA recommends that the Australian Government should offset the cost and weight disincentives of adopting improved safety and emissions technologies by implementing:

- an additional 0.5 tonne allowance for vehicles with single steer axles, up to a maximum of 7.0 tonnes on a single steer axle
- an additional 1.0 tonne allowance for vehicles with twin steer axles, up to a maximum of 12.0 tonnes on a twin steer axle group
- in both cases, the ability to share the allowance across the steer and drive axles.

These additional mass allowances must apply in addition to existing axle mass limit concessions for steer axles under General Mass Limits (GML) and be carried through to both Concessional and Higher Mass Limits (CML and HML).

For trailers with quad-axle groups the current MDL regulations should be revised to introduce mass limits for trailer quad-axle groups that are higher than the current GML limit of 20 tonnes without any requirement to access Performance Based Standards (conditional that the vehicles are compliant to the ADRs).

The adoption of quad-axle at Tier 1 axle spacing mass schedule, mass limits of:

- quad axle group mass limit under GML – 24.0 tonnes
- quad axle group mass limit under CML – 25.0 tonnes
- quad axle group mass limit under HML – 27.0 tonnes.

### Recommendation 6

The Australian Government should implement the axle configurations regulatory package with continued technical consultation, including consideration of expanding the package.

### Recommendation 7

The Australian Government should review and increase heavy vehicle mass limits for vehicles with single steer axles, twin steer axles and quad axle groups.

## 8. ATA contacts

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