



**Australian Government**

**Department of Transport and Regional Services**

# **Regulation Impact Statement**

## **ADRs 35 and 38 Commercial Vehicle Brake Systems and Trailer Brake Systems**

**October 2006**

*A draft statement inviting discussion and comment  
from parties affected by the additional requirements*

This Regulation Impact Statement deals with requirements to be introduced for heavy vehicle braking systems. ADR 35 applies to vehicle categories NA, NB, NC while ADR 38 applies to vehicle categories TB, TC and TD.

Issued by: Standards and International section of the Vehicle Safety  
Branch within the Department of Transport and Regional Services

## Abbreviations

|        |                                                 |
|--------|-------------------------------------------------|
| ADR    | Australian Design Rule                          |
| ARTSA  | Australian Road Transport Suppliers Association |
| ATA    | Australian Trucking Association                 |
| AVSR   | Australian Vehicle Standard Regulation          |
| BTE    | Bureau of Transport Economics                   |
| COAG   | Council of Australian Governments               |
| DOTARS | Department of Transport and Regional Services   |
| ECE    | Economic Commission for Europe                  |
| FMVSS  | Federal Motor Vehicle Safety Standards (USA)    |
| NTC    | National Transport Commission                   |
| GATT   | General Agreement on Tariffs and Trade          |
| RIS    | Regulation Impact Statement                     |
| UN     | United Nations                                  |
| WTO    | World Trade Organisation                        |
| ABS    | Antilock Brake System                           |
| MVSA   | Motor Vehicle Standards Act 1989                |
| TIC    | Truck Industry Council                          |

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## Background

Since 1989, the Australian Design Rules (ADRs) have stood as national standards in Australia and set out the minimum safety requirements for vehicles sold in Australia. The ADRs benefit vehicle manufacturers and consumers by ensuring that the minimum requirements for registration of vehicles are the same in every state and territory. This has significantly reduced the cost for manufacturing vehicles in Australia.

While the ADRs apply to new vehicles, which must comply before they can be supplied to the market, once put into use the vehicles must comply with the in-service regulations administered by the states and territories. The general principle applied by the states and territories is that vehicles produced in compliance with ADRs applicable at the time of manufacture must continue to comply with those ADRs. In 1999, the NTC published the Australian Vehicle Standards (AVSRs) with the aim of providing a set of national uniform in-service vehicle rules and all jurisdictions agreed to implement the AVSRs. The AVSRs have preserved the general principle of continuing compliance with the ADRs but also make particular provisions in areas not covered by the ADRs. There are also particular provisions relating to some areas that are covered by ADRs, in recognition that as vehicles age, continued compliance with the ADRs is not practicable.

Like all Commonwealth regulations, the ADRs are developed through a consultative process involving government, industry and consumer representatives. With the increasing globalisation of the motor vehicle manufacturing industry, vehicle manufacturers would like to see all vehicle standards harmonised with international standards to improve economies of scale. The problem confronting the Australian Government is to ensure that in harmonising with international standards, the level of safety currently offered to consumers is not reduced.

ADRs 35 and 38 are important vehicle safety measures, and form part of the Australian motor vehicle standards system. Together they specify performance requirements for prime movers and trailers. The two design rules are being considered together because the effectiveness of trailer brakes is directly influenced by the braking system of the towing vehicle.

The Australian Government has undertaken to review the ADRs to ensure that they are relevant, cost effective and do not provide a barrier to importation of safe vehicles and components. These objectives are shared by the New Zealand Government which has been reviewing its vehicle safety standards. The review is being carried out by the Vehicle Safety Standards Branch of the Department of Transport and Regional Services (DOTARS) together with the National Transport Commission (NTC) and the New Zealand Land Transport Safety Authority. This should assist with the future development of Trans Tasman Vehicle Safety Standards under the *Trans Tasman Mutual Recognition Act 1997*.

The aim of the ADR review is four fold:

- to identify whether existing standards are relevant or irrelevant in the light of on going developments in automotive safety technology, given the fact that some of the standards are in a mature stage of providing community benefits,

- if existing standards are relevant, identify the refinements required to ensure their progression and positive contribution in the standards life cycle,
- ensure standards do not impose excessive requirements on business, that they are cost effective and take account of community, social, economic, environmental, health and safety concerns, and
- to pursue where appropriate harmonisation with international standards rather than with regional or national standards.

The review takes account of the provisions of the Trans-Tasman Mutual Recognition Arrangement (TTMRA) Annex 4 – Road Vehicles. While the main object of the TTMRA is that goods sold in Australia could be sold in New Zealand and vice versa, it was acknowledged that there would be difficulties with Trans-Tasman trade in road vehicles, given the different regulatory regimes of the two countries. Road vehicles were therefore granted a special exemption from the immediate application of the TTMRA until the regulatory systems could be aligned. In Annex 4 of TTMRA, the Parties undertook to embark on a cooperation programme aimed, where appropriate, at harmonising Australian and New Zealand standards with *United Nations - Economic Commission for Europe (UNECE)* Regulations or those national or regional standards that are agreed by the Parties. The Parties also agreed to seek to develop consistent conformance assessment and certification requirements in both countries. The UNECE is regarded as the international standards setting body, meeting the provisions of the World Trade Organisation (WTO) Agreement on Technical Barriers to Trade, as standards development in the UNECE is open to participation by the international community

However it became evident that there would be negative impacts from following a rigid program of standards alignment as required in Annex 4 and the Australian Productivity Commission was called upon to carry out a review. The Commission issued its report in 2003 “Evaluation of the Mutual Recognition Schemes” and the findings have been considered and reported in the Cross Jurisdictional Review (CJR) Forum. The Commission’s report advanced the view that “... if New Zealand mirrored the current Australian approach to motor vehicle regulation, it would adversely affect New Zealand exporters and consumers.” and “One way to apply the TTMRA to road vehicles would be for Australia to adopt the New Zealand approach of recognising motor vehicle standards from several major road vehicle producing countries. However, given the initial cost of adopting this approach and the likelihood of widespread adoption of UNECE standards internationally, this would not be in Australia’s interests.”

New Zealand and Australia’s accession to the 1958 Agreement is consistent with commitments by Asia Pacific Economic Cooperation (APEC) region economies to facilitate trade in automotive product by harmonisation of road vehicle regulations through the multilateral UN/ECE arrangements. Accordingly, the regional perspective of the TTMRA has been overtaken by APEC-wide developments. There is little to be gained at this juncture in pursuing a programme of bilateral coordination, and bilateral convergence will be a function of the pace at which Australia moves to harmonise its ADRs with UNECE regulations.

ADRs 35 and 38 will need to provide a consistent and coherent set of standards, which are consistent with international requirements and so reduce the cost of compliance to industry.

Brakes are active safety devices, which not only help to control the vehicle but also form an important component of a vehicle's crash avoidance system. The potential for injuries and fatalities as a result of ineffective design and uncontrolled production of braking systems is enormous in case of heavy vehicles as a result of competitive pressures, financial distress and severe operating conditions facing the road transport industry. Therefore control in the design, production and maintenance of heavy vehicle brakes is critical if risk of injury to road users and damage to property is to be reduced if not avoided.

## 1. Problem

The road freight industry has shown exceptional growth in Australia. Unfortunately, due to the immense demand and economic pressures, industry may have to contend with challenging operational conditions. By challenging operational conditions the following aspects are included: pressures to lengthen maintenance intervals, long in-service operational times and loading conditions dictated by economic pressures. All the above factors have a potential to lead to some kind of failure, either due to human factors or failure of mechanical components when the fatigue limit has been reached.

Heavy vehicles are involved in 20 per cent of fatal crashes and cost the Australian community \$3 billion annually (BTE 2000). A wide range of factors have been identified as playing a role in truck crashes. These include vehicle factors, driver factors, road environmental factors and situational factors such as day/night or rural/metropolitan. Among vehicle factors, braking and truck instability were significant factors related to crash occurrence (Sweatman et al 1995).

The other factors included vehicle conspicuity, lighting, load security and heavy vehicle maintenance including brake and tyre inspections. Surveys conducted by states and territory transport agencies have shown that between 25% to 30% of the vehicles surveyed had mechanical defects that contravened current road and traffic regulations in the states and territories and may therefore, be at risk of causing an accident due to a mechanical failure. Tyres and brakes have been found to be the two most dominant components that contribute to mechanical defects causing accidents.

Further details of these surveys were sought from State and Territory authorities, but they were unable to provide the information. Given that the design of new vehicles is set by mandatory standards, the above defects are likely to be related to wear and tear. This suggests that even primary safety systems such as brakes on heavy commercial vehicles are not immune to the economic pressures of cutting costs, in this case through the lengthening of maintenance intervals or the deferral of essential repairs.

While heavy vehicles generally travel at lower speeds in urban areas than rural areas braking is required more often in urban environment, with a greater potential for collisions due to increased traffic density. Many of the less severe urban heavy vehicle crashes involve the heavy vehicle running into the rear of a slowing or stationary lighter vehicle. While some of these crashes may result from drivers

cutting in on heavy vehicles, a substantial number result from the real or perceived braking difficulties of heavy vehicles (Sweatman et al 1995). These braking difficulties are exacerbated by incompatible vehicle combinations, challenging operational conditions and poor maintenance.

Regulating performance requirements for braking systems for prime movers and trailers can improve the stopping ability by ensuring compatibility between the braking systems of the towing and towed vehicle, the use of better front brakes, introduction of new brake technology (brake by wire) and relevant brake valve and lining requirements. In addition to regulating design requirements for braking performance, maintenance of braking performance is also critical. Maintenance of braking performance is regulated by state and territory transport agencies and is confined to inspection of slack adjusters, brake lining indicators, tyres and dynamometer testing. Maintenance of braking systems can be assisted by introducing automatic slack adjusters, brake lining indicators, electronic monitoring and ABS (Sweatman et al 1995), an issue which was investigated by the National Transport Commission.

When a heavy vehicle and a passenger car collide, it is nearly always the people in the car who suffer most. Heavy vehicle crashes are high risk and high impact events and it is not surprising that they are widely reported. Although inadequate braking cannot be identified as a major contributor to heavy vehicle crashes, braking is important because it is the most important crash avoidance feature for a vehicle. Heavy vehicle operators and heavy vehicle manufacturers tend to have conflicting views on requirements for braking performance. Heavy vehicle combinations are not supplied by a single manufacturer and so operators generally seek advice from engineers on the required performance requirements. The competitive conditions under which the road transport freight market operates means that some operators are likely to compromise on the braking design requirements for heavy vehicles. Another issue arises when prime movers sourced from different countries are combined with Australian made trailers for which braking response times need to be set.

For the braking systems of the prime mover and the trailer to be compatible to provide the stopping ability to prevent a crash, braking performance requirements need to be mandated at the market entry stage to ensure that the braking system responds to the required conditions of operation. By mandating braking design requirements vehicles can be maintained to the design requirements once they enter service and thereby reduce potential costs to the community arising from heavy vehicle brake failure. It is therefore doubtful that current market mechanisms will be able to provide the necessary arrangements for ensuring braking compatibility for combination vehicles at the market entry stage and later when vehicles are in operation.

State and Territory Governments have not shown any confidence in market mechanisms being able to regulate driver fatigue, vehicle speeding and even vehicle maintenance and they have intervened to ensure that heavy vehicles are road worthy and do not pose a risk to other road users.

If both Australian and state government intervention were withdrawn, the most likely consequences would be negative for road users. The areas most likely to experience the greatest increase in cost in case ADRs 35 and 38 are abandoned include:

- (a) Increase in risk of fatal and serious injuries to road users resulting in an increased burden on the public health system;
- (b) Damage to private and public property resulting from vehicles losing control and stability;
- (c) Misallocation of scarce public health resources for treating fatal and serious injuries resulting from crashes. Efforts towards resolving more pressing public health problems will suffer for lack of public health resources;
- (d) The increasing trend of serious injuries will impact on private health insurance programs as hospitalisation for such injuries will need to be paid out from the common pool of health insurance premiums which could lead to increased premiums on existing policy holders; and
- (e) Increased costs in terms of losses in utility to family and friends. In addition losses in productivity could occur as other workers in team oriented job tasks would need to carry out additional tasks and may even need to hire and train temporary or permanent replacements.

From the above analysis, it is clear that problems will surface if regulation for commercial vehicle and trailer brake systems is withdrawn. These problems can be significant for the community and it is unlikely that market mechanisms by themselves can remedy them.

With existing market mechanisms being unable to provide heavy vehicles with braking systems that are safe to operate on Australian roads, a key issue that needs to be resolved in any review of safety regulations relates to the content of performance requirements.

The revised contents that would be proposed for adoption need to ensure that braking performance of heavy vehicles is not only safe but also cost effective compared to the existing arrangements. This is discussed in Part 3 – Options.

Apart from the potential costs to the community from brake failure, an important issue relates to the potential breach of Australia's commitments as a member of the WTO under the Technical Barriers to Trade Agreement. The current requirements for ADRs 35 and 38 impose costs on importers of prime movers and trailers and as importers pass on such costs to operators they are likely to have a negative impact on the profitability of freight operators and small businesses. It is therefore necessary to review the existing content of braking requirements for heavy vehicles and harmonise them with international requirements in a phased manner.

In summary, it can be concluded that the problem is three fold. Firstly it is more concentrated at the manufacturing stage when heavy vehicle combinations are configured to address a variety of operating conditions before they enter service and once in service the design requirements set at the market entry stage help to maintain the vehicle to design requirements. Secondly, the challenging and competitive conditions under which the freight movement market operates can result in some

operators compromising on vital and essential vehicle safety features and such an approach if not regulated could impose costs on the community. Thirdly, the existing mandatory requirements for heavy vehicle braking impose additional compliance costs on vehicle manufacturers who comply with international standards. This requires a review of the existing requirements and subsequent harmonisation with international requirements, which would ensure that Australia's commitments as a member of the WTO are met.

## 2. Objectives

The Australian Government's objective is to *reduce the risk of crashes* and if crashes are unavoidable to *reduce the risk and cost of occupant injury severity* from vehicle impacts and impacts with external objects. In case of ADRs 35 and 38, this includes reducing collateral damage to road users and property when heavy vehicles operate on national highways, non-metropolitan and metropolitan roads.

While formulating safety requirements, the Government attempts to ensure that *requirements for components do not create unnecessary technical barriers to international trade and do not have any negative impact on competition.*

While implementing safety requirements, the Department of Transport and Regional Services endeavours to recommend the most appropriate form of intervention to correct market failure using existing legislation, codes of practice or a combination of market measures and legislation.

The Australian Design Rules have the force of delegated legislation under the *Motor Vehicle Standards Act 1989*. The Department of Transport and Regional Services is the regulatory body responsible for issuing and implementing Vehicle Safety Standards (Australian Design Rules) under the *Motor Vehicle Safety Standards Act 1989*.

The object of the Act is to achieve uniform vehicle standards to apply to new vehicles supplied to the market and manufacturers and importers demonstrate compliance by testing different vehicle types.

## 3. Options

The Council of Australian Governments (COAG) has laid out a set of policy principles, which need to be followed when making national standards. One of these requirements states that wherever possible, standards should be compatible with internationally accepted standards in order to minimise impediments to trade.

In the case of road vehicle safety standards, the acknowledged international standards setting body is the United Nations Economic Commission for Europe (UNECE) and the Regulations adopted by that body are prime candidates for consideration as national standards. This is in keeping with Australia's commitments as a signatory to the General Agreement on Tariffs and Trade (GATT)/World Trade Organisation (WTO) Agreement on Technical Barriers to Trade.

Furthermore, since Australia became a member of the UNECE 1958 Agreement in April 2000, the Department has a direct role in the development of UNECE Regulations and can represent Australia's interests. However, in the case of ADRs 35 and 38, compatibility of future new vehicles with the existing fleet is an issue that hampers full harmonisation with UNECE R 13. Nevertheless, this review will attempt to further the degree of harmonisation and pave the way for full harmonisation.

In order to review existing braking performance requirements or develop new requirements, two conditions need to be met, firstly, the adequacy of existing arrangements needs to be reviewed, and secondly a set of policy objectives for formulating proposed braking performance requirements needs to be outlined. These are discussed in section 3.1 and 3.2.

### **3.1 Current Arrangements for Heavy Vehicle Safety**

The current arrangements for providing safer heavy vehicles to transport operators are governed by legislative and non-legislative instruments. These are discussed in the following paragraph. In addition state and territory transport agencies have a number of arrangements for ensuring that operators of heavy vehicles operate and maintain safer heavy vehicles. Details of these arrangements are available from state and territory vehicle registration offices.

Heavy vehicle operators have access to safer heavy vehicles through two arrangements, *one* through the *Trade Practices Act 1974* and *second* through the *Motor Vehicle Standards Act 1989*. The *Trade Practices Act 1974* provides consumer protection and quality of supply of product. The areas addressed by the Trade Practices Act include product safety, product information, conditions and warranties in consumer transactions, liability of and actions against manufacturers and importers for defective goods and prescription of industry codes of practice.

Section 65C of the Act requires goods to meet prescribed consumer product safety standard. Consumer protection laws are important for they create a device for increasing equity in market place dealings between consumers and producers of vehicles. Part IVB of the Trade Practices Act can prescribe self regulated or quasi regulated industry codes into black letter law which applies the remedies contained in the Trade Practices Act to those who contravene codes, mandatory or voluntary. It is important to note that the Trade Practices Act applies across all sectors of the economy and is not industry specific.

The *Motor Vehicle Safety Standards Act 1989* is an industry specific regulation and prescribes vehicle safety requirements, which are mandatory for all new vehicles entering the market. These mandatory requirements are known as the Australian Design Rules and serve as national standards for road vehicles and components. As the Motor Vehicle Standards Act (through the Australian Design Rules) specifies mandatory product safety standards it is given more force in law for overall consumer protection by the Trade Practices Act 1974.

It is important to note that heavy vehicle operator's benefit from the scope of the two Acts, the Motor Vehicle Standards Act providing a preventative effect, while the

Trade Practices Act providing both compensatory and preventative effects. The compensatory effect for the Trade Practice Act's comes through its comprehensive coverage in most areas of consumer protection while the preventative effect comes through the prescriptions of codes by legislative means. The preventative effect from the Motor Vehicle Standards Act comes through from the barriers (in the form of compliance with ADRs) it creates for market entry.

Besides the two Acts, the recent introduction of operating and maintenance codes of practice for heavy vehicle braking by the Australian Trucking Association are gradually assisting in providing and maintaining a safer environment for passenger car drivers and unprotected road users.

## **3.2 Policy Objectives for formulating heavy vehicle braking performance requirements**

In formulating performance requirements for heavy vehicle braking, six key policy issues need to be kept in my mind. These issues relate to:

- Adherence to COAG principles for setting national standards;
- Upholding Australia's obligations as a member of the WTO and maintaining commitment to the Agreement on Technical Barriers to Trade;
- Maintaining compatibility with the existing fleet of towing and towed vehicles;
- Retaining or improving existing levels of heavy vehicle safety through equivalence or improvements in braking performance;
- Cost effective compliance and administrative arrangements for implementing performance requirements for heavy vehicle braking; and
- Adequacy of current arrangements for maintaining heavy vehicle safety

The third, fourth and fifth issues are discussed in section 3.3 under option 2 as they relate to harmonisation of heavy vehicle braking requirements with the requirements of ECE R 13.

## **3.3 Identifying Options**

Nine options have been identified for analysis, including regulatory and non-regulatory options.

### **A. Regulatory Options**

Five regulatory options have been identified ranging from retaining ADRs 35 and 38 to adopting a smorgasbord of standards from countries producing heavy vehicles.

**Option 1**

Retain ADRs 35 and 38 (Business-as-usual). The business-as-usual option accepts ECE R 13 certified vehicles subject to meeting certain conditions outlined in ADRs 35 and 38.

**Option 2**

Harmonise heavy vehicle braking requirements fully with ECE R 13.

**Option 3**

Retain ADRs 35 and 38 but allow unconditional acceptance of ECE R 13. This is same as Option 1 but with the conditions on ECE R 13 acceptance as an alternative standard removed.

**Option 4**

Adopt heavy vehicle braking standards from the USA and Japan as alternative standards.

**Option 5**

A Code of Practice mandated under the Trade Practices Act 1974

**B. Non-Regulatory Options**

Four non-regulatory options have been identified ranging from a do-nothing option to the use of information programs for heavy vehicle operators. These are outlined below and discussed in the following section:

**Option 6**

Withdraw mandatory requirements and allow market mechanisms to assume the allocation of safer vehicles to consumers.

**Option 7**

Allow economic agents in transport markets to self regulate requirements for braking systems for commercial vehicles and trailers.

**Option 8**

Provide operators with safety information related to braking systems for commercial vehicles and trailers and which they could use to make choices regarding braking systems.

**Option 9**

Initiate a voluntary code of practice to be monitored by industry associations.

**3.4 Analysing the options****Option 1: (Business-as-usual)**

**Retain ADRs 35 and 38 with conditional acceptance of ECE R 13.**

The business-as-usual option represents maintenance of the existing ADRs. These have been in force under various arrangements for approximately thirty years and so are part of a mature system. This presents some difficulties with producing quantitative economic data in support of retaining the ADRs as there is no possibility of comparing the pre and post regulatory environments. As such only a qualitative analysis can be carried out. Given this limitation, the type of benefits from maintaining the existing regulations have already been identified in Section 1 above (in terms of their loss should the regulations be withdrawn). In the broadest sense, these relate to the reduction of costs due to road crashes from inferior design and performance features of heavy commercial vehicle and trailer braking systems.

However, the business-as-usual option is not responsive to some of the policy issues, which need to be addressed when formulating performance requirements for national standards. For instance, it does not dismantle technical barriers to trade, which in turn could be considered to be in potential breach of Australia's commitments as a member of the WTO. Also, the business-as-usual option does not progress the heavy vehicle safety agenda and operators are disadvantaged by not having access to recent developments in heavy vehicle braking technology.

For these reasons, despite the highlighted disadvantages, this option is considered feasible and will be analysed further.

### ***Option 2 – Harmonise heavy vehicle braking requirements with ECE R 13***

There has been considerable debate over heavy vehicle braking over the past decade. ADRs 35 and 38 were reviewed in the mid nineties and draw largely on ECE R 13 requirements. ADR 35 retains some elements of the United States requirements, although the last review increased the extent of harmonisation with ECE R 13. ADR 38 also retains some elements of the US requirements.

As stated earlier, harmonisation of heavy vehicle braking with ECE R 13 is a key issue. Harmonisation with ECE R13 has the potential of offering better protection for road users and vehicle occupants as standards developed by the ECE incorporate the latest trends in automotive safety technology and also helps the national economy by facilitating international trade.

Also, there would be considerable savings to overseas manufacturers who supply up to 90 % (12,000 units per annum) of the rigid truck market. Local manufacturers are currently engaged in producing prime movers in small volumes (approximately 1500 units per annum) to meet ADR requirements and have not explored overseas markets, possibly due to additional costs of complying with ECE R 13. With ECE R 13 requirements in place, domestic manufacturers would not incur any additional cost to access overseas markets in the long term.

In considering harmonisation of ADRs 35 and 38 with ECE R 13, three issues are of significance. Firstly, compatibility with the existing fleet (towed vehicles/trailers) is a central issue. Secondly, the ability of ECE R 13 to provide equivalent or better braking performance and thirdly, the costs to industry and government arising from harmonisation.

The first issue is of major significance to operators. There would be considerable resistance to any moves to introduce new standards (say ECE R13) if it would mean that vehicles meeting these standards would not be compatible with the existing fleet. This issue is particularly significant for Australian operations where towed vehicle/trailer combinations are regularly changed. It may be of less significance where towed vehicle/trailer combinations are more stable, although it has to be said that Australian operations today see a trend to more stable truck/trailer combinations than in the past.

Towed vehicle/trailer compatibility depends on two key elements. The first relates to the physical (interface) element and the second relates to the performance element.

The physical element relates to the physical interface such as air line connectors, electrical connectors and alarms/signals. ADRs 35 and 38 have specific requirements for connectors and these are reflected in the existing fleet. Any changes to requirements would need to incorporate these requirements. Alarms and signals for ADR 35/38 and ECE have points of difference, but are unlikely to create incompatibility problems.

Service brake performance compatibility is now addressed in the ADRs 35/01 and 38/02 package with complementary performance envelopes (or boundaries) specified in each rule. The boundaries are generally compatible with ECE R13, and vehicles meeting ECE requirements would meet ADR requirements (but not necessarily vice versa). Emergency and parking brake compatibility is a different matter. ECE and ADR requirements are technically different, but would not seem to be significantly incompatible. There are some differences, for instance, ECE allows mechanical parking brakes, but this as such does not lead to incompatibility.

On the second issue of equivalent or better braking performance, firstly it should be recognized that ECE certified powered vehicles would have much the same laden braking performance as ADR certified vehicles. However, the same could not be said for trailers. Engineering analysis shows that ECE trailers would generally have lower braking effort than ADR 38 trailers. While this may not be a safety issue in Europe, as Europe finds the braking effort to be satisfactory, it could lead to complaints in Australia of under-braked trailers and excessive brake and tyre wear on prime movers. Excessive braking effort can lead to jack knifing of trailers while excessive tyre wear can have a negative effect on trailer traction and control and thereby increasing the risk of road crashes. While the objective of this regulatory option is to mandate the minimum requirements in accordance with COAG Principles and Guidelines, the issue of ECE trailer compatibility with a non-ECE prime mover needs to be addressed and this needs to be done in a phased manner. The public consultation period and subsequent working party discussions to some extent have resolved the issue (refer Section 5 Consultation and Appendix 3 for details). Submissions from the various industry bodies has led to an inclusion of unladen performance requirements based on ECE specifications (where proportioning brake systems have been fitted) in the draft ADRs for both prime mover and trailers under this option. This was recognized as a transition requirement that would bring the ADR further in line with the UN based ECE standard, while at the same time improving the compatibility of new and existing vehicles on the road.

ECE prescribes unladen and laden braking performance requirements while ADRs 35 and 38 only specify laden performance requirements. ECE R 13 also ensures adequate braking performance even when the driver side wheels are in contact with a surface of friction characteristic widely different to the surface on which the non-driver side wheels are travelling. Such a situation occurs frequently when the non-driver side wheels have run off on to an unsealed shoulder.

For these reasons, this option is considered feasible and will be analysed further.

***Option 3: Retain ADRs 35 and 38 and offer unconditional acceptance of ECE R 13***

Like Option 1, Option 3 carries with it some of the deficiencies that could retard harmonisation of braking requirements with ECE R 13. However, it does offer unconditional acceptance of ECE R 13 and leaves it to industry to decide on the pace of unconditional acceptance of ECE R13. The difficulty with this option is that the regulator would be unable to control the pace of harmonisation with ECE R 13 and some sections of industry may choose not to harmonise.

A number of considerations arose in relation to adopting this option and these are detailed in Appendix 1. However, none of these issues were considered so pressing as to prevent removal of the conditions for taking this intermediate step along the path to harmonisation with ECE R 13. The technical issues were worked through during both the pre and post public comment period mainly via the working groups. This is outlined in Section 5.

This option would satisfy WTO obligations as vehicles complying with ECE R 13 would be allowed entry to the Australian market without the need for any modifications.

For these reasons, this option is considered feasible and will be analysed further.

***Option 4:***

***Adopt relevant standards applicable in the largest vehicle markets (for example USA, Japan and Europe) as alternative standards.***

This option keeps the existing mandatory standards ADRs 35 and 38, but allows selected standards from other countries to be used as alternatives. As the alternatives would be the same or similar to standards in many other countries, this option would minimise the impact of regulation on industry.

While this may at first seem to be economically efficient, closer examination proves otherwise. The allowance of alternative standards is of real benefit where compliance with those standards can be easily verified by the issue of authoritative certificates of compliance or the standards are materially different and vehicles would need to be modified to comply with the chosen standard.

Maintenance of alternative standards is another issue that can seriously erode the regulator's efficiency to manage the administrative functions. This stems from the need to continuously examine the ADR amendment proposals to maintain the currency of the ADRs in relation to the alternative standards. The process for

amending an ADR to allow compliance with an amended alternative standard typically involves:

- assessment of the technical differences;
- Preparation of a proposal for consideration by an advisory group<sup>1</sup> responsible for ADR development;
- depending on the nature of the change, submission of the proposal to the Chief Executives of the State/Territory Department of Transport for their consideration;
- if agreement is obtained for the proposal, voting on the proposal by the Australian Transport Council; and
- determination of the proposal (amendments to ADRs 35 and 38) by the Parliamentary Secretary to the Minister for Transport and Regional Services under section 7 of the Motor Vehicle Standards Act 1989.

The above process could take up to eight months if all goes well. However, priorities of the day may not allow immediate processing of requests so the actual time taken could exceed a year. With the present level of resources it is highly unlikely that alternative standards could be assessed within a time frame which is commercially feasible for industry. The total cost for implementing a separate business line which could assess the functional equivalence and the risk mitigation capabilities of a range of alternative standards to the level of the ADRs is difficult to determine as it involves activities performed by a number of different organisations.

At the time of writing this statement the USA and Japan have not provided any information to the United Nations ECE organisation on their intentions to harmonise their heavy vehicle braking requirements with ECE R 13.

For these reasons, despite the highlighted disadvantages, this option is considered feasible and will be analysed further.

#### ***Option 5:***

##### ***Mandatory Code of Practice operating under the Trade Practices Act***

The *Trade Practices Act 1974* provides prescriptions and remedies including injunctions, damages and orders for corrective measures for those who contravene such codes. Mandatory codes can be enforced under the Trade Practices Act against all businesses in the heavy vehicle sector regardless of whether they are signatories to the code. A mandatory code is an effective means of regulating in areas where government agencies do not have the expertise or resources to monitor compliance.

A feature of such prescribed codes is that they retain a high degree of industry involvement while providing the enforceability and coverage that can be ensured only

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<sup>1</sup> known as the Technical Liaison Group and comprises of supplier associations (Federal Chamber of Automotive Industries and others), state and territory governments, National Transport Commission and consumer associations (Australian Automobile Association).

through legislative means. However, breaches can only be revealed by failures in the field or by third party reporting and any savings through avoiding government intervention need to be balanced against the consequences of failures. Furthermore, in case of heavy commercial vehicles, the consequences of brake system failure or lack of performance could be catastrophic given the size and mass of these vehicles.

In the case of regulating the design and installation of heavy vehicle braking systems, DOTARS has the expertise and the resources to administer a cost effective compliance regime and therefore a mandatory code of practice is not the appropriate route to deliver safer vehicles into the market.

The arrangements for administering the compliance regime were reviewed in 1999 and endorsed as part of the Review<sup>2</sup> of the *Motor Vehicle Standards Act 1989*. Among the options examined was the system currently in place in the United States of America (USA) which involves the regulator (National Highway Traffic Safety and Administration) purchasing vehicles in the open market and conducting its own testing program. The task force noted that:

- This activity involves high costs. In the U.S.A. for example a budget of approximately US\$ 25 million is provided, and
- In the event that vehicles are found not to comply with mandatory standards, action is taken by the regulatory authorities either in courts or through mandatory recall. Resolution in the courts can be a lengthy process during which potentially unsafe vehicles can remain in the market.

A mandatory code of practice under the Trade Practices Act needs to be underpinned by a mandatory standard. Therefore this option is similar to Options 1 and 2, the only difference being in the enforcement method. Options 1, 2, 3 and 4 address mandatory standards under the Motor Vehicle Standards Act, which has an established regulatory regime, administered by DOTARS for ensuring compliance with the mandatory standards. A mandatory code of practice under the Trade Practices Act would rely on industry to comply, with appropriate prosecution provisions in the event that non-compliance becomes evident.

For these reasons, this option is not considered feasible.

#### ***Option 6 – Do - Nothing***

***Withdraw mandatory requirements and allow market mechanisms to allocate safer vehicles to heavy vehicle operators.***

This option withdraws the existing mandatory standards ADRs 35 and 38 and relies instead on the market to provide sufficient information to the consumer to make an informed choice. The choice would have to lead to vehicle systems being produced that meet the level of safety desired by the community.

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<sup>2</sup> Review of Motor Vehicle Standards Act 1989, Department of Transport and Regional Services, August 1999. The review analysed the use of self-regulation and self-certification as alternatives to the current system and concluded that the costs of the new proposals outweighed the benefits.

If this option was implemented, it is only likely to increase the risk of injuries to road users and increase the cost of road trauma to the community. State and territory governments own and operate the Australian road network and have road safety plans in place to reduce fatalities and injuries from road crashes. They are unlikely to accept a situation where the withdrawal of mandatory requirements for heavy vehicle braking, could create risks resulting from imprecise control of heavy vehicles with a potential to inflict fatal and serious injuries to road users. In such a situation, state and territory governments are quite likely to develop their own requirements for heavy vehicle braking. Such a move by state and territory governments could increase the cost of compliance to industry and governments, all of which would eventually have to be recovered from road users through higher taxes, levies, charges and insurance premiums. A return to state and territory based arrangements for developing vehicle safety standards would destroy the benefits obtained from the micro-economic reforms of the late eighties.

For these reasons, this option is not considered feasible.

### ***Option 7 – Self-Regulation***

#### ***Allow economic agents in the market to self regulate braking requirements for commercial vehicles and trailers***

Option 7 is listed but is unlikely to be successful for heavy vehicle braking as market forces are not likely to deliver and maintain road worthy heavy vehicles in the Australian fleet. The high risk nature of heavy vehicle crashes and the high impacts on communities has forced state and territory governments to legislate on the operating and maintenance aspect of heavy vehicle operations. In the absence of mandatory braking requirements for new heavy vehicles entering the Australian fleet, state and territory government intervention is most likely to occur. Such intervention is likely to produce a range of requirements across different states which could increase cost of compliance to industry and administrative cost to governments all of which eventually would be passed on to road users. Such an effect would have inflationary effects on the Australian economy.

For these reasons, this option is not considered feasible.

### ***Option 8:***

#### ***Operator Information/Education Programs***

From an economic perspective, it is reasonable to expect that operators would not deliberately switch to safer braking systems unless they perceive a net benefit from making a particular change. If operators receive advice from industry associations to install and maintain safer braking systems on their heavy vehicles, they may actually make changes, but only to the extent that they perceive a personal gain from the changes sufficient to justify the costs implicit in switching to safer braking systems.

The production of information can emanate from Commonwealth and state/territory governments, industry associations and suppliers of heavy vehicles. One likely arrangement is for the Commonwealth to summarise the commercial-in-confidence information received from manufacturers through the road vehicle certification system and make it available to consumers at the time of purchase. The information received from manufacturers is technical, complex and cannot be communicated to

the average operator in a form, which can be easily understood and applied. Moreover it is commercial-in-confidence and it is hardly likely that manufacturers would agree to expose this information to operators or the general public.

Industry associations such as the Australian Trucking Association (ATA) also publish information on braking systems. However the information which is available to the association's members, provides advice on how to maintain heavy vehicle braking systems and does not entail enforcement by the ATA or compliance by its members. The ATA Braking Code of Practice does not address design features for braking systems and therefore cannot be considered as a substitute for the Australian Design Rules. To enhance the scope of the Braking Code of Practice, the ATA would need to approach vehicle manufacturers and obtain information from them in a format similar to that which the Commonwealth uses to procure information. It is difficult to perceive such a mechanism taking shape in a competitive market place and whether such a mechanism could internalise the externalities generated from the operation of heavy vehicles.

Once information has been produced, a key issue emerges on how best to dissipate that information to operators. The Commonwealth makes information available to suppliers and consumers in the form of design rules and through regulation makes it mandatory for suppliers to provide vehicles, which comply with national standards.

Therefore, under current arrangements, suppliers do not provide any information to operators as regulation ensures that operators are provided with safe vehicles. Operator associations such as the ATA attempt to improve operational safety of heavy vehicles by ensuring that their members maintain their vehicles according to the Association's braking code of practice.

In summary, the information program operated by the ATA through the Braking Code of Practice only addresses braking maintenance requirements, it is voluntary and does not cover all the operators in the industry and moreover it lacks the force of law to force offenders to comply. It is therefore an imperfect substitute for black letter legislation.

If black letter or even grey letter legislation is replaced by information programs negative externalities are likely to be imposed on the community which could rapidly increase the unacceptably high cost of road trauma estimated at \$15 billion annually (BTE 2000). Both state and Commonwealth governments cannot afford to ignore the fact that information programs would be unable to protect road users as well as heavy vehicle operators.

For these reasons, this option is not considered feasible.

### ***Option 9 – Voluntary Code of Practice***

By its very nature of being voluntary, option 9 is unable to obtain full participation and compliance by all economic agents in the market. To ensure participation and compliance, manufacturers and importers need to derive some benefits from participation and alternatively may need to be protected from any economic disadvantage resulting from participation in the code of practice. To ensure equity in

market transactions, industry or business associations would seek to negotiate special status from the government for its members. This very often results in the introduction of punitive measures sometime backed by legislation and directed mainly at those who are not members of interest groups.

Currently the main industry associations are the Truck Industry Council (TIC) which represents heavy vehicle manufacturers and importers while the Australian Trucking Association represents road transport operators. The TIC has recently set itself up as an interest group for heavy vehicle manufacturers and may be unable to have the resources to administer a code of practice. The ATA launched a Braking Code of Practice in 2002 but it is too early to have feedback on the effectiveness of their program. Moreover the ATA does not cover all the operators in the trucking industry.

If high risk, high impact events such as heavy vehicle crashes are to be avoided or reduced, heavy vehicles need to be designed to meet requirements which make them safe to operate and be maintained at all times in a road worthy condition. Ensuring that heavy vehicles are safe and road worthy is done in two stages. Firstly when they enter the fleet by meeting the requirements of ADRs 35 and 38 and secondly when in service, they are monitored annually by state transport agencies through a system of annual and random inspections.

In a regulated environment, as is currently the case with motor vehicles, DOTARS is fully accountable to the government for administration of vehicle safety regulation under the *Motor Vehicle Standards Act 1989*.

No such accountability arrangements through a code of practice can be imposed on the TIC and ATA to respond to a high impact, high risk area of public safety.

For these reasons, this option is not considered feasible.

## **4. Impact Analysis**

The aim is to assess from a public interest perspective, whether the costs incurred by industry for designing, developing and implementing proposed requirements for heavy vehicle braking systems exceed the public and private benefit derived from its provision. There is no universally acceptable methodology for quantitatively measuring the costs of trauma from unsafe brakes and benefits of proposed countermeasures, which help reduce such trauma and cost effectiveness analysis is used here to help understand the economic efficiency of the changes proposed for heavy vehicle safety improvement.

### **4.1 State of Play in the Industry**

Commercial vehicles sold in Australia are sourced from four regions of the world. They include Europe, Japan/Korea, USA/North America and Australia. Europe accounts for 16% of the total market, while Japan accounts for 62%, North America accounts for 12% and Australia accounts for 10% (VFacts 2003).

The three local commercial vehicle manufacturers have traditionally been US owned, but two are now owned by European companies, and are expected to use more ECE based components and models over time.

It should be recognised that Australian based, European and North American commercial vehicle manufacturers have plants in other regions of world – South America, China and Canada. Vehicles from these regions are occasionally marketed in Australia and would require additional testing to meet unique Australian requirements. As these vehicles form a very small proportion of volume of heavy vehicles sold, effects arising from harmonisation on their suppliers is addressed separately.

The heavy vehicle market of the 1980's was dominated by US sourced and/or US designed vehicles, but European sourced vehicles now command a significant presence. In the medium and more lighter end of the market Japanese sourced vehicles dominate.

Japanese sourced vehicles are generally certified to ADR 35/01 in Japan. US sourced and Australian built heavy vehicles are certified in Australia. European sourced heavy vehicles are certified to ADR 35/01 in Australia while the additional testing required to gain ADR 35/01 certification for ECE R13 compliant vehicles is carried out in Australia.

## **4.2 Affected parties**

Parties likely to be most affected by the problem or the proposed options are:

### **Groups affected by the problem**

#### **Consumers**

- Operators of heavy vehicles.
- The wider community who bear the cost of road trauma.

### **Groups affected by the options**

#### **Business**

- Heavy vehicle manufacturers, vehicle importers, manufacturers and importers of heavy vehicle components.
- Parties providing services for the design and testing of braking systems.
- Parties providing vehicle certification and compliance services to vehicle manufacturers and importers.

#### **Government**

- State and territory transport agencies performing a review or oversight function.

- State and territory law enforcement authorities who have a monitoring function.
- Road safety research institutions.

### 4.3 Identifying the Cost and Benefits for the Options

As discussed in Section 3.4, the following remaining four options merit further examination:

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*Option 1 (Business-as-usual) Retain ADRs 35 and 38 with conditional acceptance of ECE R13*

*Option 2 Harmonise heavy vehicle braking requirements with ECE R13*

*Option 3 Retain ADRs 35 and 38 with unconditional acceptance of ECE R13*

*Option 4 Adopt relevant standards applicable in the largest vehicle markets (for example USA, Japan and Europe) as alternative standards.*

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It was not possible to quantify the benefits of the reduction of road trauma to the existing regulations. However, as there were only regulatory options left in the analysis and these options have a great deal of similarity in their technical requirements; it has been assumed that the costs and benefits would not differ significantly between them. Therefore, the costs and benefits of each option have been discussed mostly in descriptive terms, relative to the existing regulations (Option 1).

The costs of compliance to particular standards relate to the particular tests and submissions required against the *Motor Vehicle Standards Act 1989*. The costs do not consider issues of Conformity of Production relating to type approval of a vehicle, as these would apply equally to all the above options.

In addition, the costs do not consider issues of Conformity of Production relating to type approval of a component or system under ECE R13. This would mean in reality that some costs would be slightly higher. However, this would not change the overall ranking of the options.

During the public comment phase, no further information was provided towards quantifying the costs or benefits.

Full harmonisation of ADRs 35 and 38 with ECE R 13 would entail significant costs and for the short term could present difficulties with prime mover and trailer compatibility. Tractors and trailers in Australia get interchanged very frequently to ensure that trailers are laden at all times or tractors haul laden trailers. In Europe tractor-trailer compatibility is not much of an issue as prime movers and trailers are seldom interchanged and quite often travel unladen which also necessitates an unladen test for braking performance. In any case, as ECE R 13 has been in effect in Europe for some time, the European fleet is more homogeneous than Australia's. While it had originally been argued that unladen braking performance was not necessary for Australia, there have been recent requests from the operating industry for the Australian Government to amend the rules so as to encourage the fitment of

load sensing valves to improve unladen performance. This suggests that Australia could benefit from adopting a similar stance to unladen performance testing as the UNECE. These options have been outlined in earlier sections and also in the following paragraphs, the costs and benefits for these options are reviewed.

From the discussion in section 3.4, it appears that full harmonisation of ECE R 13 requirements for heavy vehicle braking performance is not feasible in the short term. The NTC has undertaken to revisit its earlier review of mandating ABS brakes for heavy vehicles and has been asked to widen the scope of its study to encompass the broader issue of harmonising with ECE R 13.

The previous study conducted in 1995 identified a number of issues relating to the high cost of ABS, low benefits, lack of support from vehicle operators in relation to reliability, durability, maintenance support and response capabilities on rural roads and loading conditions. The report concluded that the costs outweighed the benefits and the recommendation was not proceed with ABS. Since that time several developments have occurred with costs considerably falling, rapid improvements in technology and a better idea of the perceived benefits which could result from the installation of ABS on heavy vehicles.

The remaining options are discussed below:

## Option 1 – Business As Usual

### *Costs*

None, Option 1 does not alter the cost of compliance or the cost of road trauma.

### *Incremental Benefits*

None, Option 1 does not alter the cost of compliance or the cost of road trauma.

Table 1 outlines the various cost and benefit elements and provides a comparison in terms of vehicle production sources.

**Table 1: Incremental Costs and Benefits for Option 1**

|                           | Area of Origin | Incremental Cost for |          | Incremental Braking benefits |
|---------------------------|----------------|----------------------|----------|------------------------------|
|                           |                | Trucks               | Trailers |                              |
| Vehicle Testing           | Europe         | None                 | None     | None                         |
|                           | USA            | None                 | None     | None                         |
|                           | Japan          | None                 | None     | None                         |
|                           | Australia      | None                 | None     | None                         |
| Braking system components | Europe         | None                 | None     | None                         |
|                           | USA            | None                 | None     | None                         |
|                           | Japan          | None                 | None     | None                         |

\*Incremental braking benefits relate to benefits over and above those obtained from ADRs 35 and 38

Table 2 illustrates the extent to which Option 1 meets the policy requirements set out in section 3.2:

**Table 2: Extent to which option 1 meets the policy requirements for formulating performance standards for heavy vehicle braking**

| <b>Policy Requirement</b>                              |      |
|--------------------------------------------------------|------|
| Meets COAG principles for setting national standards   | No   |
| Upholds Australia's obligations as a member of the WTO | No   |
| Compatibility with existing fleet                      | Yes  |
| Maintains existing levels of braking performance       | Yes  |
| Impact on heavy vehicle suppliers                      | None |
| Impact on operators of heavy vehicles                  | None |
| Incremental cost for implementing option               | None |

## **Option 2 –Fully harmonise with ECE R 13 requirements**

### ***Costs***

- (a) Increase in time and costs would be incurred by local and American heavy vehicle manufacturers or testing agencies as these parties have to familiarise themselves with any new requirements. The cost of compiling and preparing compliance reports would increase for Australian and American manufacturers in the short term as new tasks would need to be performed (no such costs would be faced by European manufacturers). These costs are discussed further on in this section.
- (b) Recurrent costs to vehicle manufacturers to comply with the ECE R 13 requirements would increase dramatically in the short term. These costs include those related to maintaining conformity of production, collection of data and maintenance of a database adequate to generate sufficient information to demonstrate compliance with the current and additional requirements. In addition, as discussed above, there would be significant capital expenditure for establishing production, testing and inspection systems.

### ***Incremental Benefits***

- (a) Road trauma arising from inadequate design features and maintenance of heavy vehicle braking systems is likely to remain at current levels or slightly decrease. One of the reasons for this is that there would be some improvement in unladen braking performance which is an emerging issue in Australia and especially performance on low friction surfaces.
- (b) The costs of modifying and compliance testing vehicles from European sourced vehicles would reduce for ECE R 13 compliant vehicles.
- (c) As this option results in complete harmonisation, a reduction of costs incurred by local heavy vehicle manufacturers to comply with braking system requirements to sell in to overseas markets, most of which accept ECE R 13.
- (d) Changing the local requirements to compliance with the ECE R 13 requirements could facilitate the opportunity for investment with a potential for long term gains.

- (e) Australia's WTO commitments would be met.
- (f) Vehicle suppliers would be able to offer the latest in automotive safety technology to Australian consumers.

Table 3 outlines the various cost and benefit elements and provides a comparison in terms of vehicle production sources.

**Table 3: Costs and Incremental Braking Benefits for Option 2 (unconditional acceptance of ECE R 13)**

|                           | Area of origin | Incremental Cost for   |                        | Incremental Braking benefits    |
|---------------------------|----------------|------------------------|------------------------|---------------------------------|
|                           |                | Truck                  | Trailer                |                                 |
| Vehicle testing           | Europe         | None                   | None                   | Small improvement over Option 1 |
|                           | USA            | Significant Additional | Significant Additional | Small improvement over Option 1 |
|                           | Japan          | Significant Additional | Significant Additional | Small improvement over Option 1 |
| Braking system components | Europe         | None                   | None                   | Small improvement over Option 1 |
|                           | USA            | Significant Additional | Significant Additional | Small improvement over Option 1 |
|                           | Japan          | Significant additional | Significant Additional | Small improvement over Option 1 |

Incremental braking benefits: benefits over and above those obtained from current ADRs 35 and 38

The analysis of Option 2 assumes that trailer manufacturers would all move to comply with ECE R13. The issue of ECE sourced trailers is at present restricted to specialised equipment trailers (e.g. crushers) which can be addressed as non standard trailers. Imported ECE certified trailers could become significant if the terms of trade favoured imports. However, the Australian trailer market is highly competitive, and it is unlikely that imported trailers would become significant as Australian manufacturers would step in to fill the gap. In the short term the local trailer industry could face high costs for reforming to the requirements of ECE R 13.

The primary beneficiaries of Option 2 as stated earlier would be ECE sourced trucks, prime movers and trailers as there would be no need for additional testing to ADRs 35 and 38. As noted on the previous page, there would be significant costs for US, Japanese and Australian sourced trucks and prime movers as:

- Testing to ECE R13 is more expensive than testing to ADR 35/38;

- there are no suitable test facilities for some aspects of ECE tests in Australia;
- US sourced vehicles are currently certified in Australia to ADR 35. Test facilities are probably available in the US for ECE. Cost data is not easily available;
- Japanese vehicles are tested in Japan. However test facilities for ECE are probably available in Japan. Again cost data is not easily available.

Other issues for trailers relate to lower braking effort, and some costs regarding ECE R 13 specific ABS systems. This is again an area which was revisited when the statement was available for public comment. Refer Section 5 for details.

The comparative testing costs for a 3 axle prime mover would be:

|           |                          |
|-----------|--------------------------|
| ADR 35/01 | \$10,000                 |
| ECE R13   | \$27,300 (including ABS) |

The comparative costs of trailer certification based on a tri-axle semi trailer are:

|           |                    |
|-----------|--------------------|
| ADR 38/02 | \$1200             |
| ECE R13   | \$5,000 (estimate) |

In a recent Communiqué from the Council of Australian Government's meeting, it was suggested that estimation tools such as the costing model provided by the Commonwealth Office of Small Business could assist with estimating costs. However, in this case the estimates were originally provided directly by industry and were accepted through the public comment stage. Therefore, the tools were only used to note that costing model categories of Education (training with the requirements of new standards), Purchase (purchase of test equipment and hire/purchase of test facilities), Record Keeping (test data recording and compiling), Procedural (test procedures) and Publications (purchase/obtaining of new standards) would all be factors included in the above estimates.

On a yearly basis, Section 4.1 states that European product accounts for 16% of the total Australian market. This leaves 84% of product potentially affected by these costs. Given that there are approximately 100 tests submitted for certification per year<sup>3</sup>, the change in the testing costs could be in the order of \$1m. This would be a significant cost to industry.

Table 4 illustrates the extent to which Option 2 meets the policy objectives set out in section 3.2.

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<sup>3</sup> The certification records from 2000 to 2006 show a range from 0 to 300 per year.

**Table 4: Extent to which option 2 meets the policy requirements for formulating performance standards for heavy vehicle braking**

| <b>Policy Requirement</b>                                          |                                                                                                                                                                                                                                 |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Meets COAG principles for setting national standards               | Yes                                                                                                                                                                                                                             |
| Upholds Australia's obligations as a member of the WTO             | Yes                                                                                                                                                                                                                             |
| Maintains Australia's commitment as a Contracting party to the ECE | Yes                                                                                                                                                                                                                             |
| Compatibility with existing fleet                                  | Not satisfied in the short term                                                                                                                                                                                                 |
| Maintains existing levels of braking performance                   | Yes and exceeds                                                                                                                                                                                                                 |
| Impact on heavy vehicle suppliers                                  | Positive on European sourced product<br>Positive on American and Japanese product certified to ECE R 13 -if available<br>Negative and significant on Australian, Japanese and American sourced product not certified to ECE R13 |
| Impact on operators of heavy vehicles                              | Could be significant in the short term                                                                                                                                                                                          |
| Incremental cost for implementing option                           | High costs may be incurred in the short term by Australia, American and Japanese suppliers                                                                                                                                      |

### **Option 3 – Retain ADRs 35 and 38 and offer unconditional acceptance of ECE R 13**

#### ***Costs***

None, Option 3 does not increase the cost of compliance.

#### ***Incremental Benefits***

- (a) Road trauma arising from inadequate design features and maintenance of heavy vehicle braking systems is likely to remain at current levels or slightly decrease, but not as much as with Option 2. One of the reasons for this is that while there would be some improvement in unladen braking performance which is an emerging issue in Australia and especially performance on low friction surfaces, it would only be for those vehicles certified to ECE R13.
- (a) A reduction in time and costs would be enjoyed by business for all manufacturers and testing agencies of ECE sourced vehicles, as these parties would no longer have to consider the additional conditions attached to the current acceptance of ECE R13 under ADRs 35 and 38.
- (b) A reduction in time and costs for ECE sourced vehicles would be enjoyed by the government certification agency, as the agency would no longer have to consider the additional conditions attached to the current acceptance of ECE R13 under ADRs 35 and 38.
- (c) Removing the additional provisos attached to the current acceptance of ECE R13 under ADRs 35 and 38 could facilitate the opportunity for investment in the ECE compliance path with a potential for long term gains.
- (d) Australia's WTO commitments would be met.

- (e) Vehicle suppliers would be able to offer the latest in automotive safety technology to Australian consumers.

Table 5 outlines the various cost and benefit elements and provides a comparison in terms of vehicle production sources.

**Table 5: Costs and Incremental Braking Benefits for Option 3 (Retain ADRs 35 and 38 and offer unconditional acceptance of ECE R 13)**

|                           | Area of origin | Incremental Cost for |                 | Incremental Braking benefits                           |
|---------------------------|----------------|----------------------|-----------------|--------------------------------------------------------|
|                           |                | Truck                | Trailer         |                                                        |
| Vehicle testing           | Europe         | Slightly better      | Slightly better | Small improvement over Option 1 but less than Option 2 |
|                           | USA            | None                 | None            | Small improvement over Option 1 but less than Option 2 |
|                           | Japan          | None                 | None            | Small improvement over Option 1 but less than Option 2 |
| Braking system components | Europe         | Slightly better      | Slightly better | Small improvement over Option 1 but less than Option 2 |
|                           | USA            | None                 | None            | Small improvement over Option 1 but less than Option 2 |
|                           | Japan          | None                 | None            | Small improvement over Option 1 but less than Option 2 |

Incremental braking benefits: benefits over and above those obtained from current ADRs 35 and 38

Option 3 is one step higher from Option 1 in that the conditions for acceptance of ECE R 13 as an alternative standard are removed. Therefore, vehicles can comply with either the technical prescriptions of ADRs 35 and 38 or with ECE R 13.

The advantage is that vehicles sourced from markets supplying vehicles in compliance with ECE R 13 need not incur additional expense to comply with requirements on top of ECE R 13 as is currently the case. Also, vehicles can continue to comply with the technical requirements of the current ADRs, thereby avoiding the high costs of Option 2.

Table 6 illustrates the extent to which Option 3 meets the policy objectives outlined in section 3.2.

**Table 6: Extent to which Option 3 meets the policy requirements for formulating performance standards for heavy vehicle braking**

| <b>Policy Requirement</b>                              |                                                                                                                                                                     |
|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Meets COAG principles for setting national standards   | Yes                                                                                                                                                                 |
| Upholds Australia's obligations as a member of the WTO | Yes                                                                                                                                                                 |
| Compatibility with existing fleet                      | Should improve                                                                                                                                                      |
| Improves existing levels of braking performance        | Yes                                                                                                                                                                 |
| Impact on heavy vehicle suppliers                      | Neutral on Australian, Japanese and American suppliers unless they plan to comply with ECE R13<br>Suppliers have a choice on the standards they wish to comply with |
| Impact on operators of heavy vehicles                  | None                                                                                                                                                                |
| Incremental cost for implementing option               | None                                                                                                                                                                |

### **Option 4 – Adopt relevant standards applicable in the largest vehicle markets (for example USA, Japan and Europe) as alternative standards.**

#### ***Costs***

- (a) Road trauma arising from inadequate design features and maintenance of heavy vehicle braking systems is likely to remain at current levels, but could slightly increase. One of the reasons for this is that while there would be some improvement in unladen braking performance which is an emerging issue in Australia and especially performance on low friction surfaces, it would only be for those vehicles certified to ECE R13. There would instead tend to be an increase in vehicles certified to their own national standards. At the very least this would begin to affect compatibility within the fleet.
- (b) As discussed in Section 3.4, significant increases in time and costs would be incurred by business (manufacturers and testing agencies) and government in terms of the added complexity of developing and maintaining a suite of national and international standards.

#### ***Incremental Benefits***

- (a) A reduction in time and costs would be enjoyed by business for all manufacturers and testing agencies of vehicles sourced from any of the relevant countries (from where a standard has been adopted), as these parties would no longer be limited to the current ADRs 35 and 38 requirements.
- (b) Australia's WTO commitments would be met.
- (c) Vehicle suppliers would be able to offer a variety of automotive safety technology to Australian consumers.

Table 7 outlines the various cost and benefit elements and provides a comparison in terms of vehicle production sources.

**Table 7: Costs and Incremental Braking Benefits for Option 4 (Adopt relevant standards applicable in the largest vehicle markets (for example USA, Japan and Europe) as alternative standards)**

|                           | Area of origin | Incremental Cost for   |                        | Incremental Braking benefits |
|---------------------------|----------------|------------------------|------------------------|------------------------------|
|                           |                | Truck                  | Trailer                |                              |
| Vehicle testing #         | Europe         | Significant Additional | Significant Additional | Slightly worse than Option 1 |
|                           | USA            | Significant Additional | Significant Additional | Slightly worse than Option 1 |
|                           | Japan          | Significant Additional | Significant Additional | Slightly worse than Option 1 |
| Braking system components | Europe         | None                   | None                   | Slightly worse than Option 1 |
|                           | USA            | None                   | None                   | Slightly worse than Option 1 |
|                           | Japan          | None                   | None                   | Slightly worse than Option 1 |

Incremental braking benefits: benefits over and above those obtained from current ADRs 35 and 38  
 # the changes would affect certification and testing as a whole, rather than individual manufacturers testing only to one alternative standard.

Option 4 is one step higher from Option 3 in that vehicles could comply with the technical prescriptions of any of a number of standards referenced in ADRs 35 and 38, including ECE R 13.

The advantage is that vehicles sourced from markets supplying vehicles in compliance with their national standards may not need to incur additional expense to comply with the current ADR 35 and 38 requirements.

Table 8 illustrates the extent to which Option 4 meets the policy objectives outlined in section 3.2.

**Table 8: Extent to which Option 4 meets the policy requirements for formulating performance standards for heavy vehicle braking**

| Policy Requirement                                     |                                                                   |
|--------------------------------------------------------|-------------------------------------------------------------------|
| Meets COAG principles for setting national standards   | Yes                                                               |
| Upholds Australia's obligations as a member of the WTO | Yes                                                               |
| Compatibility with existing fleet                      | Would get worse                                                   |
| Improves existing levels of braking performance        | No                                                                |
| Impact on heavy vehicle suppliers                      | Suppliers have a choice on the standards they wish to comply with |
| Impact on operators of heavy vehicles                  | None                                                              |
| Incremental cost for implementing option               | Would increase for testing and certification agencies             |

## 4.4 Comparison of Costs and Benefits for Options

Option 1 would not change the existing arrangements and therefore the incremental costs and benefits would both be zero. There would be no cost impact on the Consumer, Business or Government, while compatibility within the fleet and the general level of braking performance would remain the same.

However, as Option 1 results in a very low level of harmonisation compared with Options 2 or 3, additional costs would continue to be incurred by Business for ECE R 13 compliant vehicles with local manufacturers no closer to accessing export markets. This Option does not meet COAG principles for setting national standards.

In addition, Australia's standing as a member country of the WTO would suffer considerably in international trade circles if Australian standards were not internationally harmonised. This, as pointed out in an earlier discussion, could increase market access costs for potential vehicle exporters and importers.

Finally, consumers would be denied access to the latest developments in safety technology.

Overall, the "business as usual" option continues a situation where vehicles sourced outside Australia incur costs for testing and certification and in some cases for additional components. These costs to Business relate to the use of a regulation unique to Australia and are significant. The question to be addressed is:

**Is it beneficial and cost effective to promote a unique regulation if the same or even greater benefits may be available from other alternatives such as Options 2, 3 or 4?**

Option 2 would lead to very marginal braking benefits when compared to Option 1. This would benefit the broader community (mainly the Consumer and Government) in terms of a reduced cost of road trauma.

Option 2 would also allow a modest saving to business as ECE sourced vehicles would be accepted in Australia without modification. Businesses supplying USA and Japanese sourced vehicles already certified to ECE could also make some savings in testing costs.

However, for local and American heavy vehicle manufacturers and testing agencies the business costs of familiarisation and testing to the ECE would increase. The issues of 12V trailer power supply and compatibility within the fleet would also need to be addressed.

This Option would meet COAG principles for setting national standards and Australia's standing as a member country of the WTO would improve in international trade circles.

Finally, consumers would access the latest developments in safety technology.

Overall, this option would provide the benefits from harmonising standards with international regulations, at a short term but significant cost to businesses (flowing on to the consumer) who supply non European product, where vehicles have to be re-certified to the new requirements.

Option 3 would lead to very marginal braking benefits when compared to Option 1. However, these would be slightly less than Option 2. This would benefit the broader community (mainly the Consumer and Government) in terms of a reduced cost of road trauma.

Option 3 would also allow a modest saving to business as ECE sourced vehicles would be accepted in Australia without modification. Businesses supplying USA and Japanese sourced vehicles already certified to ECE could also make some savings in testing costs. For local and American heavy vehicle manufacturers and testing agencies, the cost to business would not change as these manufacturers would continue to use the current ADR 35 and 38 certification arrangements.

This Option would meet COAG principles for setting national standards and Australia's standing as a member country of the WTO would improve in international trade circles.

Finally, consumers would access the latest developments in safety technology, although this would be slightly less than for Option 2 as not all vehicles would be certified to ECE R13.

Option 3 is an interim pathway for encouraging industry to achieve full harmonisation with ECE R13. The option would offer industry time to develop design, manufacturing and testing expertise to comply with ECE R 13. Moreover the outcome of a NTC study into issues relating to ABS introduction and harmonisation with ECE R 13 will pave the way for full harmonisation as harmonisation is greatly dependent upon introducing ABS requirements for braking systems and addressing unladen conditions. As the study involves a number of issues it is expected that it would involve a considerable period of time (around 2 to 3 years) in engaging with various segments of industry. A full review of Option 3 along with industry consultation will be attempted at that time with the aim of solely adopting ECE R 13 requirements.

Overall, this option would provide the benefits from harmonising standards with international regulations for an increased portion of the fleet, while avoiding the cost to business for local and American sourced vehicles having to comply with ECE R13.

Option 4 would lead to slightly less braking benefits when compared to the other options, as it would introduce a number of possible different configurations of braking systems. This could lead to a lowering of compatibility between vehicles, which is an important factor in truck/trailer braking.

Option 4 may offer some savings to business as many vehicles would be accepted in Australia without modification. However, as discussed in Section 3.4, there would be significant costs to testing agencies and certification agencies, representing both

business and government, in maintaining a suite of standards. To expand on this further, as Australia would have no input in to the development of other countries' national standards, it could find itself in the position of having to choose between accepting unsuitable updated requirements or rejecting the entire standard. All of this would create uncertainty for business and an increased administrative burden.

It is an indication of the inefficiency of such a system that many of the major vehicle producing countries, such as in the European Union but also Japan, have signed up or are considering signing up to the internationally based United Nations (UNECE) regulatory system.

There is a related issue to managing a certification system that relies on other countries' national standards. There may be an expectation by business that approvals issued by other countries to the standards would be acceptable on face value as proof of compliance to the Australian requirements. A current example of this is certificates of compliance issued by European Union (EU) countries against European Economic Community (EEC) directives. Although the technical requirements of some directives are identical to corresponding United Nations Economic Commission for Europe (UNECE) regulations, Australia has no access to the testing and approval process and no recourse to query a test result. The ability to have access to the test process is fundamental to the integrity of the Australian type approval system, as approval is based on a sample vehicle using limited test information only, followed by rigorous audit of the entire testing process.

Given the above, although at first glance it would seem convenient to allow a suite of standards from different sources to be available to the vehicle manufacturer, there are substantial inefficiencies and therefore costs in maintaining this suite.

This Option would meet COAG principles for setting national standards and Australia's standing as a member country of the WTO would improve in international trade circles.

Finally, consumers may or may not access the latest developments in safety technology.

Overall, this option is likely to result in an increase of road trauma through the mismatching of different braking systems, while leading to significant increases in time and costs in terms of the added complexity of developing and maintaining a suite of national and international standards.

In conclusion, as noted in the previous section, it was difficult to consider costs and benefits in anything other than qualitative terms. However, this became less important when the options were generally considered against Option 1.

Option 3 is the only option where both the road trauma benefits and the costs would be expected to improve.

Option 4 would be the worst case, where the road trauma benefits would get worse and the costs would increase.

Option 2 would be somewhere in the middle, with the road trauma benefits improving but with the costs increasing as well. Although the potential improvements to road trauma were not able to be estimated, Section 4.3 identified costs to business that would be significant.

Therefore, Option 3 is the recommended option.

## **4.5 Effect on Competition**

The introduction of the proposed changes to ADRs 35 and 38 would not increase barriers to entry by new entities interested in participating in the market for supply of heavy vehicle braking systems. On the same note the changes would be unlikely to lead to existing entities leaving the industry as the changes would assist existing entities to access overseas markets and help improve economies of scale in an industry used to operating in a protected environment.

The public comment process was used to assist in eliciting information on the impact of the proposed changes to competition in the industry, mainly in relation to manufacturers and suppliers of heavy vehicles and braking system components. However, no further information was provided by the relevant parties.

## **4.6 Effect on Small Business**

The existing regulations affect owners and operators of heavy vehicles. The proposed regulations would affect owners and operators who are contemplating the purchase of new heavy vehicles, suppliers of heavy vehicles, suppliers of components for heavy vehicle braking, repairers of heavy vehicles, engineers who provide design and certification services and state and territory governments. These organisations could be classified into three groups, ie. owner/operators, repairers and engineers and some of them could be considered small businesses on the basis that they generate revenues of less than \$5million.

Repairers are required to keep abreast of the latest developments in technology and this is done through service bulletins and workshop manuals both of which are available from vehicle manufacturers. The owner/operators of heavy vehicles would be unlikely to face any negative impacts, as the operation and maintenance requirements would remain the same. Engineers like repairers are required to keep abreast of the latest developments in technology as part of the continuing professional development demanded by their professional associations.

Those engineers who provide testing and certification services would be unlikely to incur any additional expenditure for testing equipment or facilities, as testing requirements would be unlikely to change. The public comment process was used to assist in eliciting the impacts of the proposed changes on small business. However, no further information was provided by the relevant parties.

## **5. Consultation**

The development of new ADRs and review of existing ADRs is the joint responsibility of the Australian Department of Transport and Regional Services and the National Transport Commission. It is carried out in consultation with State and Territory transport agencies, industry associations and road user groups. Consultation is carried out in four stages as directed by section 8 of the *Motor Vehicle Standards Act 1989*:

- setting up a working group to review existing performance requirements and/or develop new performance requirements;
- review by the Technical Liaison Group (TLG);
- public comment;
- review by the relevant state and territory authorities, represented by the Transport Agencies Chief Executives (TACE), with final approval by the Australian Transport Council (ATC).

The first three of these stages have been completed and stage four is expected to be completed towards the end of 2006.

## **5.1 Single Issue Working Group for Heavy Vehicles**

As part of the Review of the Australian Design Rules, a number of single issue working groups have been established. One such group, the Heavy Vehicle Working Group is charged with the responsibility for reviewing harmonisation of design standards for heavy vehicles.

An Issues Paper on reforms required to ADRs 35 and 38 was presented to a Heavy Vehicle Working Group in 2001. Subsequently meetings were held to finalise the content of reform required which would progressively harmonise ADR 35 and 38 with ECE R 13. International harmonisation of ADR 35 and 38 requirements it was felt should be implemented in stages rather than in a single stage to reduce any negative impact on Australian and USA sourced product. All working group members felt that a staged approach would not only help to reduce the cost of compliance in the long run but also assist manufacturers to tap into overseas markets.

During those discussions, the timetable for complete harmonisation with ECE R 13 was not addressed. However, it was agreed that Option 3 – Retain ADRs 35 and 38 but offer unconditional acceptance of ECE R 13, would assist the longer term plan towards full (and exclusive) harmonisation with ECE R 13 (Option 2).

## **5.2 Consultation with Industry Associations**

The project to harmonise ADRs 35 and 38 requirements with ECE R 13 has attracted considerable interest from vehicle manufacturers and importers.

As described earlier there has been on-going consultation with stakeholders through the Heavy Vehicles Single Issue Working Group for developing, drafting and amending the content of the proposals. In addition to liaising in the Technical Liaison Group which includes interest groups such as the Federal Chamber of Automotive Industries, Australian Road Transport Suppliers Association, Truck Industry Council and the Australian Automobile Association, there have been meetings with individual members of these interest groups from time to time.

### **5.3 Public Comment**

The proposal was circulated for 90 days public comment from September 2004 to November 2004. Key industry associations such as Australian Trucking Association, Commercial Vehicle Industry Association of Australia, Federal Chamber of Automotive Industries and the Truck Industry Council supported Option 3, the recommended option. The peak consumer group the Australian Automobile Association also supported option 3. Support for option 3 was also obtained from a consortium of truck operators, truck assemblers and component suppliers led by the Australian Trucking Association the peak body representing a large number of economic interests across the trucking industry. There was no support for the other options.

Despite overwhelming support for option 3 industry groups had some concerns and they approached these concerns jointly with the ATA consolidating comments on behalf of the CVIAA, TIC and ARTSA. These are listed in Appendix 3. The main concerns relate to use of ADR 35/01 and ADR 38/02 as acceptable prior rules, reduction of service brake application times, flexibility on ratio of brake force to axle load as long as retardations sufficient to cause wheel-lock are met, reducing service brake application times from 0.6 seconds to 0.4 seconds, removal of additional voltage labelling requirements for ABS trailer plugs and additional brake reaction times for long combination vehicles to be aligned with Australian Vehicle Standards requirements and incorporated in ADR 64/0X.

A meeting held with industry groups to resolve concerns raised during the public comment stage resulted in unanimous support for the final form of ADRs 35 and 38 and their submission to the Transport Agencies Chief Executives (TACE). The final drafts were completed and submitted in June 2006.

### **5.4 Review by state and territory authorities**

The submission to TACE was further discussed during a routine meeting of the Technical Liaison Group (TLG) in June 2006. The group identified some minor changes to the draft ADRs that would allow them to be applied more efficiently, without changing the basic intent. The most significant of these was to maintain the agreed brake reaction times for long combination vehicles in ADR 35/XX and 38/XX, rather than transfer them to ADR 64/.. and 63/....Most of the changes were incorporated, while a remaining number were incorporated following a special meeting of a sub-group to the Heavy Vehicle Working Group in July 2006. As TACE members were represented at TLG, it was possible for TACE to support the proposal in the interim, the agreed amendments being recorded in the TLG minutes for inclusion in the proposal to go to the Australian Transport Council (ATC).

Approval from the ATC for the revisions to ADRs 35 and 38 will enable the Minister for Transport and Regional Services to issue a determination for ADR 35/02 and 38/03.

## **6. Conclusion and Recommended Option**

This Regulation Impact Statement has considered both regulatory and non-regulatory options for heavy vehicle braking systems. This Statement has demonstrated that market based options are unable to meet the desired objectives of government in reducing road trauma arising from heavy vehicle crashes with road users. Option 3 was the preferred option.

Option 3 was generally supported during public comment. Industry associations supported Option 3 pending future work being done via a joint DOTARS/NTC study of ABS/ECE R13 harmonisation.

## **7. Implementation and Review**

### **7.1 Implementation**

Agreed requirements can be given force in law by amending Australian Design Rules 35 and 38 under section 7 of the Motor Vehicle Standards Act 1989. For new vehicles, the requirements would be implemented under the type approval arrangements for new vehicles administered by the Department of Transport and Regional Services, Vehicle Safety Standards Unit. For in-service vehicles, the National Road Transport Commission would adopt heavy vehicle braking performance requirements in the Australian Vehicle Safety Regulations as is the current practice for in-service vehicles. Penalties for non-compliance with the requirements of Motor Vehicle Standards Act 1989 are 120 penalty points for each offence which translates into \$12,000.

Revising existing ADRs 35 and 38 and issuing revised design rules ADR 35/02 and 38/03 would complete the first phase of the project. In the second phase administrative arrangements would be developed for implementing the revised requirements through the Road Vehicle Certification System.

### **7.2 Review**

Following the completion of the second phase, the revised rule would be subject to DOTARS's regular program of review and revision, which is based on the changing environment in which vehicle safety standards are developed and applied. This program includes monitoring overseas developments and regular consultation with DOTARS's key constituents to identify implementation issues or changes in factors affecting existing vehicle safety standards.

## References

Alross Pty Ltd (2001), *Regulation Impact Statement for the Review of ADR 35/01 Commercial vehicle Brakes and ADR 38/02 Trailer Brakes*, Canberra (unpublished report)

Australian Trucking Association (2003), *Heavy Vehicle Braking Code of Practice*

Bureau of Transport Economics (2000) *Road Crash Costs in Australia*, Report 102, Canberra

Commonwealth Office of Regulation Review (1998), *A Guide to Regulation (second edition)*, Canberra

Council of Australian Governments (1997), *Principles and Guidelines for National Standard Setting and regulatory Action by Ministerial Councils and Standard-Setting Bodies*, Canberra

Department of Transport and Regional Services (2002), *National Standards for Road Vehicles and Vehicle Components, Australian Design Rules for Motor Vehicles and Trailers*, Canberra

Federal Chamber of Automotive Industries (2003), *Vehicle Facts and Monthly Statistics*, Melbourne

Sweatman, P.F., Ogden, K.W., Haworth, N., Corben, Rechnitzer, G., (1995), *Heavy Vehicle Crashes in Urban Areas*, Federal Office of Road Safety, Canberra

# Appendices

## Appendix 1: Some Issues Relating to Harmonisation with ECE R 13

There is a need to be specific about the context of 'harmonisation'. It is likely that unique Australian requirements would preclude Australia from moving to mandate ECE R13 certification. There are opportunities to improve 'harmonisation' of ADR 35 with ECE R13 but there are several issues to be addressed.

### Technical and physical compatibility of ADR and ECE

The braking systems of vehicles certified to ECE R13 would be generally compatible in the field with the braking systems of vehicles certified to ADR 35 and ADR 38.

There are three main areas of concern:

1. 12V power supply for trailer ABS.
2. Response and release time requirements.
3. Trailer Parking

There are also issues relating to rear air line couplings for trailers used in multiple trailer applications. The physical provision of the coupling could be addressed as a requirement for trailers to be used in such applications. The question of the treatment of the rear trailer coupling in measuring response time could also be addressed in a similar way. This is a relatively minor issue as it is expected that there would be very few trailers certified to ECE R13.

The 12V power supply requirement for trailer ABS has no equivalent ECE requirement. However it will continue to be a requirement for powered tow vehicles in Australia.

The response and release time issues are difficult to quantify. There are two issues;

1. is there any justification for regulating release times?
2. appropriate performance requirements for response and release times.

There seems to be some doubt as to the basis for regulating release times. The general view is that it may be an issue for long combination vehicles e.g. B doubles, road trains. ECE does not regulate this while FMVSS does. There may be a case for some research and analysis to determine if a valid case exists for regulating release times and/or to establish the basis for the recent relaxation of release times in FMVSS.

There is a subsidiary issue of the differences in test equipment for ADRs and ECE R13. Some research may be necessary to establish the relationship between test measurements using the different test set-ups.

Given that release times are currently regulated in the ADRs, a short term strategy could be to relax the existing response and release times in ADR 35/38 to match current FMVSS requirements, which would encompass ECE response time requirement and provide benefits to vehicle and trailer manufacturers.

A point worth noting is that the regulation of operate and release times provides a useful in-service test to determine if the braking system components are in reasonable working order. This may provide some basis to continue to regulate release times, but not at the current levels.

It could be argued that, for ABS equipped powered vehicles, the regulation of release times is redundant. This argument can be used to support a proposal that certification to ECE R13 could be allowed as technically equivalent to ADR 35.

There is also a performance issue in that ECE R13 trailers would have significantly less braking effort than ADR 38 trailers. It would be difficult to persuade operators to support a move to accept ECE R13 trailers. Again there might be a case for further study to assess on road braking performance of ECE R13 and ADR 38 trailers.

The trailer parking issue derives from the interaction between ECE certified tow vehicles and ADR 38 trailers. The outstanding problem is ‘compounding’ which it has been suggested could overload components in the trailer brake units. There has been only one report of problems, and analysis suggests that the relevant components would be designed to withstand a degree of ‘compounding’. Further work is necessary to clarify this issue.

#### *Estimated Costs*

Harmonising with ECE R13 would impose significant additional costs (testing and components) on non-ECE sourced vehicles for very little if any improvement in safety.

Allowing ECE R13 as an alternative technical standard would allow some costs savings (testing and components) for some ECE sourced powered vehicles. For trailers, ECE R13 would impose additional costs and result in vehicles with lower trailer braking efforts. It would be unlikely that trailers would be certified to ECE R13.

#### *Expected Benefits*

There is insufficient data to quantify the possible modest benefits of moving to ECE R13 requirements. In terms of crash benefits, it would be necessary to save around 20 lives per year to justify the cost of mandating the technical requirements of ECE R13 (Allros 2001). There is no suggestion of safety benefits of this magnitude.

#### *Load Sensing*

There appears to be a case for allowing some trailers fitted with load sensing equipment to be used with tow vehicles not fitted with load sensing equipment. Current ADR requirements require placarding and disabling equipment on the trailer.

## **Appendix 2: Members of the Heavy Vehicle Working Group**

Australian Trucking Association  
Australian Road Transport Suppliers Association  
Commercial Vehicle Industry Association of Australia  
Federal Chamber of Automotive Industries  
Roads and Traffic Authority, New South Wales  
Queensland Transport  
Vicroads  
Department of Transport, Western Australia  
Department of Transport, South Australia  
Peter Sweatman, Road User Research Pty Ltd - Expert

### Appendix 3: Summary of Public Comments

| ADR 35/0X                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ADR Clause                        | Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Received from       | DOTARS Comment                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Clause 2.1<br>Applicability Table | Amend to accept 35/01 as prior rule; and Amend the applicability date reference to read “The applicability date should be the date of gazettal for this design rule.                                                                                                                                                                                                                                                                                                                                                                                                            | ATA<br>CVIAA<br>TIC | This is not possible as there are more stringent requirements for vehicles fitted with load proportioning systems and hence there can not be an option to use the earlier rule. However, industry has indicated that this is no longer an issue as (a) the applicability date will correspond to required certification for new emission regulations and (b) DOTARS has agreed to design in a rollover certification mechanism for existing test results. |
| Clause 4<br>Design Requirements   | Delete all after clause ...7.18.1 Insert - clause ... 7.13.1 <i>must be between the upper and lower boundaries of Figure 1 for each value of ‘Control Signal’ used. Additionally, if a vehicle is equipped with load sensing and equipped to tow a trailer the ‘Established Retardation Coefficient’ measured using the general test conditions of part 6 and the particular test conditions of clause 7.13.1 but with the vehicle at “lightly Loaded Test Mass 35/...” must be between the upper and lower boundaries of Figure 2 for each value of ‘Control Signal’ used.</i> | ATA<br>CVIAA<br>TIC | Corrects a drafting error and actions consensus viewpoints reached at an industry working group meeting for heavy vehicle braking.                                                                                                                                                                                                                                                                                                                        |
| 4.1.10.2                          | Delete – clause 7.18.2 Insert – clause 7.13.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     | Corrects drafting error                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Clause 5<br>5.2                   | Performance requirements<br>Insert after items 11-12, 13; Delete - and (optionally) item 13 (if not conducted with items 6-10); Insert - <i>may be conducted at any time;</i>                                                                                                                                                                                                                                                                                                                                                                                                   |                     | Agree as tests have different site requirements, varying load conditions and no mutual dependency.                                                                                                                                                                                                                                                                                                                                                        |

| ADR Clause | Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Received from       | DOTARS Comment                                                                                                                                                 |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clause 7   | <u>Particular Test Conditions</u><br>Delete clause 7.12.6<br>rename 7.12.7 to 7.12.6 and add “when the service brake ‘Control’ is operated through a full working stroke by an operator seated in the normal driving position, the pressure measured at the extremity of a pipe 2.5 m long with an internal diameter of 13 mm which must be joined to the ‘Coupling Head’ of the ‘Control Line 35/...’ must reach 420 kPa within 400 milliseconds of the instant the ‘Control’ leaves the ‘Initial Brake Control Location’.”                                                                                                                                                                                                            | ATA<br>CVIAA<br>TIC | Agree                                                                                                                                                          |
| 7.12.8.2   | Delete clause                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ATA, CVIAA, TIC     | Agree as release times are deleted. The test is less stringent than AVSR Part 9 Division 4 Rule 139 and does not provide assurance that it will meet Rule 139. |
| 7.13.1     | Industry suggests there are potential implications of ABS and load sensing impacting on the current in-service response times for medium/large combinations. The fitment of “safety” items such as ABS and Load sensing will extend response times for combinations beyond the current in-service requirements.<br>Industry wants assurance that the states do not implement/enact additional legislation that may result in a more stringent in-service requirement/s. Industry advises that AVSR’s require immediate amendment along with amendment of in-service gazettes. The industry ADR 35/38 working group recommends including these special in-service requirements (for B.doubles and Road Trains) as an appendix to ADR 64. | ATA<br>CVIAA<br>TIC | Agree<br>AVSR requirements for prime movers for B-Doubles and road trains will be included as an appendix in ADR 64.                                           |
| 7.13.3     | at end of clause Delete 7.17.2 to 7.17.5 - Insert 7.12.2 to 7.12.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                     | Agree, typographical error                                                                                                                                     |

| ADR Clause      | Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Received from | DOTARS Comment                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clause 8<br>8.2 | <u>Alternative Standards</u><br>Requirement for additional voltage labelling of ABS trailer plugs is unnecessary as 12v and 24 v plugs cannot be interconnected.                                                                                                                                                                                                                                                                                                                                                                                                             | TIC<br>CVIAA  | Agree to delete 8.2                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Clause 8        | <u>Alternative Standards</u><br>Multi trailer combinations (Road trains; B doubles and B.triples): additional brake reaction time requirements are to be included in the revised ADR 64/0X and are to be aligned with revised AVSR requirements that reflect more realistic time limits for the prime mover tested in isolation. The current AVSR Part 9 Division 4 Rule 139 application and release time tests for a B-double or road train prime mover are unrealistic and are not met by many prime movers which deliver satisfactory performance when tested to Rule 140 | ATA           | Amendments to the AVSR are managed by the NTC in association with states, territories governments and the Australian government.<br><br>DOTARS will advise the NTC on industry position relating to AVSR Rules 139 and 140.<br><br>Agreed ADR brake reaction time requirements for prime movers used for B-Doubles and road trains will be maintained in ADR 35/XX and not transferred to ADR 64/XX following a TLG decision in June 2006. |

| <b>ADR 38/0X</b>                                                                         |                                                                                                                                                                                                                                                   |                      |                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ADR Clause</b>                                                                        | <b>Comment</b>                                                                                                                                                                                                                                    | <b>Received from</b> | <b>DOTARS Comment</b>                                                                                                                                                                                                                                                                                                                        |
| Clause 2.1<br>Applicability Table                                                        | Amend to accept 38/02 as prior rule; Amend the applicability date reference to read “The applicability date should be the date of gazettal for this design rule.                                                                                  | ATA<br>CVIAA<br>TIC  | This is not possible as there are more stringent requirements for vehicles fitted with load proportioning systems and hence there can not be an option to use the earlier rule. However, industry has indicated that this is no longer an issue as the draft proposal includes a rollover certification mechanism for existing test results. |
| <u>Clause 5 General design requirements for trailers over 4.5 tonnes ‘ATM’</u><br>5.14.2 | amend to read - <i>Systems that utilize spring brakes for emergency and parking brakes are deemed to comply with this requirement if the parking/emergency brakes do not release until a service tank pressure of 0.435E (283kPa) is reached.</i> | ATA<br>CVIAA<br>TIC  | Agree                                                                                                                                                                                                                                                                                                                                        |
| <u>Clause 6 Service Brake System</u><br>6.3.1                                            | Delete 0.6 seconds; - Insert <i>0.4 seconds</i> ;                                                                                                                                                                                                 | ATA<br>CVIAA<br>TIC  | It is desirable that the trailer braking should precede that of the towing vehicle. 0.4 seconds is considered achievable and aligns numerically with ECR R13, although test procedures differ slightly.                                                                                                                                      |

| <b>ADR 38/0X</b>                                        |                                                                                                                                                                                      |                      |                                                                                                                                                                                                                                                |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ADR Clause</b>                                       | <b>Comment</b>                                                                                                                                                                       | <b>Received from</b> | <b>DOTARS Comment</b>                                                                                                                                                                                                                          |
| 6.3.2                                                   | Delete 0.5 seconds; - Insert <i>0.4 seconds</i> :                                                                                                                                    | ATA<br>CVIAA<br>TIC  | According to manufacturers 0.4 seconds is considered achievable and would assist in meeting AVSR multi-combination vehicle requirements                                                                                                        |
| 6.6.4                                                   | Delete to allow in-service maintenance of the system;<br>Insert “ <i>as to the calibration settings in laden and unladen modes</i> ”;                                                |                      | More clearly defines data to be supplied. “In-service maintenance” could be construed as requiring information usually supplied in repair and maintenance service manuals                                                                      |
|                                                         |                                                                                                                                                                                      |                      |                                                                                                                                                                                                                                                |
| <u>Clause 7</u><br><u>Emergency brake system</u><br>7.4 | Delete “in a inconspicuous position”;                                                                                                                                                | ATA<br>CVIAA<br>TIC  | Agree                                                                                                                                                                                                                                          |
| 7.4.1                                                   | Add words so that clause reads: If the auxiliary device utilises stored energy then, <i>with the energy storage devices initially charged to 1.0 E</i> , the release system<br>..... |                      | The revised clause permits “yard release” valves to be considered as auxiliary release mechanisms. These are placed where accessible to fork lift or yard truck drivers and should not be required to be relocated to inconspicuous positions. |

| ADR 38/0X                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                                                                          |
|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------------------------------------------------------------|
| ADR Clause                                                          | Comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Received from       | DOTARS Comment                                                           |
| <u>Clause 14</u><br><u>Parking brake effectiveness test</u><br>14.2 | Delete Clause!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                     |                                                                          |
| <u>Clause 15</u><br><u>Time response measurement</u><br>15.4.1      | Delete “or the initial pressure at the output of brake control valve (V)” at end of clause. Insert after ..... <i>storage reservoir and the control valve (V), “<b>or the initial pressure rise at the output of brake control valve (V)</b>”</i> so that clause 15.4 reads: The test rig described in Figure 3 must be calibrated by adjustment of the orifice (O) such that; upon application of the brake control valve (V) with the storage reservoir (R1) charged to 1.0 ‘E’ (650 kPa), the time between the initial pressure drop measured between the storage reservoir and the control valve (V), or the initial pressure rise at the output of brake control valve (V), and the pressure at the end of the calibrating vessel (R2) increasing to 0.65 ‘E’ (420 kPa), is between 0.18 and 0.22 seconds. | ATA<br>CVIAA<br>TIC | Corrects drafting error which incorrectly located the additional section |
| 15.4.2                                                              | Delete Clause!                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                     | Clause is redundant since release time testing is no longer required.    |

| <b>ADR 38/0X</b>                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                      |                                           |
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| <b>ADR Clause</b>                                            | <b>Comment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Received from</b> | <b>DOTARS Comment</b>                     |
| 15.7                                                         | Amend clause to read: The brake actuation time must be taken from when the pressure level, measured between the storage reservoir and the control valve, initially drops or the pressure level at the output of brake control valve (V) initially rises, to when the pressure in the least favoured brake actuator reaches 0.65 'E' (420 kPa).                                                                                                                                                                                                                                                                          | ATA<br>CVIAA<br>TIC  | Aligns the clause with the revised 15.4.1 |
| <u>Clause 18 Emergency brake calculation</u><br>18.3         | <p>Delete entire clause</p> <p>The acceptance of emergency brake lockup in clause 13.3 removes the requirement for emergency skid limit testing and certification of a “Ratio of brake force to static axle load” limit figure.</p> <p>A search of emergency skid limit test data submitted to DOTARS on page 4 of 4 of the MVCS CB38 Annex G forms reveals no instances where ERC at wheel lockup was below 0.18 ERC. The concept of “Emergency Skid Limit Ratio” has therefore been shown by past testing to have been an unnecessary precaution and can now safely be eliminated for brake reactive suspensions.</p> | ATA<br>CVIAA<br>TIC  | Agree                                     |
| <u>Clause 21 Specification of brake components</u><br>21.3.6 | Delete – “ <i>below or</i> ” in 4 <sup>th</sup> line ..... final speed as calculated <i>below or</i> by clause                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ATA<br>CVIAA<br>TIC  | Agree                                     |

| <b>ADR 38/0X</b>                               |                                                                                                                                                                                                                                                                                                                                                                                                                             |                      |                                                                                                                                                                                                                                                                                                                                                                                           |
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| <b>ADR Clause</b>                              | <b>Comment</b>                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Received from</b> | <b>DOTARS Comment</b>                                                                                                                                                                                                                                                                                                                                                                     |
| 21.4.1.1                                       | Delete – latter part of clause .... <i>“The ratio of brake force to static ‘Axle Load’ at each ‘Axle’ must not exceed that specified in the data for the suspension as ‘Approved’ under the provision of clause 21.4. Alternatively the ratio may be exceeded provided the suspension has been shown by road test to meet the requirements as specified in clause 13.3 for retardations sufficient to cause wheel-lock”</i> |                      | Agree<br>Text is redundant since emergency skid limit ratio figure at wheel lockup should no longer be required.<br><br>21.4.1.1 is a clause providing information for preparation of test specimen for service skid limit tests. The bold text addition has no place in this clause. Further, it refers to data “approved under the provisions of 21.4 when 21.4 has no such provisions. |
| 21.4.2.1                                       | DELETE – latter part of clause .... <i>“The ratio of brake force to static ‘Axle Load’ at each ‘Axle’ must not exceed that specified in the data for the suspension as ‘Approved’ under the provision of clause 21.4. Alternatively the ratio may be exceeded provided the suspension has been shown by road test to meet the requirements as specified in clause 13.3 for retardations sufficient to cause wheel-lock”</i> |                      | Agree<br>Text is redundant and should be deleted, for reasons given in response to 21.4.1.1                                                                                                                                                                                                                                                                                               |
| <u>Clause 22 Alternative Standards</u><br>22.1 | Delete:<br>Trailers complying with the technical requirements of ECE 13/05 to 13/09 will be taken as meeting the requirements of this rule so long as the requirements of clauses 6.3 and 6.7 are met.                                                                                                                                                                                                                      |                      | The additional requirements of antilock, springbrakes and response times for road train trailers have been agreed at the Single Issue Working Group level                                                                                                                                                                                                                                 |

| <b>ADR 38/0X</b>                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                      |                       |
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| <b>ADR Clause</b>                                                                                                                                                                                                                                      | <b>Comment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Received from</b> | <b>DOTARS Comment</b> |
| ADR 38/0X must mandate spring brakes on trailers!                                                                                                                                                                                                      | The industry ADR 35/38 working group endorses the principle of alternative standards. However, because prior parking brake standards ensured that trailer brakes were “activated” when the prime mover is parked, the industry working group supports concept of retaining only spring brake actuation on trailers when towing vehicle is parked. It is important that ADR 35/0X retains a requirement that when the towing vehicle is parked, the towed vehicle is parked. |                      | Agree                 |
| <b>TABLE 1:</b><br>Single (1) axle “D” must also include 10.0 tonnes (for RFS suspensions)<br>Tandem (2) axle “D” must also include 17.0 tonnes (for RFS suspensions)<br><br>Tri axle (3) axle “D” must also include 22.5 tonnes (for RFS suspensions) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                      | Agree                 |
| APPENDIX 1 – add new clauses as follows:                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                      | Agree                 |

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
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| <p>3.2.2.1</p> | <p>For trailers equipped to tow another trailer – 12 volt system:</p> <p>Pin 1 +ve high current trailer solenoid valve supply, 10 amps minimum rated capacity 15 amps peak capacity</p> <p>Pin 2 +ve low current trailer electronic unit supply, 4 amps minimum rated capacity</p> <p>Pin 3 -ve low current trailer electronic unit supply, 6 amps minimum rated capacity</p> <p>Pin 4 -ve high current trailer solenoid valve supply, 10 amps minimum rated capacity 15 amps peak capacity</p> <p>Pin 5 trailer antilock failure, switched to -ve (eg pin 3 or pin 4) upon fault detection, 2 amps minimum rated capacity</p> <p>3.2.2.2</p> <p>For vehicles equipped to tow another trailer - 24 volt systems:</p> <p>Pin 1 +ve high current trailer solenoid valve supply, 10 amps minimum rated capacity 15 amps peak capacity</p> <p>Pin 2 +ve low current trailer electronic unit supply, 4 amps minimum rated capacity</p> <p>Pin 3 -ve low current trailer electronic unit supply, 6 amps minimum rated capacity</p> <p>Pin 4 -ve high current trailer solenoid valve supply, 10 amps minimum rated capacity 15 amps peak capacity</p> <p>Pin 5 trailer antilock failure, switched to -ve (eg pin 3 or pin 4) upon fault detection, 2 amps minimum rated capacity</p> |  |
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