Vehicle Safety Standards
Department of Transport and Regional Services

Australian Design Rules Review

Regulation Impact Statement

for

ADR 8 – Safety Glazing Materials

FINAL 23 May 2006

Prepared by:
Vehicle Safety Standards
Department of Transport and Regional Services
## Contents

1. Introduction ................................................................................................................ ..1  
2. Windscreen Standards for Vehicle Occupant Protection .............................................1  
   2.1. Windscreens and Vehicle Crash Injuries .............................................................1  
   2.2. Chain of Events ....................................................................................................1  
   2.3. ADR Packages .....................................................................................................2  
   2.4. The Problem .........................................................................................................3  
   2.5. The Need For Government Intervention ..............................................................4  
3. Government Objectives ...............................................................................................6  
   3.1. Objectives ............................................................................................................6  
   3.2. Current Regulation in Australia ...........................................................................7  
   3.3. Current Regulation Around the World ................................................................8  
4. Regulatory and Non-regulatory Options ......................................................................9  
   4.1. Government Regulation .......................................................................................9  
   4.2. Non Regulatory Options ....................................................................................10  
   4.3. Quasi-regulation .................................................................................................11  
5. Impact Analysis .........................................................................................................11  
   5.1. Data Availability ................................................................................................12  
   5.2. Affected Parties ..................................................................................................12  
   5.3. Cost/Benefit Analysis ........................................................................................13  
   5.4. Analysis of Presented Options ...........................................................................14  
   5.5. Comparative Analysis .........................................................................................18  
6. Consultation ...............................................................................................................21  
   6.1. Consultation Procedure ......................................................................................21  
   6.2. Summary of Feedback .......................................................................................21  
7. Conclusions and Recommendations ..........................................................................21  
8. Implementation and Review ......................................................................................22  
9. References ..................................................................................................................23  
Appendix 1 – Summary of Public Comment Feedback .....................................................24
1. **Introduction**

When a vehicle is involved in a crash, or when a vehicle’s windscreen is struck by an object, broken glazing material from the windscreen can harm the occupants. Australian Design Rule (ADR) 8 provides mandatory requirements for glazing materials (windscreens and other windows) in vehicles.

The absence of a mandatory design rule for safety glazing material could lead to sourcing of vehicles fitted with safety glazing material which may not comply with the current basic standard, exposing the Australian community to unsafe vehicles and creating a dangerous road environment.

This Regulation Impact Statement has been produced by the Vehicle Safety Standards Branch (VSS) of the Department of Transport and Regional Services (DOTARS) and the National Transport Commission (NTC) as a part of the continuous review of all ADRs to assure their effectiveness and efficiency. The following sections describe the problem (injury and death related to safety glazing materials in vehicles), explores a number of regulatory and non regulatory options and presents the costs and benefits of each. Finally the various options are compared to determine the most suitable solution.

2. **Windscreen Standards for Vehicle Occupant Protection**

2.1. **Windcreens and Vehicle Crash Injuries**

When a vehicle is involved in a crash, or when a vehicle’s windscreen is struck by an object, broken glazing material from the windscreen can harm the vehicle’s occupants. Additionally, if occupants are not wearing seatbelts, they may be projected through the windscreen and out of the vehicle, taking further damage from the broken windscreen and anything else they may impact on. Lesser damage to windscreens (from impact with other objects) may obscure vision – increasing the risk of a crash.

Australian Design Rule (ADR) 8 provides mandatory requirements for glazing materials (windscreens and other windows) in vehicles. This includes requirements to protect occupants from broken glazing material (causing facial and eye injury), reduce the risk of projection from the vehicle if not wearing a seatbelt and to ensure windscreens are of a minimum level of optical quality necessary to provide drivers with unimpeded vision.

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 injury outcome is the result of a chain of events; if any one link in the chain can be broken, the outcome may be different. This process is best described with an example:
A crash occurs – energy is absorbed by the front vehicle structure causing deformation of the front of the vehicle.

Restraint system performs (seat belts, air bags) → Restraint system fails or is not in use (occupant not wearing seatbelt) → Occupant held in place → Occupant impacts on laminated glass windscreen – does not penetrate windscreen → Occupant impacts on windscreen – windscreen shatters and occupant is projected out of the vehicle

**Figure 1 – Chain of Events – windscreen as final link**

Object impacts on windscreen (thrown rock, bird, etc.) → Laminated glass windscreen fractures → Windscreen shatters → Vision is not obscured, driver is not injured. Increased chance driver will be able to safely handle the situation → Vision is obscured and driver may be injured. Driver is no longer fully aware of the road environment – increased chance of a crash

**Figure 2 – Chain of Events – windscreen as initial link**

In both figure 1 and 2 above, the windscreen acts as a vital link in the chain of events. In the case of example 1, the restraint system breaks the chain of events by preventing the occupant moving. If that fails or is not in use, the laminated glass breaks the chain of events by preventing the occupant being projected out of the vehicle. In example 2 the laminated windscreen breaks the chain of events by ensuring adequate visibility even though the windscreen has been damaged. Note that this is a simplification to illustrate chain of events. In reality the chain is significantly more complex with all aspects of the vehicle and road environment interacting.

### 2.3. ADR Packages

In order to more easily determine the various links in a chain of event that assist in breaking the chain, the ADRs can be grouped into packages of related countermeasures. Vision countermeasures reduce the extent of injury by enhancing the visibility of the road environment, thereby reducing the risk of crashes. A vision countermeasure offers a preventive safety feature by reducing the probability of a car crash occurring. Countermeasures such as windscreens with adequate levels of safety also offer a protective safety feature by preventing or reducing occupant ejection and facial or eye
injuries in the event of crash. Other countermeasures such as rear vision mirrors, instrument visibility, windscreen wipers and washers also offer preventive safety features. Rear vision mirrors also provide protective safety features through the use of suitable construction materials.

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 RISs 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.

- this RIS on ADR No 8, Safety Glazing Material;
- a RIS on ADR No 12, Glare reduction in the field of view;
- a 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 regulation impact statements for ADR 12, 15 and 16 have been finalised, recommending 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.

As the common goal is reduction of road trauma for vehicle occupants, some similarities may exist between this RIS and the others. Although European and United States standards combine many requirements in a single standard, the different vehicles to which the standards are applicable in Australia make a combined RIS difficult to comprehend so separate RIS have been prepared.

2.4. The Problem

The problems or issue related to windscreens and the potential need for government intervention is three fold. The first two are related to safety, that consumers generally do not have the expertise to make informed decisions related to safety features of different windscreens and that poor choices in windscreen can have a flow on effect increasing the cost to the community. The third is the Australian Government policy of reviewing all regulation to ensure it is effective and efficient.

2.4.1. Information Asymmetry

Individual consumers of new and existing vehicles are able to effectively exercise their safety preferences if they are in a position to accurately assess the safety features offered by a windscreen. Unfortunately the typical consumer does not possess the knowledge to make a comparative evaluation of principal safety devices in vehicles.
The lack of publicly accessible windscreen information, consumer inexperience and the inability to access vehicles for testing would lead to consumers making poor (unsafe) decisions if vehicles with inadequate levels of protection for windscreens were available on the market.

2.4.2. Externalities and the Cost to the Community

The use of “unsafe” safety glazing is likely to change the cost to the community. Any potential reduction in the level of safety provided by windscreens 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 optimal safe vehicles and poor selection of vehicles by consumers would be reflected by increasing expenditures on hospitalisation, a loss of quality of life, property damage, rehabilitation and others, most of which would be borne by the community, not the manufacturer or individual choosing to drive 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 – 8/01 was determined in 1995. 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 three main issues related to the potential need for government intervention to insure that safety in safety glazing materials is not compromised. The first two relate to ensuring the safety of all road users and the third relates 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 if government intervention is warranted.

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 windscreen meets any particular level of safety. There are twelve complex tests involved in demonstrating compliance with this rule’s performance requirements and most consumers would be unable to carry out these tests. The results would be poor choices of vehicles with regards to safety glazing (with or without the consumer knowingly doing so) that would increase the risk of crashes – a cost that must then be borne by the community.
In the absence of government intervention, manufacturers could react to market pressures to the general detriment of safety. In an unregulated environment, it is possible that manufacturers may project an image that their windscreens are safe without in fact even incorporating basic protective features and as indicated above, consumers lacking technical knowledge may be unable to differentiate between windscreens with and without basic safety features.

Such situations 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.

2.5.2. Economic and Technological Improvements

There is a question over what would happen if ADR 8 were withdrawn. Would industry return to producing zone toughened windscreens instead of laminated windscreens, both for original equipment and replacement windscreens? If it could be said that the tooling for producing zone toughened windscreens had been completely superseded by that for laminated windscreens, the answer would be that such a return would be highly unlikely. However, since zone toughened products are still being produced (for side windows and rear windscreens) and the capability to manufacture zone toughened products persists, there remains a possibility that zone toughened windscreens could return.

Furthermore, there is a price differential between the two types of windscreen. An original equipment glazing manufacturer puts the differential at $20 ($50 for laminated and $30 for zone toughened windscreens), which together with on-costs could be significant in the price sensitive end of the market. Also, this differential would be magnified considerably at the retail outlets for replacement windscreens.

In respect of replacement windscreens, while consumers may be aware of the superior fracture resistance of laminated windscreens, they would also be aware that laminated windscreens can crack and need to be replaced in accordance with State and Territory regulatory prescriptions when certain criteria are evident (crack length exceeds maximum allowed, grouping of multiple cracks and the location of cracks in relation to critical visibility zones on the windscreen). Also, cracks in laminated windscreens can grow in length after the initial impact without subsequent impacts, sometimes overnight. Therefore, some consumers may form the view that laminated windscreens are no less prone to needing replacement during service and in view of the price differential mentioned above, may opt for zone toughened replacement windscreens if they were available. The Australian Automobile Association has indicated that generally consumers of automotive components will choose the cheaper product if several options are available.

As already indicated, reviews of ADRs 12, 15 and 16 found that government intervention was no longer necessary. This was due to the market being well established, with consumers being able to make informed decisions about glare in the field of view, windscreen demisters and windscreen wipers and washers respectively. In the case of safety glazing, consumers are not easily able to compare the safety quality of glazing material used by different manufactures.
Government intervention to ensure a minimum level of safety for safety glazing in vehicles is necessary to compensate for information asymmetries between consumers and manufacturers, market pressure to reduce costs in a non-regulatory environment, and flow on costs that would be borne by the community. There are not significant enough technological or economic impetus to ensure the use of laminated windscreens without government intervention.

The increased cost to the community by negative externalities in a non-government regulated environment far outweighs any benefit gained from any of the non-regulatory options discussed in section 4. Where benefits exist, they apply to manufacturers (increased competitiveness, reduced cost of compliance) or the individual consumer (reduction in vehicle or replacement windscreen price), the cost of such options are borne by the entire community (hospitalization, reduced quality of life, loss of life). Although carried out in a basic, qualitative manner, this analysis indicates that government regulation is the best solution.

The following sections of this RIS will examine both the regulatory and non-regulatory options in more detail and present a rudimentary cost/benefit analysis. The comparisons presented in section 5 are primarily of a qualitative nature, as data for a quantities 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 safety glazing material is of a type and quality that can assist in reducing the cost of road trauma.

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.

Harmonising 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 both Australian manufacturers 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 cost of complying with the ADRs.

### 3.2. **Current Regulation in Australia**

The existing mandatory standard, Australian Design Rule (ADR) No. 8, specifies a number of standards which address the physical and optical properties required for automotive safety glazing. The list of acceptable materials standards includes the national standards of Australia, New Zealand, U.S.A., U.K., Japan and the regulation adopted by the UN/ECE. In addition to the materials standards, the ADR also addresses a number of regulatory aspects including requirements mandating laminated safety glass for windscreens (as opposed to several other glazing material available in the referenced standards), a minimum luminous transmittance (transparency of the glass) of 75% for the primary vision area of the windscreen (some of the referenced standards use other values) and requirements for non glass (plastic) safety glazing. The rule also specifies methods for determining the primary vision area - a zone on the windscreen through which the driver views the road.

ADR 8 has four separate components. The first outlines what is considered glazing material and specifies the material requirements for windscreens (including mandating the use of laminated glass in the windscreens of all vehicles).

The second part requires that all glass used must carry the indelible marks of relevant standards which are visible when the glass is fitted in the vehicle. The marks must identify the type of glass and the relevant materials standard to which the glass conforms.

The third component defines the primary vision areas required for windscreens for passenger cars, other vehicles and references specific visibility zones from *UN ECE R 43/00 – Uniform Provisions concerning Approval of Safety Glazing and Glazing Materials, Revision 1 of February 1988* for both categories. It also requires that optical transmission for windscreens be not less than 75% in the primary vision area.
The fourth component lists specifications for glazing materials which include:

- Australian Standard AS 2080 – 1983 – Safety Glass for Land Vehicles,
- UN ECE R 43/00 - Uniform Provisions concerning Approval of Safety Glazing and Glazing Materials,
- British Standards Institution – BS AU178 – 1980 – Road Vehicle Safety Glass,
- New Zealand Standard – NZ 5443-1987

The ADRs apply to new vehicles, 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 (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 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 windscreens, the AVSR require continued compliance with ADR 8.

**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 29 of the Safety Regulations for Road Vehicles (supported by Announcement That Proscribes Details of Safety Regulations for Road Vehicles Attachment 37 Technical Standards for Window Glass...
Department of Transport and Regional Services  
Regulation Impact Statement for ADR 8 – Safety Glazing Materials


The US Department of Transport’s National Highway Traffic Safety Administration has released a report discussing the cost of and lives saved by the Federal Motor Vehicle Safety Standards (similar to the ADRs). This report compares the number of facial injuries due to frontal, tow away crashes in the 5 years before High Penetration Resistant windscreens (laminated glass) and the 5 years after their regulation. There was a 74% reduction in injuries (Lives Saved by Federal Motor Vehicle Safety Standards… 2004, p66). Similar studies for vehicle fatalities found the HPR windscreens did not have a notable effect on preventing fatalities although source data was not as easily available as for injuries (Lives Saved by Federal Motor Vehicle Safety Standards… 2004, p67). Although the Australian road environment is different, this American research does indicate that the use of laminated glass windscreens substantially reduces facial injuries related to windscreens.

4. Regulatory and Non-regulatory Options

4.1. Government Regulation

Four options have been considered for future legislation. One is to retain ADR 8 as is, the second to retain ADR 8 but update it to the latest materials standards, third, accept UN/ECE R43 as an alternative and fourth, remove the ADR.

4.1.1. Retain ADR 8

This option can be considered the status quo or “do nothing” approach. The ADR would continue in its current form with no modification.

4.1.2. Update ADR 8

ADR 8 currently references a number of material standards to provide the technical details for testing safety glazing materials (section 3.2). It also contains a number of regulatory provisions stipulating laminated glass for windscreens, the minimum levels of luminous transmittance and three alternative methods for determining the primary vision area of a windscreen (the area through which the driver views the road ahead). These regulatory provisions override any corresponding provisions contained in the referenced standards. For example, the US standard nominates a minimum luminous transmittance of 70% for windscreens but the ADR demands a minimum of 75%.

As technology, government policy, industry practice and consumer expectations change the standards are rewritten. When this happens the ADRs are no longer using the latest materials standards. This option would retain ADR 8 in its current form but update it to the latest versions of the relevant materials standards. The UK standard can be removed as it has since joined the European Union and accepts the ECE regulation. Both the Australian and New Zealand standards can be removed and replaced with a combined standard AS/NZ 2080 due to be released shortly. Compliance with the regulatory
provisions mentioned above will still be imposed in lieu of the corresponding provisions in the referenced standards.

4.1.3. UN/ECE R43

This option would replace ADR 8 with UN/ECE R43. It would still be called ADR 8 but the full text of UN/ECE R43 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). It should be noted that the regulatory provisions in the current ADR coincide with the corresponding provisions in the ECE Regulation, therefore adopting the ECE Regulation as an alternative to the ADR will not necessitate any changes in regulatory provisions.

4.1.4. Remove ADR 8

The ADR can be repealed. It would no longer be in effect and therefore not enforceable. There would then be no Federal level regulation related to safety glazing material. The following three non regulatory options are alternatives that could be put in place if some form of intervention is 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.

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 increase effective decision making. In the case of safety glazing, an information campaign would need to present the consumer with the tools to examine windscreens from different manufacturers and the ability to compare safety features in order to choose one that offers a suitable level of safety.

Another possibility is to derive a convenient rating factor that combines a number of safety features, appropriately weighted on the basis of relative importance and presented as a “Star” or number rating (in a similar manner to energy efficiency star ratings).

In both cases the aim is to provide consumers with the ability to understand the technical details of safety glazing, 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 the secondary information market 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 some 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. The crash forces are concentrated on the driver's side of the vehicle. In the side impact crash test the vehicle is stationary and a trolley hits the side of the vehicle at 50km/h. The results of these tests are combined to come up with 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 of glazing materials 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 safety glazing material used in vehicle windscreens can have an effect (positive or negative) on the risk of injury or death in car crashes 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, updating it, adopt UN/ECE R43, repeal 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 and contrast the various options and carries out a cost/benefit analysis to determine the suitability of each option.
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 (the basic requirements of ADR 8 have been in use since 1971), legally only serious and fatal accidents need be reported to police (and not all are reported) 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 on the number of deaths and injuries directly related to safety glazing material (injuries from shards of broken glass, occupant projected through the windscreen, objects impacting on windscreen), what sort of safety glazing material was used. To compare the effectiveness of the options presented in this RIS it would also be necessary that the data be available from a period before the ADRs were introduced and for periods where changes have been made to ADR 8 (such as requiring the use of laminated glazing material).

Crash statistics used in this report have been taken from the Australian Transport Safety Bureau (ATSB) report Serious Injury Due to Road Crashes (2004) and Road Crash Data and Rates Australian States and Territories 1925 to 2002 (2003). As indicated above, long term crash statistics do not go into great detail so gathering statistics such as the number of injuries and fatalities involving an occupant striking or being projected through a windscreen is not possible. It may be possible to gather such specific information from individual coroner’s reports but the cost of such data collection far outweighs any benefit it may bring to this RIS. Use of the data provided by the ATSB and Bureau of Transport and Regional Economics (BTRE) combined with estimation and simplification of the problem is sufficient to show the relative costs and benefits of the options being considered.

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). Cost pertaining to manufactures cost of compliance are vague as industry has indicated that the cost of complying to the ADR is “negligible” but is unwilling to give 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. It may be possible to obtain a more accurate figure during the consultation period.

5.2. **Affected Parties**

Parties that are expected to be affected by ADR 8 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. Cost/Benefit Analysis

In order to carry out a detailed cost/benefit analysis the number of injuries and fatalities due to windscreen related car accidents would need to be known for a period before windscreens were regulated, while toughened glass was used and currently with the use of laminated glass. Section 5.1 has indicated that this data is not available. A rudimentary cost/benefit analysis is presented below.

American research has indicated that at speeds of more than approximately 20 miles per hour, when not wearing a seat belt the type of glass (toughened or laminated) will not prevent the occupant being projected through the windscreen (Lives Saved by Federal Motor Vehicle Safety Standards… 2004, p66). From this it can be assumed that no fatalities would have been prevented by windscreens in frontal crashes (Australia also has a higher seatbelt wearing rate than America). For the purpose of this analysis only vehicle drivers are being used as it can be assumed a portion of all these crashes will have involved injuries or deaths related to windscreens (injury due to broken safety glazing material, injury death due to the driver being projected through the safety glazing material). It is not possible to determine how many crashes are prevented through the use of safety glazing materials meeting ADR 8 requirements (such as a crash being avoided by a driver who’s windscreen was struck by a rock but who’s vision is not obscured as the laminated glass has not shattered).

The introduction of High Penetration Resistant windscreens (laminated glass) lead to a 74% reduction in non-minor facial injuries. Non-minor injuries are those with a value of two or greater on the Abbreviated Injury Scale, in the case of windscreen related damage,
primarily lacerations that extend in to the subcutaneous tissue, cause disfigurement or require more than first aid or simple closure (Lives Saved by Federal Motor Vehicle Safety Standards… 2004, p66).

Although there are differences between the American and Australian road environment the above figures can be used to find an upper limit for injuries that may result in an environment where laminated glass is not used.

As laminated glass windscreens will not prevent occupant projection at even moderate speeds, it is assumed that the type of windscreen used will not have an effect on the chance of a fatality. Thus only injury needs to be considered.

The previously cited American National Highway Traffic Safety Administration (NHTSA) compared facial injuries of AIS ≥ 2 for the years 1961-65 before HPR windscreens and 1966-70 after the regulation of HPR windscreens. The HPR windscreens resulted in a reduction of 6.76 injuries per 1000 vehicle occupants involved in frontal tow away crashes.

The average cost of a car crash serious injury is $325 000 (Road Crash Costs in Australia, 2000, p xii). Unfortunately the ATSB does not maintain statistics on non-fatal accidents thus it is not possible to apply the above injury rate to the Australian road environment. Insurance companies may possess the necessary data but it is commercially protected and not publicly accessible. It can be expected that the injury rate in Australia would be lower than 6.76 as that figure was determined in the 1980’s, since then seatbelt and airbag technology has improved and in Australia the portion of vehicle occupants not wearing seatbelts is significantly lower than in America. State and Territory road authorities have indicated they are unable to provide similar crash data to compare with the American figures.

Manufacturers have not provided any financial data related to current or future compliance costs. They have indicated that the current cost of complying with ADR 8 is negligible.

5.4. Analysis of Presented Options

5.4.1. Retain ADR 8

This option has the least effect on everyone. 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.

5.4.2. Update ADR 8

Updating ADR 8 to allow the current versions of materials standards would also have a minimal impact on industry. Respondents to the public comment package indicated that updating the materials standards would not have a negative impact on their business. One of the heavy vehicle manufacturer stated that access to updated standards may create additional business opportunities.
Using the latest materials standards may also have some benefit for further technological developments in safety glazing material which have been held back due to the requirements of satisfying the older standards. It is not expected that there would be any change in the level of safety provided by safety glazing materials.

5.4.3. UN/ECE R43

One deficiency of the current ADR is that it merely references the materials standards listed in section 3.2 and anyone wishing to discover its full scope would need to obtain at least one of the referenced standards to complete the picture. Except for UN/ECE R43, these standards are covered by copyright and must be purchased from authorised publishing agents. Incorporating them in the ADR is not feasible as a licensing fee would be payable. However, since the ECE Regulation is available for incorporation without the need for paying a licensing fee, there is no impediment to incorporating it in the ADR, significantly improving accessibility.

Accepting UN/ECE R43 certifications as ADR 8 compliant has the added benefit of furthering international harmonization and may lead to increased trade. Companies within Australia that are ADR certified but not ECE certified (perhaps due to the cost of certifying to both) would be able to certify to the ECE reg and not need to do any further testing to certify to the ADR.

A potential cost to industry could be that those currently certified to ADR 8 may need to conduct further testing in order to certify to the new ADR. This cost could be prevented by adopting the ECE reg as an alternative to ADR 8, that is, ADR 8 remains as is and certification to UN/ECE R43 is considered to be equivalent to meeting the requirements of ADR 8.

This option is not expected to cause any change in safety.

5.4.4. Remove ADR 8

As one of the primary goals of this ADR is to reduce road trauma removal of the ADR without considering alternatives is not an option. The following sections consider alternative of non-regulatory options and the possible consequences of not regulating safety glazing material in any way. All the options considered lead to a potential increase in road trauma, in turn increasing the cost to the community.

5.4.5. Trade Practices Act 1974

Reliance solely on the Trade Practice Act could result in loss of assurance for consumers that safety glazing material for vehicles provides an adequate level of safety. Additionally, a large number of windscreens and glazing material for windows is replaced annually on in-service vehicles. The absence of a mandatory standard could lead to in-service vehicles being fitted with glazing material which may not provide the level of safety found in glazing material 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 safety glazing material, the event of failure can result in significant facial,
head and eye injuries 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 safety glazing material 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 glazing material fitted to a vehicle meets the current mandatory standard, or in an environment without mandatory standards, that the glazing material has any particular level of safety.

As consumers are not in a position to assess the level of visibility and protection offered by windscreen 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 windscreen or other windows that would be deemed to be unsafe under the current standards. This could lead to an increase in facial and eye injuries in crashes, or in the case of some safety glazing material (such as toughened glass), a greater chance of occupants being projected through the windscreen if they are not wearing seatbelts. Any increase in injuries is an externality, the cost of which is borne by the community, not by manufacturers or individual consumers.

5.4.6. 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 windscreen. 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 windscreen. 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.
5.4.7. Secondary Information Markets

The secondary information market is small and currently would be unable to act as a replacement for ADR 8 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. Manufactures 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 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 a windscreen that would currently be considered unsafe in order save costs. Once again, the costs of increased crashes are borne by the community, not solely by the manufacturer or individual consumer.

5.4.8. 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.

5.4.9. Codes of Conduct

Replacement of ADR 8 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 was subjected to a separate review which concluded that the current arrangements should continue.

5.5. Comparative Analysis

Table 1 summarises the costs and benefits of the options considered in this RIS. As a numerical analysis is not possible it has been done in a descriptive manner, with costs and benefits expressed as an increase or decrease from the current values.

Although only generally descriptive in nature several conclusions can be drawn from Table 1. All non-regulatory options result in the potential for an increase in the cost to the community due to an increase in road trauma 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, retaining ADR 8 while modifying it by adopting UN/ECE R43 had the added benefit of potentially increasing export of locally made vehicles and vehicle components to the international market as well as furthering the goal of international harmonization.
<table>
<thead>
<tr>
<th>Option</th>
<th>Benefit</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retain ADR 8 as is</td>
<td>• No change to road trauma</td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>• No change to cost of compliance</td>
<td></td>
</tr>
<tr>
<td>Update ADR 8</td>
<td>• No change to road trauma</td>
<td>•</td>
</tr>
<tr>
<td></td>
<td>• No change to cost of compliance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Potential for new technologies to be used</td>
<td></td>
</tr>
<tr>
<td>Adopt UN/ECE R43</td>
<td>• No increase in road trauma</td>
<td>• Practically no change in cost of compliance</td>
</tr>
<tr>
<td></td>
<td>• International harmonization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Furthers TTMRA Road Vehicle Co-operation Programme</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Potential for increased trade</td>
<td></td>
</tr>
<tr>
<td>Remove ADR 8</td>
<td>• No compliance costs for manufacturers</td>
<td>• Potential increase in road trauma</td>
</tr>
<tr>
<td></td>
<td>• Potential for reduced vehicle price</td>
<td></td>
</tr>
<tr>
<td>Trade Practices Act</td>
<td>• No compliance costs for manufacturers</td>
<td>• Potential increase in road trauma</td>
</tr>
<tr>
<td></td>
<td>• Potential for reduced vehicle price</td>
<td>• Potential loss of confidence in vehicle safety</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Safety failures can only be dealt with after occurrence</td>
</tr>
<tr>
<td>Information campaign &amp;</td>
<td>• No compliance costs for manufacturers</td>
<td>• Potential increase in road trauma</td>
</tr>
<tr>
<td>secondary information</td>
<td>• Potential for reduced vehicle price</td>
<td>• Potential loss of confidence in vehicle safety</td>
</tr>
<tr>
<td>market</td>
<td></td>
<td>• Increased cost to organisations running the information campaign/</td>
</tr>
<tr>
<td></td>
<td></td>
<td>market.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Potential for manufacturers and organisations providing information to collaborate to the detriment of consumers</td>
</tr>
<tr>
<td>Code of Practice</td>
<td></td>
<td>Not a suitable option (see section 4.3.1)</td>
</tr>
</tbody>
</table>

Table 1 – Benefits and Costs of Considered Options
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 manufacturers. 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 thirteen different sources – four vehicle manufacturers, two compliance agents, one glass manufacturer, 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.

All respondents agreed to the changes indicated in the draft ADR included in the public comment package. Several errors and inconsistencies were also highlighted and these have been corrected. No financial data or crash statistics were provided, although several respondents did indicate that as they currently certify to UNECE R43, updating materials standards would no have any negative impact on their business.

As there was no dissent, this RIS has been considered non-contentious and will not be presented to TACE or the ATC.

7. Conclusions and Recommendations

This Regulation Impact Statement has investigated the need for some form of regulation and standardization of safety glazing material. Although detailed figures are unavailable it is clear that safety glazing material plays a roll in preventing crashes (by not interfering with the
driver’s vision when damaged) and reducing injury (by minimising shards that can cause lacerations to face and eyes).

Eight options were considered: continued retain ADR 8 in its current form, update it to the latest materials standards, adopt UN/ECE R43, removal of the ADR, reliance 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 markets are not suited to such specific safety devices and a code of conduct is not appropriate.

Of the three options involving continuation of the ADR all provided similar benefits with minimal if any additional cost. It is recommended that ADR 8 is kept, updated to the latest material standards and the full text UN/ECE R43 be appended for convenience of use as it does not generate copyright issues. This combined option preserves the current levels of safety without imposing additional cost on the Australian Government, manufacturers or consumers while allowing the greatest degree of flexibility for manufactures and importers of safety glazing material.

8. Implementation and Review

An amendment to ADR 8 will be drafted and submitted to the Minister for determination. It’s content will reflect the conclusions set out in section 7 with one exception. After discussions within VSS it was decided to not delete the old materials standards at this time. Removal of the old standards would constitute an increase in stringency and require the creation of ADR 8/02. This would place an unnecessary burden on both manufactures having to recertify (in many cases for no gain) and on VSS who will have to process all the new certifications. Further discussions will be held with industry to determine if the old standards are being used and if not they will be removed (responses during the public comment period were not extensive enough to make a decision).

The modified ADR 8 will be given force in law in Australia by determining it to be a vehicle 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.

As the ADRs are vehicle standards under the MVSA they 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 8 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
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.
### Appendix 1 – Summary of Public Comment Feedback

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

<table>
<thead>
<tr>
<th>Name</th>
<th>Agree with presented ADR</th>
<th>Comments</th>
<th>Response to Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low volume sports car manufacturer</td>
<td>Yes</td>
<td>No cost or benefit due to suggested changes</td>
<td>The presence of a windscreen on a vehicle is a design issue to be considered by manufacturers. Market pressure and consumer expectations account for the bulk of vehicles including windscreens. Government regulation is not currently necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supplies laminated glass windscreens on all vehicles</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Glass certified to ECE R43</td>
<td></td>
</tr>
<tr>
<td>Low volume sports car manufacturer</td>
<td>Yes</td>
<td>No cost or benefit due to suggested changes</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Supplies laminated glass windscreens on all vehicles</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Glass certified to ECE R43</td>
<td></td>
</tr>
<tr>
<td>Compliance agent</td>
<td>Yes</td>
<td>Keeping alternative standards benefits this company as they can offer a range of compliance options to their clients. A basic survey (family, friends, co-workers) indicated 75% would choose laminated glass over toughened glass. Installation of windscreens should be mandated on all vehicles, some low volume open sports cars appearing in the US and Europe do not have windscreens. This is a safety issue as they are not required to wear head or eye protection and could be injured by road debris.</td>
<td></td>
</tr>
<tr>
<td>International glass manufacturer</td>
<td></td>
<td>Currently the latest information from Glass-GTR is that light transmittance will be 70%. ADR 8 currently requires 75%. When ECE R43 is amended to reflect GTR will ADR 8 also adopt 70%? Use ANSI Z26.1-1996 as an alternative glazing standard, it is more recent than that referred to in the RIS.</td>
<td>Any difference between the ADR and a future GTR will be considered when the GTR is released. ANSI Z26.1-1996 will be used as an alternative standard.</td>
</tr>
<tr>
<td>Compliance agent</td>
<td>Yes</td>
<td>Supports suggested changes for non L-group vehicles</td>
<td>The ADR will reference ANSI Z26.1 as a</td>
</tr>
</tbody>
</table>
No cost or benefit due to suggested changes

Proposed ADR does not address motorcycle and moped windshield compliance. Generally these are non-glass as referenced in 7.3 requiring compliance with ANSI Z26.1 for even “cosmetic windshields”. Clause 7.4 contradicts this by requiring laminated glass. By specifically exempting some glazing (non-glass) in 7.2 this means all other glazing is covered by the ADR. Is this intended to cover rear vision mirrors or only transparent materials?

Is section 7.6 intended to apply to L-group vehicles?

Need to address when a motorbike windscreen needs to comply and when it is just a “cosmetic wind deflector” not entering the primary vision area. Generally VSS has applied the FMVSS height above seat definition in relation to “cosmetic windshields”, though this does not always for scooters with upright seating where windscreen height can be greater and the rider still has a clear view of the road without looking through the windshield.

ADR 8/00 has been difficult to use as it requires material to be non-shattering while still requiring compliance with Z26.1 and this has been applied differently by different assessors. All common windscreens are made from non-shattering materials but it is uncommon for them to meet ANSI Z26.1 and hence 8.4.1.

Another example of unusual motorcycle windscreen is the Benelli Adiva and BMW C1 where it has a full frame. This has not been adequately addressed in the draft ADR which would appear to require laminated guidance document for motorcycle wind deflectors. The ADR will also reflect that the standard does not apply to motorcycle wind deflectors.
Both matters could be addressed by defining a windscreen and windshield for L-group vehicles as one that has a certain height above the seat or entering a light of sight to a point on the road. Laminated glass should not apply to L-group vehicles. The in service requirements of State and Territory regulators are independent of the ADRs and none of the regulators have requested that reference be made to the minimum luminous transmittance of 35%. The ADR does not prevent the use of laminated glass in areas other than windscreens.

<table>
<thead>
<tr>
<th>Entity</th>
<th>Comment</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Automobile Association</td>
<td>Yes</td>
<td>Although unable to provide numbers of replacement windscreens, it is recognised that a significant number of consumers purchase lower cost replacement parts. State regulations have a minimum light transmittance of 35% this should be reflected in the ADR. Vehicles should not be prevented from using laminated glass on areas other than the windshield. A recent US Enhanced Protective Glass Automotive Association indicated manufactures are now using laminated glass in other windows and sunroofs.</td>
</tr>
<tr>
<td>National Transport Commission</td>
<td>No comment</td>
<td></td>
</tr>
<tr>
<td>Queensland Transport</td>
<td>Yes</td>
<td>It has been difficult to determine if the ADR allows material such as shatter proof plastics for uses such as internal partitions and what specifications such materials much meet. This should be clarified in the new ADR.</td>
</tr>
<tr>
<td>Federal Chamber of Automotive Industry</td>
<td>Yes</td>
<td>The RIS references the 1992 version of JIS R 3211 while the draft ADR references the 1998 version. Which should it be? Same for ANSI Z26.1, 1980 and 1996 are referenced, which should it be? The RIS and ADR do not mention lead time for changes. This would only be acceptable if the new ADR does not increase stringency. JIS R 3211 1998 will be used as an alternative standard. ANSI Z26.1 1996 will be used as an alterative standard. The ADR does not increase stringency and prior acceptable rules will be retained.</td>
</tr>
<tr>
<td>Entity</td>
<td>Support</td>
<td>Comments</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>---------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| 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.  
UNECE, Japanese, US, Australian and New Zealand standards will be accepted as alternatives. |
| Australian heavy vehicle manufacturer       | Yes     | Updating materials standards while still allowing R43 as an alternative would minimise compliance costs and create opportunities to reduce production costs. As the company produces specialty trucks for the Australian market, keeping control of the ADR content would be important.  
One opportunity would be to import glass from America, reducing cost.  
Customer base is likely to require laminated glass as it is less likely to chip or scratch when struck by foreign objects.  
If ECE standards replace the current, would there still be alternative standards?  
Certify all glazing to ADR 8/01                                                               |
| Motor Trades Association of Australia       | Yes     |                                                                                                                                                                                                        |
| Commercial Vehicle Industry Association of Australia | Yes     |                                                                                                                                                                                                        |