Vehicle Safety Standards
Department of Transport and Regional Services

Australian Design Rules Review

Regulation Impact Statement

for

ADR 14 – Rear Vision Mirrors

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Contents

1. Introduction

Rear vision mirrors on road vehicles are primarily a protective safety device providing drivers with an unobscured view of the road environment (behind the driver) without taking ones eyes off the road ahead. Australian Design Rule (ADR) No. 14 – Rear Vision Mirrors provides mandatory requirements for rear vision mirrors to provide minimum levels of visibility and a degree of protection to occupants and pedestrians in the event of a crash or accidental contact.

This Regulation Impact Statement has been produced by the Vehicle Safety Standards Branch (VSS) of the Department of Transport and Regional Services (DOTARS) as a part of the continuous review of all ADRs to assure their effectiveness and efficiency. The following sections describe the problem, explore a number of regulatory and non regulatory options and present the costs and benefits of each. Finally the various options are compared to determine the most suitable solution.

2. Rear Vision Mirror Standards for Prevention and Protection

2.1. Rear Vision Mirrors and Road Trauma

Rear vision mirrors are preventative safety devices. They are designed to give the driver a more complete view of the road environment than would be possible relying only on the field of vision provided by the human eye. A combination of internal (usually centreline) and external (driver side and sometimes passenger side) rear vision mirrors allows a driver to simultaneously be aware of the road environment behind them while remaining aware of the forward environment through the windscreen.

Internal vision mirrors can also be the cause of injury in a crash and must be designed in such a way as to collapse or break if impacted by the occupants without causing undue harm. Poorly designed external mirrors may also cause harm to pedestrians or anyone else outside the vehicle (sharp edges can cause cuts or impaling).

ADR 14 provides mandatory requirements for internal and external rear vision mirrors. This includes minimum size and shape, minimum fields of vision mirrors must provide and requirements to mitigate harm to occupants and pedestrians in a crash.

2.2. Chain of Events

A concept which is useful in estimating the effect of countermeasures to reduce road trauma is the fact that any road crash and its outcome (property damage, injury or death) is the result of a chain of events; if any one link in the chain can be broken, the outcome may be different. Rear vision mirrors are a vital in helping to avoid crashes.

2.3. ADR Packages

Vision countermeasures reduce the chance of a crash by enhancing the visibility of the road environment. Some vision countermeasures such as windscreens also offer a protective safety feature by preventing or reducing occupant ejection and facial or eye injuries in the event of crash. Rear vision mirrors are mainly preventative measures but also offer protective safety features through the use of suitable construction materials and shape.

The benefits arising from a package of countermeasures include reduction in the probability of a car crash and reduction in the extent of injury or death in the event of a car crash. Besides visibility, there are packages relating to occupant protection, traction and structures, all of which interact in a multiplicative manner to produce a far greater reduction in risk than would be produced by any individual package. It is the strong covariance between these packages which reduces the overall risk.

The removal of any one package or one component of a package may have a greater negative flow on effect than can be predicted within the scope of the RIS for each ADR. Conversely, other RIS have shown that some ADRs, or entire packages can be removed without negative impact. A number of RIS have or are being prepared on the subject of vision. Each RIS considers any potential impact it may have on other ADRs in the vision package.

- a RIS on ADR No 8, Safety Glazing Material;
- a RIS on ADR No 12, Glare reduction in the field of view;
- this RIS on ADR No. 14, Rear Vision Mirrors;
- a RIS on ADR No 15, Demisting of windscreen;
- a RIS on ADR No. 16, Windscreen wipers and washers; and
- a RIS on ADR No. 18, Instrumentation

The RIS for ADR 12, 15 and 16 have been finalised, resulting in the deletion of these rules as there is a high expectation that the market will exert a positive influence without continued government intervention. ADR 18 has also been finalised, resulting in the issue of a revised ADR.

2.4. The Problem

At its simplest, the problem can be defined as providing drivers with an adequate awareness of the road environment when in a vehicle. In order to do this a rear vision mirror is required to provide a field of vision and image quality so that drivers can be aware of the road and surroundings behind them, allowing effective decision making for safe driving.

The following sections present several of the problems in more detail. Section 2.5 will examine wether government intervention is necessary to overcome these problems and section 4 will provide several alternate solutions.

2.4.1. Information Asymmetry

Individual consumers of new and existing vehicles would be able to exercise their safety preferences effectively if they could assess the safety features offered by rear vision mirrors. Unfortunately, the typical consumer does not possess the knowledge to make a comparative evaluation of principal safety devices in vehicles.

The key characteristics of a rear vision mirror include positioning of the mirror, adjustment range, stability in motion, field of view, optical qualities and harm minimisation when contacted by occupants (in crashes) and others (accidental contact). It would be unrealistic to expect that such issues could be presented in an information package that would generate sufficient public interest to serve as a substitute for regulation.

The likely lack of publicly accessible rear vision mirror information and consumer inexperience could lead to consumers making poor (unsafe) decisions if vehicles with inadequate rear vision mirrors were available on the market.

2.4.2. Externalities and the Cost to the Community

The use of "unsafe" rear vision mirrors (or no rear vision mirrors at all) is likely to change the cost to the community. Any potential reduction in the level of safety provided by rear vision mirrors may result in an increase in the cost of crashes, either through more crashes or more severe crashes.

In the current highly regulated environment, road trauma costs the Australian community $7.0 billion in terms of health care per year, with the total cost of road crashes being $15 billion per year (Road Crash Costs in Australia 2000, p. xi). There are several other costs in terms of property damage and inconvenience to the community which have not been measured.

The spill over costs driven by externalities that could arise from manufacturers introducing less than optimally safe vehicles and poor selection of vehicles by consumers could lead to increasing expenditures on hospitalisation, a loss of quality of life, property damage, rehabilitation and others. Most of these costs would be borne by the community, rather than solely by the manufacturer or individuals who knowingly or unknowingly choose a vehicle with reduced safety features.

2.4.3. Efficiency and Effectiveness

This RIS is part of a review of all ADRs to ensure that they are still effective and efficient. The latest version of this ADR – 14/02 was brought into force in 1992. As in other areas of industry, technology, methodologies and consumer expectations in the automotive industry have changed over time and these changes need to be considered when assessing the need for government intervention.

2.5. The Need For Government Intervention

Section 2.4 has indicated that there are two main issues related to the potential need for government intervention in relation to rear vision mirrors. The first relates to ensuring the safety of all road users and the second to ensuring that any measures are not unnecessarily complicated or harmful to business, government or the community. This section will consider each issue individually to determine whether there is a necessity for government intervention.

2.5.1. Information Asymmetry and Consumer Choice

As discussed in section 2.4.1 it is difficult to determine by casual inspection whether a rear vision mirror offers any particular safety benefits. The tests required to determine field of vision and reflectivity are complex and most consumers would be unable to conduct these tests themselves. Thus in a market with no form of control, consumers could easily make poor choices (with or without knowingly doing so) that would increase the risk of crashes – a cost that must then be borne by the community.

2.5.2. Market Pressures

The car market is extremely competitive and seemingly small changes can lead to big savings for manufactures and any small edge that can be gained over other manufactures can lead to an increase in sales. This relates to rear vision mirrors in four ways: aesthetics, aerodynamics and fuel efficiency, consumer perception and risk takers.

It is reasonable to expect manufactures will provide what the market demands. It is conceivable that a segment of the market would want cars with small mirrors and shapes that conform to certain aesthetics standards (particularly sports models) or not have any rear vision mirrors at all. This would most likely apply to the external mirrors. If there is a viable market it is logical that some manufacturer will supply to that market. Vehicles without rear vision mirrors would limit the driver's awareness of the road environment and most likely cause an increase the number accidents.

However, it is expected that cases of manufactures supplying vehicles without rear vision mirrors would be small. The majority of consumers would expect rear vision mirrors on cars and manufactures would continue to provide mirrors as a basic safety device. Thus the concern becomes not whether mirrors would be present or not, but whether they would be effective.

Mirror size is the issue most likely to be affected by withdrawal of the ADR as it currently exercises some control by specifying a minimum field of vision. Other competing influences include styling and fuel efficiency. Manufacturers are under increasing pressure to reduce fuel consumption and minimising the size or eliminating protuberances such as external rear vision mirrors, to minimise aerodynamic drag, could be seen as a means to obtain marginal improvements. As noted previously, in such a competitive market, even a small saving in fuel could lead to an increase in sales of models that offer such benefits.

This potential trade-off of mirror safety and fuel efficiency could be further exacerbated by the current prominence of environmental issues. For example, the Government recently introduced a new fuel efficiency labelling ADR and released the Green Vehicle Guide (www.greenvehicleguide.gov.au) – a searchable website that provides a rating system for vehicles based on air pollution, greenhouse related emissions and fuel efficiency. Such environmental initiatives, although beneficial, could inadvertently lead manufactures and consumers to believe that fuel efficiency is more important than mirror safety.

An environment with no standards for rear vision mirrors could also create a demand by risk takers (or those who do not realise the lower cost vehicles may pose a greater risk) for lower cost vehicles with very few safety features. Although it is perfectly rational for consumers to maximise their private benefits through such a trade off, the social costs of such tradeoffs are likely to result in a net cost to the community.

2.5.3. Eye Injuries

Prior to the preparation of this RIS, DOTARS had received correspondence from two ophthalmologists indicating their concern regarding eye injuries caused by small flying shards of mirror glass that had spalled off the surfaces of external mirrors during crashes. An article in the Australian and New Zealand Journal of Ophthalmology has described three cases in Australia where penetrating ocular injuries were caused by shards of broken

rear vision mirror. The report states that further research is needed to determine if measures need to be taken to reduce the chance of such injuries (Thompson, C. et al, 1998).

The current ADR 14 does not include impact testing and one possible countermeasure would be to amend the ADR to include such a test. One of the options to be considered (see section 4) is to adopt a standard that incorporates an impact test and this should result in the lowering of the risk of ocular penetration injuries but unlikely to eliminate it completely. The mirror must survive an impact test as well as a bending test without breaking or if it breaks, the fragments must adhere to its protective housing or a surface firmly attached to the protective housing. The mirror is also allowed to break if it is made of safety glass that by nature breaks into regular shaped pieces of appropriate size and therefore less likely to pose an ocular penetration hazard.

2.5.4. Government Intervention

The bulk of section 2.5 has indicated that there is no economic, technical or consumer oriented measures to ensure a minimum level of safety with regards to rear vision mirrors. In addition, the current community awareness of environmental issues could actually have a negative effect on the provision of suitable rear vision mirrors. Even though it is unlikely that both manufacturers and consumers would produce or purchase vehicles without rear vision mirrors, there is no mechanism to prevent the use of inadequate rear vision mirrors that could have a negative impact on safety and thus the cost to the community.

Some form of Government intervention is necessary in order to ensure that rear vision mirrors in vehicles provide a minimum acceptable level of safety to all road users at a minimal cost to consumers, industry, government and the community. The following sections of this RIS will examine regulatory and non-regulatory options in more detail. The comparisons presented in section 5 are of a qualitative nature, as data for a quantitative analysis is unavailable (this will be discussed further in section 5).

3. Government Objectives

3.1. Objectives

3.1.1. Safety

The objective of the Australian Government is to ensure an adequate level of vehicle safety for all road users. With respect to this ADR, to ensure that rear vision mirrors provide a minimum field of view and image quality and minimum harm to road users in the event of a crash.

3.1.2. Effectiveness and Efficiency

The Australian Government has undertaken to review all ADRs to ensure that they are relevant, cost effective and do not provide a barrier to importation of safe vehicles and vehicle components. These objectives are shared by the New Zealand Government which has been reviewing its vehicle safety standards.

The aim of the ADR review is four fold:

- to identify if existing standards are relevant with regard to ongoing 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.

3.1.3. International Harmonization

This review takes account of the provisions of the Trans-Tasman Mutual Recognition Arrangement (TTMRA) Annex 4 – Road Vehicles. The Annex concerns the harmonisation of Australian and New Zealand standards with the internationally recognised United Nations Economic Commission for Europe (UN/ECE) Regulations, or those national or regional standards that are agreed by the Parties. The UN/ECE 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 UN/ECE is open to participation by the international community.

Harmonizing with the UN/ECE regulations furthers the aims of the TTMRA Road Vehicle Co-operation Programme, as it would allow free trade of UN/ECE certified vehicles between Australia and New Zealand.

International harmonization benefits Australian manufactures by reducing their cost of compliance (no need to comply with one standard for a local market and another for an international market) and consumers by removing the barriers that prevent some car manufactures exporting to an Australian market due to the additional cost of complying with the ADRs.

3.2. Current Australian Regulations

The existing mandatory standard, Australian Design Rule No. 14, specifies a number of requirements which address the physical and optical properties required for rear vision mirrors. This standard applies to internal and external rear vision mirrors on mopeds, motor cycles and sidecars, motor tricycles, passenger vehicles, omnibuses and goods vehicles. Requirements include position of mirrors (internal, driver side, passenger side), minimum level of road environment visibility, ability to prevent or reduce harm to occupants or pedestrians during a crash and minimum levels of reflectance.

It should be noted that ADR 14 does not contain any materials specifications for the mirror or mirror housing. Reflectance test standards are provided by reference to *SAE document J964a Test Procedures for Determining Reflectivity of Rear view Mirror*. UN/ECE R46/00 and 46/01 are deemed to be equivalent to ADR 14 for technical requirements.

The ADR only provides minimal requirements for motorcycles, requiring two mirrors (flat or convex) arranged symmetrically about the median longitudinal centreline. UNECE R 81 is nominated as an alternative standard but only to the extent of allowing convex mirrors conforming to that standard to be used provided they are installed in accordance with the requirements in the ADR.

The ADRs apply to new vehicles and vehicle components which must comply before they can be supplied to the Australian market. More than 955 000 new vehicles were sold in Australia in 2004. 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 National Transport Commission (then National Road Transport Commission) published the Australian Vehicle Standards Rules (AVSRs) with the aim of providing a set of national, uniform, in-service vehicle rules which all jurisdictions agreed to implement.

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 provisions relating to some areas that are covered by ADRs, in recognition that as vehicles age, continued compliance with the ADRs is not practicable. Another area where departure from the general principle is allowed is to accommodate established practices such as window tinting and alternative tyre selection. In case of rear vision mirrors, the AVSRs require continued compliance with ADR 14.

3.3. Current Regulation Around the World

In 1949 the Convention on Road Traffic was created in Geneva under the auspice of the United Nations. One provision of this document was that vehicle characteristics were a major cause of road crashes, deaths and injuries. The United Nations Economic Commission for Europe (UN/ECE) formed a working party which is now known as the World Forum for Harmonization of Vehicle Regulations (WP-29) in order to provide an international body for the creation of international vehicle standards and a mutually recognised international certification body for vehicles and vehicles components (World Forum for Harmonization… 2002, pp5-6).

Currently Europe, Australia, New Zealand, South Africa, Korea and Japan are Parties to the 1958 agreement and many other countries including China, Brazil, Thailand and Argentina have participated in WP-29 to varying degrees (World Forum for Harmonization… 2002, pp6). This level of involvement indicates that there is a genuine commitment to international harmonization of vehicle standards.

The importance of regulating safety related features of vehicles can also be seen in the regulations used by various nations. In Japan, Article 44 of the *Safety Regulations for Road Vehicles* (supported by *Announcement That Proscribes Details of Safety Regulations for Road Vehicles Attachments 79, 80, 81, 82 and 83* provides regulation for vehicle rear vision mirrors. The US regulates rear vision mirrors through *Federal Motor Vehicle Safety Standard 111 Rear-view Mirrors*, while European nations use *Council Directive 2003/97/EC type approvals for devices for indirect vision and of vehicles equipped with these devices* (amended by *2005/27/EC*). The UN/ECE produces *UN/ECE R46 Rear-view Mirrors* which can be adopted by any nation wishing to use an internationally developed standard. For motor cycles Europe uses *80/780/EEC Rear-view*

Mirrors (Motor Cycle) and the UN/ECE provide *UN/ECE R81 Rear-view Mirrors (Motor Cycle).*

4. Regulatory and Non-regulatory Options

4.1. Government Regulation

Several options have been considered for future legislation. One is retaining the ADR as is, the second, to effectively replace ADR 14 with UN/ECE R46, and thirdly, remove the ADR completely. Sections 4.1.1 to 4.1.3 will examine the various regulatory options that keep the ADR in some form while 4.1.4 and 4.2 looks at removing the ADR and non-regulatory alternatives.

4.1.1. Retain ADR 14 as is

This option can be considered the status quo or "do nothing" approach. The ADR would continue in its current form with no substantial modifications. For ease of use, the full text of UN/ECE R46 would be appended to the existing ADR.

4.1.2. Adopt UN/ECE R46 as a Replacement to ADR 14

This option would replace ADR 14 with UN/ECE R46. It would still be called ADR 14 but the full text of UN/ECE R46 is appended to the ADR with some sections such as UN/ECE approvals procedures struck out (as they are not relevant to the ADR certification process). Manufactures would now effectively be complying with the requirements of UN/ECE R46.

The UN/ECE provides a separate regulation for motorbikes, UN/ECE R81 Rear-view Mirrors (Motor Cycles). If ADR 14 is to be harmonized it will be necessary to adopt UN/ECE R81 or develop separate requirements (in ADR 14 or as a new ADR) covering motorbikes.

4.1.3. Remove ADR 14

The ADR would no longer be in effect and therefore not enforceable. There would be no Australian Government level regulation related to rear vision mirrors. The following three non-regulatory options are alternatives that would apply or could be put in place if some form of intervention is still necessary.

4.2. Non Regulatory Options

4.2.1. Trade Practices ACT 1974

In the absence of any government regulation, problems that arise with consumer goods may be dealt with through part V, section 65F or Part VA of the *Trade Practices Act 1974* or through various State and Territory consumer and fair trading legislation. No specific intervention would be necessary, as the provisions of the *Trade Practices Act 1974* would automatically apply.

Section 65F of the Act covers conditions under which the Minister can require a compulsory recall of a product and how such a recall is to be carried out. Section VA – liability of manufacturers and importers for defective goods states what the responsibility of manufacturers and importers are responsible for and how liability actions are to be carried out.

4.2.2. Information Campaigns

Information campaigns aim to inform the consumer in order to improve awareness of the product in question and enhance effective decision making. In the case of rear vision mirrors, an information campaign would need to present the consumer with the tools to examine mirrors from different manufacturers (as individual units and in the context of overall vehicle safety) and the ability to compare features in order to choose one that offers a suitable level of safety.

The aim is to provide consumers with the ability to understand the technical details related to rear vision mirrors, the need for a minimum level of safety and how such a safety level can be achieved. Informed consumers can then make decisions which will influence the products the market provides.

4.2.3. Secondary Information Market

An alternative to a government run public information campaign is the automotive information market. This secondary market for automotive consumer information exists in the form of vehicle magazines, vehicle road tests featured on television, and material prepared by motoring associations and insurance companies. The aims and outcomes of the secondary information market are the same as government run information campaigns (disregarding any commercial gain for those involved in supplying information to consumers).

4.2.4. Australian New Car Assessment Program

The Australian New Car Assessment Program (ANCAP) is a combination of information campaign and secondary information market that is currently in use. It was initiated in the mid 1990s by a consortium of insurance companies, automotive associations and State regulators. ANCAP purchases and tests cars available on the market and publishes the results. The ANCAP tests include one frontal offset and one side impact crash test. They also carry out pedestrian impact tests. In the frontal offset crash test, the vehicle is driven at 64 km/h into a barrier with a crushable aluminium face with the crash forces concentrated on the driver's side of the vehicle. In the side impact crash test, the vehicle is stationary and a trolley impacts the side of the vehicle at 50km/h. The results of these tests are combined to produce a single rating for each vehicle (ranging from zero to five stars).

The question is whether such a program could be adjusted to provide useful information other than overall crash worthiness.

4.3. Quasi-regulation

4.3.1. Codes of Practice

The Trade Practices Act 1974 makes allowances for the use of mandatory and voluntary codes of practice in industry. A mandatory code can be enforced on a specific industry whether they are signatories or not, while a voluntary code can only be enforced on those who have agreed to abide by it. Any code of practice needs to be underpinned by an acceptable standard (in this case pertaining to the properties and installation of rear vision mirrors in vehicles). The Code merely affects the method of enforcing compliance with specified standards, whether by direct Government supervision and scrutiny or by industry self regulation.

5. Impact Analysis

So far this RIS has shown that rear vision mirrors can have an effect (positive or negative) on road trauma and that such effects impose a cost on the community (decrease or increase). Several options have been presented to reduce this cost to the community: retaining the ADR in its current form, effectively replace it with UN/ECE R46, or remove the ADR (regulatory options), reliance on the Trade Practices Act, information campaigns, secondary information markets and codes of practice (non-regulatory options). This section will compare the various options and discuss the limitations imposed by data availability.

5.1. Data Availability

Before any analysis can be considered, the limitation on available data must be understood. Automotive vehicle safety has been regulated much longer than any relevant, detailed data has been recorded. Additionally, only serious and fatal accidents need be reported to police (though not all) and companies are not always willing to release cost related data that could harm their competitive edge.

In order to conduct a detailed analysis data would be required not jut on trauma directly related to rear vision mirrors material (injuries from shards of broken mirror or impact on the mirror or housing) but also on crashes that have been attributed to faulty or ineffective mirrors or where mirrors were not present (and their presence would have prevented the crash). To compare the effectiveness of the options presented in this RIS it would also be necessary for the data to be obtained for the period before the ADRs were introduced and for periods where changes have been made to ADR 14 (such as allowing the use of convex mirrors as opposed to flat mirrors).

This data is not available for a myriad of reasons. The Australian Transport Safety Bureau (ATSB) collects data for fatal and serious injuries but not in sufficient details for the purposes of this RIS. In many crashes it would be impossible to attribute the cause of the crash to faulty or a lack of rear vision mirrors, making it impossible to gather data in order to compare the crash rates of vehicles with or without mirrors. .

The cost of vehicle crashes has been studied by the Bureau of Transport Economics (BTE, now BTRE) and this RIS uses the costs presented in the BTE report Road Crash Costs in Australia Report 102 (2000). Costs pertaining to manufactures' cost of compliance are vague as industry has indicated that the cost of complying to the ADR is "negligible" but have not provided more specific costs as doing so would require much effort on their part (to isolate the costs from the total cost of doing business) or because they feel that releasing such information could harm their commercial competitiveness.

5.2. Affected Parties

Parties that are expected to be affected by ADR 14 include:

- Domestic vehicle manufacturers who are also importers;
- Vehicle importers (includes foreign manufacturers and their representatives);
- vehicle owners;
- vehicle occupants; and
- Governments.

These affected parties are represented by several interest groups.

- The Federal Chamber of Automotive Industries (FCAI), an all encompassing interest group which represents the interests of the manufacturing sector including vehicle manufacturers, vehicle importers and component manufacturers/importers of light passenger vehicles.
- Federation of Automotive Products Manufacturers (FAPM). This group also has membership in FCAI.
- The Truck Industry Council (TIC) representing truck manufacturers.
- Bus Industry Confederation.
- The Motor Traders Association of Australia, representing vehicle dealers.
- The Insurance and Superannuation Council of Australia and the Australian Automobile Association, peak organisations representing the insurance industry and consumers.
- The Australian Trucking Association representing commercial vehicle owners and operators.
- The Australian Automobile Aftermarket Association representing economic agents operating largely in the after market.
- Automotive clubs and associations

Thus this ADR directly or indirectly has an impact on all members of the community. Manufactures and importers are affected directly by the cost of compliance, which in turn is passed on to the consumers (car owners). Indirectly the ADR affects the wider community as the cost of injury and death in car crashes is borne by the community as a whole.

5.3. Analysis of Presented Options

5.3.1. Retain ADR 14

This option has the least effect on all parties. As the ADR is left unchanged there is no change in the cost of compliance to manufactures and importers nor is there any benefit gained by them, consumers or the regulator. There would be no change in levels of safety.

5.3.2. Replace the ADR with UNECE R46

5.3.2.1. Vehicles other than motor cycles

The ECE regulation related to rear vision mirrors for vehicles other than motor cycles is currently accepted as an alternative standard to ADR 14. Replacing the ADR with UNECE R 46 will have no impact on manufacturers who have products approved to the ECE Regulation and can offer them in compliance without further testing or verification of compliance. Those manufacturers not currently using UNECE R 46 approved products will have make some adjustments as there are some differences between the two standards.

ECE R46 is significantly more prescriptive than ADR 14 and in general terms varies from ADR 14 in many of its technical specifications.

- Size and shape of mirror housing, including ability for some mirrors to retract into the housing under impact.

- Size, shape and maximum radius of curvature of reflecting surface.
- Coefficient of reflection no less than 40% as opposed to 35% in ADR 14.
- Impact and bending on the protective housing fixed to the stem tests.
- Mirror stability must be retained at up to 80% of a vehicle's maximum design speed (or 150 km/h if the design speed is greater).
- Type and placement of mirrors for the various categories of vehicles.
- Vehicle categories. The UN/ECE regulations use different categories than the ADRs. This is not expected to be a problem as comparison tables have been developed for previously harmonized ADRs and any specific issues can be addressed directly in the ADR.

It is expected there would be some increase in cost of compliance for companies not currently using UNECE R 46 as the compliance standard. During the public consultation period, several heavy vehicle manufacturers indicated that sole adoption of UNECE R46 would impose an additional cost of compliance. Their preference was to allow compliance with either R46 or the current ADR 14/02 requirements.

The adoption of UN/ECE R46 as a replacement for the current ADR 14 should not have any impact on safety, except in relation to the issue of ocular penetration injuries mentioned above.

5.3.2.2. Motor cycles

As indicated previously, the ECE provides a separate regulation, R81, for rear vision mirrors on motor cycles and three wheeled vehicles that do not enclose the rider in bodywork while ADR 14 covers all vehicle categories.

Currently ECE R 81 mirrors are accepted for compliance with ADR 14 provided they are mounted in accordance with the ADR rather than the ECE Regulation.

Like R46, R81 is more prescriptive than ADR 14 and of particular note, does not allow the use of flat mirrors. An outline of the differences is listed below.

- Requires convex mirrors.
- Size and shape of mirror housing, including ability for some mirrors to retract into the housing under impact.
- Size, shape and maximum radius of curvature of reflecting surface.
- Coefficient of reflection no less than 40% as opposed to 35% in ADR 14.
- Impact and bending on the holder fixed to the stem tests.
- Mirrors need not be placed symmetrically.
- Two wheeled vehicles with a maximum design speed of 50 km/h require only one rear vision mirror.

The requirement of convex mirrors could have a major impact as many manufacturers currently use flat mirrors. This could be offset by continuing to allow motorcycles to use flat mirrors. Minimal feedback was provided regarding the use of R81, though none of it was negative.

5.3.3. Remove ADR 14

The feasibility of repealing ADR 14 and relying on the Trade Practices Act 1974 and the influence of the marketplace has been outlined above and is further discussed below.

5.3.4. Trade Practices Act 1974

Reliance solely on the Trade Practice Act could result in loss of assurance for consumers that rear vision mirrors provide an adequate level of safety. Additionally, a large number of rear vision mirrors are replaced on in-service vehicles each year. The absence of a mandatory standard could lead to in-service vehicles being fitted with mirrors which may not provide the level of safety found in mirrors that meet the current standards.

Reliance on Section 65F and part VA of the Act for maintaining consumer rights introduces an impediment to consumer certainty, as these provisions are retrospective. They do not come into effect until the vehicle is on the market and any defect or fault is brought to the attention of the Australian Competition and Consumer Commission (ACCC). The legal redress is only available after failure has been detected. In the case of defective rear vision mirrors, the event of failure can result in anything from property damage to fatalities depending upon the nature and extent of the event. Furthermore, it may be some time before the causal link is established and in the meantime more events could occur.

The optical and material quality of rear vision mirrors are difficult to ascertain by casual inspection. The only way to accurately determine quality is through a series of complex tests. Due to a lack of specific knowledge, necessary funds and access to testing equipment, the average automotive consumer is not in a position to confirm that mirrors fitted to a vehicle meet the current mandatory standard, or in an environment without mandatory standards, that the mirrors provide any particular level of safety.

As consumers are not in a position to assess the safety features of rear vision mirrors, they are likely to make decisions that may have a negative impact on the community. Individuals may be willing, through lack of knowledge or the desire to reduce cost, to purchase vehicles or after market replacement mirrors that would be deemed to be unsafe under the current standards. This could lead to an increase in crashes. Any increase in crash injuries or fatalities is an externality, the cost of which is borne by the community, not by manufacturers or individual consumers.

5.3.5. Information Campaigns

Public education campaigns can be effective when the information being provided is simple to comprehend and unambiguous. If public information campaigns based purely on the ADR requirements were freely available, most consumers would be unable to comprehend the technical content and make decisions about the safety aspects of a specific vehicle's rear vision mirror. A campaign targeted to the average consumer would be just as ineffective as without the technical content the campaign would be nothing but flashy advertising and a waste of public money.

In these situations, where the majority of consumers are unable to make decisions regarding particular technical aspects of a product, they leave such decision to the manufacturer (if they trust the manufacturer) or to a government nominated regulatory authority (if the product is regulated). In the case of the automotive industry, the majority of safety related decisions reside with the regulatory authority. It is for the above reasons

that public education campaigns on car safety have not enjoyed much success among vehicle buyers.

The difficulty with a rating system is that the more important features such as crash protection would dominate and it is doubtful that consumers would be able to focus on features like rear vision mirrors. Alternatively, each safety system would have to be rated separately and consumers would have to establish their own priorities as to which safety systems are more or less important in the final decision. It has already been stated above that most consumers are not in a position to make such decisions. It is unreasonable to expect consumers to assess the merits of each component and make an informed decision. A rating system, ANCAP, is currently being used in conjunction with the existing regulations.

5.3.6. Secondary Information Markets

The secondary information market is small and currently would be unable to act as a replacement for ADR 14 as the level and content of information provided does not facilitate consumer learning, particularly in critical areas such as overall occupant protection. Such a market currently exists in the form of ANCAP.

It is likely that the secondary information market would mature with the withdrawal of government intervention. However, the extent of development will depend upon how well the market resolves issues in relation to information asymmetries and moral hazard.

Currently an asymmetry exists as consumers do not have ready access to all the information they need to make informed decisions. Manufacturers and insurance companies are unwilling to release information in order to retain a competitive edge and any information provided by automotive associations and specialist groups may be biased towards their interests. Present trends indicate that it is highly unlikely that quality information delivered through this secondary market would be able to resolve the above issues as well as fulfil the role performed by current government regulation.

A moral judgement also needs to be made on the use of a secondary information market as a non regulatory option. Without some form of oversight or a highly developed market where information can be obtained from several different, independent sources in order to verify its accuracy, there is nothing to prevent collusion between various organisations to further their own goals (such as increased profit).

The use of this secondary market would also suffer from the same externalities as sole use of the Trade Practices Act. Even with accurate safety information there is nothing preventing an individual from purchasing mirrors that would currently be considered unsafe in order to reduce costs. Once again, the costs of increased crashes are borne by the community, not solely by the manufacturer or individual consumer.

5.3.7. ANCAP

Although ANCAP carries out tests similar to those presented in some of the ADRs there are several major differences. Up until 1999 a full frontal collision (driving the front of the vehicle into a stationary object) was also carried out at an impact speed of 56 km/h, 8 km/h higher than that required by ADR 69. The expectation was that the higher speed would magnify the differences between cars and provide consumers with a better picture

of the relative performance of these vehicles (Explanation of ANCAP Test Procedures 2005).

ANCAP and the ADRs currently work in a complimentary fashion. While the ADR provided baseline performance requirements such that consumers are assured that all vehicles perform to a legislated level, ANCAP provides supplementary information to help consumers make informed choices in purchasing vehicles, if they care to consider the relative safety performance in making that choice.

As ANCAP is mentioned in both information campaigns and secondary information markets it is necessary to consider if there is a need for both the ADR and ANCAP. As mentioned above, the ADR provides consumers with the assurance that all vehicles will perform to a minimum acceptable level. In the absence of the ADR and in reliance on ANCAP alone, no such assurance would be available, as there would be no legal compulsion to perform well in the ANCAP tests. Manufacturers may well pursue a good ANCAP result but this cannot be guaranteed.

Furthermore, there is no guarantee that such programs will continue in their current form. Full frontal impact tests were originally carried out at a higher speed than the ADR required and ceased in 1999 in favour of offset frontal impact tests. This is a prime example that although the ANCAP can provide valuable information, it is prone to change from time to time and does not offer the stability and continuity of government regulation. Testing is further limited by the cost of carrying out tests. Each test involves the purchase of a vehicles which could be anywhere from $15 000 for a small car, up to above $60 000 for a four wheel drive. This financial constraint means that it is unlikely that all available vehicles would be tested, making ANCAP of limited use to consumers.

Organisations such as ANCAP are more suited to inform on overall vehicle safety rather than the safety provided by particular systems. It would be difficult to package the information in a manner that the average consumer would understand as in order to present safety data on individual features the current safety index would not be usable. On the other hand, consumers would not appreciate being inundated with detailed test results that are time consuming and difficult to comprehend.

5.3.8. Codes of Conduct

Replacement of ADR 14 with a voluntary code of conduct could still result in costs to manufacturers as responsible sections of the industry would continue to incur the overall cost of design, development, styling and testing, while other manufactures may cease such practices. In the absence of regulation in such a technically complex area, market pressures may cause a shift in focus away from safety in order to reduce cost to the consumers.

Additionally, a code of conduct is a method of enforcing a standard, in this case, of manufacture. Thus a standard such as those is section 3.2 would still be needed in addition to the code of conduct. Enforcement is currently provided for in the Motor Vehicle Standards Act 1989, any code of conduct would be redundant. The enforcement measures in the Motor Vehicles Standards Act were subjected to a separate review which concluded that the current arrangements should continue.

5.4. Comparative Analysis

Although only generally descriptive in nature several conclusions can be drawn from the analysis of options in section 5. All non-regulatory options result in the potential for an increase in the cost to the community due to an increase in deaths and injuries due to crashes. Although individuals may benefit by compromising on safety to reduce the cost of a vehicle (or fleet of vehicles) the cost of an increased chance of injury or death is borne by the community as a whole. Thus reliance on the Trade Practices Act, information campaigns and secondary information markets and codes of conduct are not acceptable alternatives to government regulation.

Of the remaining options, adopting the UN/ECE regulations would not compromise safety while further harmonizing Australian vehicle regulations with the international standards.

6. Consultation

6.1. Consultation Procedure

A Single Issue Working Group for Vision was set up to provide assistance for the review of vision related ADRs. This group comprised of representatives from the Federal Chamber of Automotive Industries, Federation of Automotive Products Manufacturers, Australian Bus and Coach Association, Australian Automobile Association, NSW Roads and Traffic Authority and the National Transport Commission. The views of vehicle and glazing manufacturers and suppliers were taken into account during the public comment stage of this RIS.

Public comment was carried out using VSS standard procedures. A request for comment was posted on the RVCS bulletin board which reaches the majority of manufactures. Additionally manufactures, operators and special interests groups were notified by email and an advertisement was placed in The Australian on 8 October 2005. The RIS was also available on the DOTARS website. The World Trade Organisation was informed in accordance with Australia's obligations to the reduction of Technical Barriers to Trade.

Previously, following public comment, further consultation would have been undertaken with the Transport Agencies Chief Executives (TACE) and the Australian Transport Council (ATC); determination would proceed if a simple majority of ATC members approved the proposal. However, at the June 2005 ATC meeting, transport Ministers endorsed a recommendation that broadly supported, non-contentious, UNECE harmonised proposals could proceed directly to determination following public consultation. The public comment process is used to determine whether this proposal qualifies as a non-contentious item and whether further consultation would be necessary.

6.2. Summary of Feedback

The public consultation period was carried out between October 8 and December 9 2005. Feedback was received from fourteen different sources – six vehicle manufacturers, two compliance agents, four industry and consumer representative groups, one regulator and one advisory group. The full list of respondents, including comments can be found in Appendix 1.

The bulk of respondents indicated an agreement with the suggested changes to ADR 14 although several heavy vehicle manufactures expressed a desire to keep the current ADR 14n requirements as changing to R46 would increase their cost of compliance.

7. Conclusions and Recommendations

This Regulation Impact Statement has investigated the need for some form of regulation and standardization of rear vision mirrors in road vehicles. Although figures are unavailable it is clear that rear vision mirrors play a roll in preventing accidents (by providing drivers with a view of the road environment behind them).

Five options were considered: continued government regulation, removal of the ADR and relying on the Trade Practices act, use of secondary information markets and information campaigns and a code of conduct. Of these options, use of the Trade Practices act was unacceptable as it is reactive and would require injury or death to occur before action can be taken, information campaigns and marketplace forces are not suited to such specific safety devices and a code of conduct is not appropriate.

Of the regulatory options, retaining ADR 14 or replacing it with UN/ECE R46 were equivalent in terms of safety – neither proved beneficial over the other. Replacing ADR 14 with R46 is the preferred option as it furthers the aims of international harmonization but further information from those who may be affected by such a change is required.

Taking into account the response to the public consultation period, the recommendation of this RIS is to amend ADR 14/02 to allow compliance with UNECE R46, UNECE R81 (for L group vehicles) or the current ADR requirements. This gives a range of options to manufactures without reducing levels of safety.

8. Implementation and Review

The modified ADR 14 will be given force in law in Australia by determining it to be a national standard under section 7 of the Motor Vehicle Standards Act 1989. It will be implemented under the type approval arrangements for new vehicles administered by the Vehicle Safety Standards Branch of the Department of Transport and Regional Services.

Being national standards under the MVSA the ADRs are subject to complete review on a 10 year cycle (of which this RIS is a part of the current review cycle). It should be noted that determinations under section 7 of the Motor Vehicle Standards Act are exempt from the sun setting clauses of the Legislative Instruments Act 2003. Additionally there are arrangements for on-going development of the ADRs. This continuing development is the joint responsibility of the Vehicle Safety Standards Branch of the Department of Transport and Regional Services and the National Transport Commission and is carried out in consultation with representatives at all levels of governments, the manufacturing and operating industries, road user groups and experts in the field of road safety.

Enforcement of the new ADR 14 will continue under the current provisions of the Motor Vehicle Standards Act and Regulations. Vehicle and component manufacturers are required to ensure that vehicles supplied to the market comply with the requirements of all ADRs. Penalties for non-compliance with the Motor Vehicle Standards Act are 120 penalty points for each offence. Each penalty point is currently valued at $100.

For revised ADRs which do not represent an increase in stringency, there is no need for lead-time. For those that are updates of existing ADRs, they will have the same applicability as the originating ADR currently has. There will be a seamless transition from the existing to the revised ADR. Where the stringency of a standard is increased, suitable lead-time will be negotiated.

9. References

Explanation of ANCAP Test Procedures, n.d. Retrieved Feb 2005 from http://www.aaa.asn.au/NCAP/explanation.htm

Road Crash Costs in Australia Report 102, 2000, Bureau of Transport Economics, Canberra, p. xi

Road Crash Data and Rates Australian States and Territories 1925 to 2002, 2003, Australian Safety Transport Bureau, Canberra, p3

Serious Injury Due to Road Crashes, 2004, Australian Safety Transport Bureau, Canberra, Table 8.

Thompson, C. et al. "Perforating eye injuries from external rear vision mirrors", *Australian and New Zealand Journal of Ophthalmology*, 1998, issue 26, pp. 61-62.

World Forum for Harmonization of Vehicle Regulations (WP.29) How it Works How to Join It, 2002, United Nations Economic Commission for Europe, Geneva, pp. 5-6

Appendix 1 - Summary of Public Comment Feedback

Note that manufacturers and importers names have been removed to protect commercial interests.

Organisation	Keep existing 14 requirements plus alternates	Replace ADR 14 with ECE requirements	Comments
Compliance agent	Yes		Don't currently certify mirrors to ECE requirements. ECE certification would cost clients more due to more detailed analysis and test requirements. Would require 2-3 months lead time Cannot provide data but feels that the removal of government intervention would not increase crashes and the current technology and the consumer requirement for mirrors on vehicles would be adequate.
Low volume motorcycle manufacturer			Supports full harmonisation with ECE R81.
Compliance agent	Yes		Certifies to R46 to most vehicles, ADR 14 for L-group. Change wouldn't provide any additional benefit. R81 allows convex mirrors with a radius of curvature between 1000 and 1500mm. This should be adopted in clause 10.1.2 to remove the inconsistency.
Heavy vehicle manufacturer			Due to the current resources required to implement ADRs 80/01 and 83/00 any change to ADR 14 should not come into force until January 2009. May need to change the cab's metal structure to meet the requirements in the draft ADR 14. The impact of this would be alleviated by allowing current ADR requirements as an alternative for at least 5 years.
Australian Automobile Association		Yes	Support harmonisation with ECE
National Transport Commission			No comment
Heavy vehicle manufacturer	Yes		Certify mirrors to ADR 14 A change in requirements would impose development costs of A$230000 –

			A&350000 per one mirror model. Would request a lead time of 2 years for new models and 3 years for all new vehicles.
Queensland Transport		Yes	Supports harmonisation with UNECE, however has no objection to continuing the use of flat mirrors on motorcycles as proposed in the draft ADR. Does not collect crash or medical data that is relevant to this RIS. Supports continued regulation, could only speculate on the impact of not regulating rear vision mirrors.
Federal Chamber of Automotive Industry		Yes	Supports harmonisation with UNECE standards rather than retaining a dual standard ADR, as long as sufficient lead time is allowed for. It is suggested 2 years after coming into force for new models. As the aim is harmonisation and there is no safety gain going from the current ADR to the UNECE requirements, there is no justification in specifying an "all new vehicles" implementation date. Such a requirement would impose unnecessary compliance costs`
			Alternative standards should include UNECE R46/01 and 46/02.
Heavy vehicle manufacturer	Yes		Fundamentally disagree with the sole adoption of UNECE standards. European motor vehicles make up a small portion of vehicles sold in Australia. Opportunity for export to Europe is limited, currently it is more likely for vehicles to be exported to the USA, South Africa and Middle Eastern countries. Japanese and US markets are targeted by many manufactures whose vehicles are tested and homologated to these standards. Continuing to allow these other standards will give Australian manufacturer maximum flexibility.
Australian heavy vehicle manufacturer	Yes		Current mirror requirements are adequate for Australian road conditions. Solely adopting UNECE requirements would put an unnecessary strain on the certification system and increase costs. If the option we support it used, it would allow us to examine ECE regulations as time permits and implement any that would be of benefit to the company. Solely adopting UNECE requirements would disadvantage local manufactures. Numerous products are currently built in Australia for Australian use, especially in B-doubles and road trains. Adopting UNECE requirements would open the market for the import of UNECE compliant products.

		Mirrors are currently certified to ADR 14/02 requirements. Use of UNECE standards would enhance the company's opportunity to expand into the European market. 18 months lead time would be required for any changes to the ADR. If the UNECE standards become mandatory, will the ADR retain alternative standards?
Motor Trades Association of Australia		Neither the ADR or UNECE standards offer any benefit over the other. As long as mirrors continue to meet State/Territory registration requirements the use of current ADR or UNECE standards would have minimal impact on the vehicle repair sector. Consider mandating the use of laminated glass on mirrors. In UNECE R81 only one mirror is required if the vehicle is designed not to exceed a speed of 50km/h. This may conflict with the requirement to provide a driver with maximum road awareness/visibility. This visibility requirement should be preserved.
Commercial Vehicle Industry Association Australia	Yes	
Full volume car manufacturer		Would accept the use of UNECE R46/02 as the body of ADR 14 and alternative standards should allow /01 or /02. They often certify to EEC but we do not offer that as an alterative. They can deal with that as the EEC evidence is suitable for compliance with ECE (assuming ECE is adopted). ADRs not adopting most recent ECE standard is an issue as their vehicles are designed to latest ECE standards.