

Vehicle Standard (Australian Design Rule 98/02 – Advanced Emergency Braking for Passenger Vehicles and Light Goods Vehicles) 2026

Made under section 12 of the *Road Vehicle Standards Act 2018*

DRAFT FOR CONSULTATION **Explanatory Statement**

Approved by the XXX, XXX

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CONTENTS

1.	LEGISLATIVE AUTHORITY	3
1.1.	National Road Vehicle Standards	3
1.2.	Exemption from Sunsetting	3
1.3.	International Harmonisation	4
2.	PURPOSE AND OPERATION	5
2.1.	Overview of the Regulatory Framework	5
2.2.	Overview of the ADR	5
2.3.	Design Requirements	5
2.4.	AEBS Warnings	6
2.5.	AEBS Capability	6
2.6.	AEBS Performance and limitations	7
2.7.	Exemptions and Alternative Procedures	7
2.8.	Alternative Standards	8
3.	MATTERS INCORPORATED BY REFERENCE	8
3.1.	Legislative Instruments	8
3.2.	Other Documents	9
4.	CONSULTATION	10
4.1.	General Consultation Arrangements	10
4.2.	Specific Consultation Arrangements	11
5.	REGULATORY IMPACT	11
5.1.	Benefits and Costs	11
5.2.	Impact Analysis	11
6.	STATEMENT OF COMPATIBILITY WITH HUMAN RIGHTS	11
6.1.	Overview	11
6.2.	Human Rights Implications	11
6.3.	Conclusion	12

1. LEGISLATIVE AUTHORITY

1.1. National Road Vehicle Standards

The Vehicle Standard (Australian Design Rule 98/02 – Advanced Emergency Braking for Passenger Vehicles and Light Goods Vehicles) 2026, which may also be cited as the Australian Design Rule 98/02 – Advanced Emergency Braking for Passenger Vehicles and Light Goods Vehicles or ADR 98/02, is made under the *Road Vehicle Standards Act 2018* (RVSA).

The RVSA enables the Australian Government to establish nationally uniform standards that apply to road vehicles and/or road vehicle components when they are provided to the market in Australia for the first time. The RVSA applies to vehicles or components whether they are manufactured in Australia or imported.

The making of the national road vehicle standards necessary for the RVSA's effective operation is provided for in section 12, which empowers the Minister to “determine standards for road vehicles or road vehicle components”. These standards are also referred to as the Australian Design Rules (ADRs).

1.2. Exemption from Sunsetting

ADR 98/02 is exempt from the sunseting provisions of the *Legislation Act 2003*.

Source of the exemption

A standard made under section 12 of the RVSA is not subject to the sunseting provisions of section 50 of the *Legislation Act 2003* through section 12 of the Legislation (Exemptions and Other Matters) Regulation 2015 (table item 56C). A similar exemption was previously granted in respect of national road vehicle standards made under section 7 of the *Motor Vehicle Standards Act 1989* (MVSA) (item 40, section 12 of the Legislation (Exemptions and Other Matters) Regulation 2015). This exemption is important to ensure that Australian Design Rules (ADRs), including ADR 98/02, continue to remain in force and available to regulators, industry and the public.

Intergovernmental dependencies

The exemption concerns ADRs which facilitate the establishment and operation of the intergovernmental vehicle standard regime that Commonwealth, state and territory governments rely on to regulate the safety of vehicles on public roads.

The Commonwealth uses the ADRs as the basis on which approvals to supply types of road vehicles to the market are granted under the Road Vehicle Standards Rules 2019. States and territories and the National Heavy Vehicle Regulator use the ADRs as the primary criteria on which vehicles are assessed for roadworthiness. This ‘in-service’ aspect is dependent on the date of manufacture, which determines the applicable version of the ADRs against which the vehicle can be assessed. The ability to rely on national standards is particularly relevant given the long service life of vehicles – the average age of vehicles in Australia is over 10 years.

While the ADRs are regularly updated to reflect changes in technology, it is not possible to apply these new standards retrospectively to vehicles that are already in use. With former ADRs kept on the Federal Register of Legislation, state and territory governments can use them to ensure vehicles continue to comply with the ADRs that were in force when they were first supplied to the market.

In the event that the Commonwealth could not justify the maintenance of the ADRs, state and territory governments would be compelled to create their own vehicle standards. Whilst this could mean adopting the substance of the lapsed ADRs as an interim measure, the differing needs and agendas of each state and territory government may result in variations to in-service regulations. Having different vehicle standards across the states and territories would make the scheme operate contrary to the underlying policy intent of the RVSA, which is to set nationally consistent performance-based standards.

Commercial dependencies

The effect on vehicle manufacturers to redesign existing models to comply with new ADRs would present a burden and be a costly and onerous exercise. Manufacturers should not be expected to continually go back to redesign existing vehicles. Furthermore, ongoing product recalls to comply with new ADRs would undermine consumer confidence with significant financial impact to manufacturers. This exemption allows vehicle manufacturers to focus their efforts to ensure new models supplied to the market continue to comply.

Review of Australian Design Rules

ADRs are subject to regular reviews, as resources permit, and when developments in vehicle technology necessitates updates to requirements. Reviews of the ADRs ensure the ongoing effectiveness of a nationally consistent system of technical regulations for vehicle design, which are closely aligned, wherever appropriate with leading international standards such as United Nations (UN) regulations. This method facilitates the rapid introduction of the latest safety devices and technological advances into the Australian market, while also contributing to the industry's cost competitiveness in the domestic market. Where a review results in a new or amended ADR, these changes are subject to full parliamentary scrutiny.

1.3. International Harmonisation

A majority of Australian road vehicle standards, including ADR 98/02, are closely harmonised with internationally based UN regulations, which are developed by the UN World Forum for Harmonization of Vehicle Regulations. Harmonisation ensures that vehicles built to the most recent safety, environmental and anti-theft standards are supplied to the Australian market at the least cost and that Australia has access to the latest vehicle technologies. In contrast, more Australian specific standards would require vehicles to be designed, developed and produced specifically for the relatively small Australian market. Unless needed to achieve legitimate policy objectives, a market specific standard would generally result in a significantly lower net benefit and benefit-cost ratio, than if costs were amortised over a number of markets, such as occurs with UN regulations.

2. PURPOSE AND OPERATION

2.1. Overview of the Regulatory Framework

The RVSA establishes a regulatory framework to regulate the importation and first supply of road vehicles to the market in Australia. The core principle of this framework is that vehicles which comply with appropriate standards are suitable for provision to the market in Australia. The ADRs have set out those standards since the early 1970s. At that time, they were applied cooperatively by the Australian Motor Vehicle Certification Board representing the Commonwealth and state and territory governments. In 1989, this arrangement was replaced by the MVSA and the Australian Design Rules were determined as national standards. The RVSA commenced in full and replaced the MVSA on 1 July 2021. A two-year transition period was provided between 1 July 2021 and 30 June 2023.

Under the RVSA, the ADRs are national road vehicle standards intended to make vehicles safe to use, control the emission of gas, particles or noise, secure vehicles against theft, provide for the security marking of vehicles and promote the saving of energy. The ADRs are applied to vehicles as criteria for approval under various regulatory pathways set out in the Road Vehicle Standards legislation. Vehicles approved under these regulatory pathways can be provided to the market in Australia for use in transport.

2.2. Overview of the ADR

The policy intent of the additional AEBS requirements mandated through ADR 98/02 is to reduce the occurrence of impacts on bicycles and bicyclists.

Where Advanced Emergency Braking Systems (AEBS) are fitted to new vehicles, they are closely integrated with a vehicle's other systems, feature a sensor array and have the capacity to anticipate certain crashes based on the sensor data collected. The function of an AEBS conforming to ADR 98/02 is to:

- (a) Avoid or mitigate the severity of a rear-end in-lane collision with a passenger car;
- (b) Avoid or mitigate the severity of an impact with a pedestrian; and
- (c) Avoid or mitigate the severity of an impact with a bicycle.

2.3. Design Requirements

AEBS automatically detects an imminent forward collision and activates the vehicle braking system to decelerate the vehicle with the purpose of avoiding or mitigating a collision.

AEBS conforming to ADR 98/02 are designed to reduce the likelihood of an in-lane rear-end crash with a car in front, or the impact on a pedestrian or a bicycle by first warning the driver and then automatically braking to reduce impact speed when a collision is imminent, if the driver has not reacted.

AEBS read inputs from a variety of sensors and cameras to monitor the road environment. In the event that a collision with a vehicle in front, pedestrian or bicycle is predicted, the driver is warned. This warning occurs by at least two modes and may be acoustic, haptic or optical. If the driver does not respond, a warning brake phase may

be initiated. If the driver still does not react to the event, the system will execute an emergency braking phase in order to mitigate the collision.

Clause 5.1 requires that all applicable vehicles be fitted with AEBS and meet the requirements set out in Appendix A, as varied by clause 6 Exemptions and Alternative Procedures. Appendix A is the UN Regulation No. 152 – UNIFORM PROVISIONS CONCERNING THE APPROVAL OF MOTOR VEHICLES WITH REGARD TO THE ADVANCED EMERGENCY BRAKING SYSTEMS (AEBS) FOR M₁ AND N₁ VEHICLES (R152), incorporating the 02 series of amendments, including the supplements 1 to 5 to the 02 series of amendments.

2.4. AEBS Warnings

AEBS designed to conform to ADR 98/02 have different types of warnings depending on the road environment and state of the AEBS. Some warnings alert the driver in case of potential failures or deactivation of the AEBS. Warnings also form an essential part of the core functionality of AEBS.

A ‘failure warning’ occurs when a fault in the AEBS prevents the requirements of ADR 98/02 being met. A fault in this instance may be electrical in nature, a failure in the self-check function of the AEBS or a non-electrical failure such as sensor occlusion or misalignment. The self-check function continuously checks the AEBS for a system failure while AEBS is active. The AEBS communicates a ‘failure warning’ with a constant yellow optical warning signal. The purpose of the ‘failure warning’ is to alert the driver to a fault in the AEBS.

A ‘deactivation warning’ occurs when the driver deactivates the AEBS. This is only possible if the vehicle is fitted with a means to deactivate the AEBS, and such a means is not required by this standard. A deactivation warning also occurs when the vehicle is equipped with a means to automatically deactivate the AEBS function, for example, in situations such as off-road use. The warning signal used in both instances may be the same as the ‘failure warning’ signal. The purpose of the ‘deactivation warning’ is to alert the driver that the AEBS function has been deactivated.

A ‘collision warning’ occurs when the AEBS detects an imminent forward collision. The warning signal used in this instance must be provided by at least two modes selected from acoustic, haptic or optical. Optical warning signals must be visible even in daylight and be easily verifiable by the driver from the driver’s seat. The purpose of the ‘collision warning’ is to alert the driver that a collision is imminent so that the driver can take immediate action. This is because even small margins count in reducing speed to prevent or lessen the risk of fatality or severe injury.

2.5. AEBS Capability

An ‘emergency braking’ intervention occurs when the AEBS has detected the possibility of an imminent collision with a leading vehicle in the same lane, a pedestrian, or a bicycle, after a ‘collision warning’; if no action from the driver has been detected. During an emergency braking intervention, the AEBS shall use the vehicle’s service brake system to cause deceleration of at least 5 m/s² for the purpose of avoiding or reducing the severity of impact with the leading vehicle, pedestrian or bicycle.

The AEBS may abort an automated ‘emergency braking’ intervention in the event that the AEBS no longer detects that a collision is likely. The AEBS may also abort the

emergency braking intervention if it detects a ‘deliberate action’ by the driver which indicates that they are aware of the situation, e.g. operating the direction indicator control.

AEBS is required to be active and work within speeds ranging from 10 km/h up to 60 km/h (20 km/h to 60 km/h for pedestrian and bicycle scenarios). AEBS should work at all load conditions. This requirement does not apply if the driver has deactivated the AEBS (where the option is available).

2.6. AEBS Performance and Limitations

‘Speed reduction by braking demand’ sets out the environmental conditions in which the AEBS equipped vehicle must demonstrate its braking intervention performance as well as the speed reductions required of it, in order to comply with ADR 98/02.

An AEBS compliant to ADR 98/02 will be designed to generate as few unnecessary ‘collision warning’ signals as possible, and will avoid initiating emergency braking interventions in situations where an attentive driver would not anticipate a collision.

A key purpose of reducing false warnings or emergency braking interventions is to reduce the likelihood of the driver switching the AEBS off. However, the requirement still exists for vehicles where there is no way to deactivate AEBS, as false alarms and interventions are nevertheless highly undesirable, including because of the safety risks that could otherwise arise.

2.7. Exemptions and Alternative Procedures

Exemptions

Clause 6 creates exemptions from some requirements of appendix A (UN R152) which pertain to gaining a type approval in the UN context. This is because they are not required in the Australian context where the Commonwealth administers approvals through the RVSA and the ADRs. Consequently, manufacturers supplying new vehicles to Australia are exempt from most administrative (non-technical) requirements of UN R152.

Clause 6.1 states that, paragraphs 3., 4., 7., 8., 9., 10., 11., 12. and annexes 1 and 2 of UN R152 are not required for the purposes of complying with ADR 98/02. This is because they refer to gaining a type approval in the UN context.

Alternative Procedures

Clause 6 identifies procedures to which vehicles may comply, which are acceptable alternatives to those created by UN R152. These have been adapted for the Australian market to enable vehicle manufacturer to demonstrate compliance to ADR 98/02 where they have not gained a type approval in the UN context.

Clauses 6.2., 6.3. and 6.4. state that ADR 98/02 applies to vehicles seeking to demonstrate that they meet all the technical requirements for AEBS tested in car to car, car to pedestrian and car to bicycle scenarios as defined in Appendix A.

Clause 6.5. states that category MA vehicles do not need to meet the requirements in paragraph 5.1.7. of Appendix A if they comply with ADR 31/04. This is because these standard features are sufficiently equivalent requirements pertaining to ABS, which are

necessary for optimal brake performance during an AEBS intervention. This allows vehicle manufacturers to more easily demonstrate compliance to ADR 98/02.

Clause 6.6 states that category MB, MC and NA vehicles do not need to meet the requirements in paragraph 5.1.7 of Appendix A if they comply with ADR 31/04 or ADR 35/07. This is because these standards feature sufficiently equivalent requirements pertaining to ABS, which are necessary for optimal brake performance during an AEBS intervention. This allows vehicle manufacturers to more easily demonstrate compliance to ADR 98/02.

Clauses 6.7 to 6.27 clarify the administrative arrangements of UN R152 where they differ from the RVSA framework; for example, there is no technical service under the RVSA framework.

Clause 6.28 clarifies the precedence in the event of a conflict between clause 6 and Appendix A.

2.8. Alternative Standards

Clause 7 sets out standards which are considered to be equivalent to ADR 98/02. If a vehicle meets the requirements of one of these standards, it also complies with ADR 98/02. These alternative standards are acceptable because they do not compromise the performance requirements set out in UN R152. Vehicle manufacturers have the flexibility to gain compliance to ADR 98/02 through clause 5.1 and Appendix A as varied by clause 6 Exemptions and Alternative Procedures, or through clause 7 Alternative Standards.

Clause 7.1 identifies the United Nations Regulation No. 152 – UNIFORM PROVISIONS CONCERNING THE APPROVAL OF MOTOR VEHICLES WITH REGARD TO THE ADVANCED EMERGENCY BRAKING SYSTEMS (AEBS) FOR M₁ AND N₁ VEHICLES, incorporating the 02 series of amendments (including at least supplements 1 to 5 to the 02 series of amendments), as an acceptable alternate standard. This standard is also featured in Appendix A of ADR 98/02 and makes up most of the technical requirements of ADR 98/02. It is the second series of amendments to the original internationally agreed standard for AEBS regarding passenger vehicles and light goods vehicles.

3. MATTERS INCORPORATED BY REFERENCE

3.1. Legislative Instruments

Clause 4.1.1 of ADR 98/02 includes a reference to the Vehicle Standard (Australian Design Rule Definitions and Vehicle Categories) 2005 (which may also be cited as the Australian Design Rule – Definitions and Vehicle Categories). This sets out definitions for many terms used in the ADRs, including the vehicle categories used in ADR applicability tables.

Clauses 6.5 and 6.6 of ADR 98/02 each include a reference to the Australian Design Rule 31/04 – Brake Systems for Passenger Cars, which prescribes braking system requirements for passenger vehicles (other than omnibuses) and light goods vehicles to ensure safe braking under normal, and emergency conditions.

Clause 6.6 of ADR 98/02 also includes a reference to the Australian Design Rule 35/07 – Commercial Vehicle Brake Systems, which prescribes braking requirements for commercial vehicles and large passenger vehicles to ensure safe braking under normal and emergency conditions.

The ADRs may be freely accessed online through the Federal Register of Legislation. The website is www.legislation.gov.au.

In accordance with paragraph 12(2)(b) of the RVSA, each of these ADRs are incorporated as in force or existing from time to time. The ellipses (...) indicates the version(s) (e.g. 00, 01 etc.) of the ADR in force at the time.

3.2. Other Documents

American Society for Testing and Materials

Paragraph 2.14 of Appendix A includes references to the American Society for Testing and Materials (ASTM) of E1136-19, ASTM of F2493-20 and ASTM Method E1337-19. These standards specify a standard reference test tyre and a method for determining the peak braking coefficient of road test surfaces.

ASTM Standards may be freely accessed online through the ASTM International Reading Room. This requires the user to register using an email and password. The ASTM International Reading Room website is: www.astm.org/standards-and-solutions/standards-and-publications/reading-room.

In accordance with paragraph 14(1)(b) and subsection 14(2) of the *Legislation Act 2003*, each of these ASTM standards are incorporated as in force on the date this national road vehicle standard is made.

International Organization for Standardization

Paragraph 6.3.1 of Appendix A includes a reference to ISO 19206-3:2021. This standard specifies detection requirements for a vehicle rear-end target to represent a passenger vehicle in terms of size, shape, reflection properties, to assess the system detection and activation performance of vehicle active safety systems, including AEBS.

Paragraph 6.3.2 of Appendix A includes a reference to ISO 19206-2:2018. This standard specifies detection requirements for pedestrian targets that represent an adult or a child in terms of size, shape, reflection properties, to assess the system detection and activation performance of vehicle active safety systems, including AEBS.

Paragraph 6.3.3. of Appendix A includes a reference to ISO 19206-4:2020. This standard specifies the properties and performance requirements of a bicyclist target that represents a human bicyclist in terms of shape, movement, reflection properties, etc. for testing purposes.

ISO Standards are available for purchase only from the International Organization for Standardization (ISO) and various associated national standards bodies. While not freely available, these ISO standards are all readily accessible and widely used by vehicle manufacturers and test facilities as part of their professional libraries. Subject to copyright conditions, people may view a copy of ISO 19206-2:2018, 19206-3:2021 and 19206-4:2020 at the Offices of the Department of Infrastructure, Transport, Regional Development, Communications, Sport and the Arts in Canberra.

In accordance with paragraph 14(1)(b) and subsection 14(2) of the *Legislation Act 2003*, each of these ISO standards are incorporated as in force on the date this national road vehicle standard is made.

Section 12 of the Act allows the Minister to incorporate a broad range of documents, including as in force or existing at a particular time or as in force from time to time, when making national road vehicle standards. This ensures that Australia's legislative framework is well-prepared for future developments in the international road vehicle space.

United Nations Regulations and/or Resolutions

Clause 7.1 includes a reference to the 02 series of UN Regulation No. 152 (R152). This is an international standard for AEBS fitted to passenger vehicles (other than omnibuses) and light goods vehicles.

Paragraph 1 of Appendix A includes a reference to the Consolidated Resolution on the Construction of Vehicles (R.E.3.), document ECE/TRANS/WP.29/78/Rev.6. This includes definitions for the UN vehicle category classifications used in Appendix A and the alternative standard under clause 7 of ADR 98/02.

Paragraph 1 of Appendix A includes a reference to UN Regulation No. 131 (R131). This is an international standard for AEBS fitted to omnibuses, medium and heavy goods vehicles.

Paragraph 2.14 and 5.1.7 of Appendix A includes references to UN Regulations No. 13 (R13) and 13-H (R13H). Paragraph 6.1.1.3 of Appendix A includes a reference to UN Regulation No. 13-H. These are international standards for road vehicle braking systems.

Paragraph 5.1.2 of Appendix A includes a reference to the UN Regulation No. 10 (R10). This is an international standard for electromagnetic compatibility for vehicles and vehicle components.

Paragraph 5.4.1.3 of Appendix A includes a reference to UN Regulation No. 121 (R121). This is an international standard for the identification of vehicle controls, tell-tales and indicators.

The Consolidated Resolution on the Construction of Vehicles (R.E.3.), document ECE/TRANS/WP.29/78/Rev.6, and the UN Regulations (including R10, R13, R13-H, R121, R131 and R152), may be freely accessed online through the UN World Forum for the Harmonization of Vehicle Regulations (WP.29). The WP.29 website is www.unece.org/trans/main/welcwp29.html.

In accordance with paragraph 14(1)(b) and subsection 14(2) of the *Legislation Act 2003*, each of these UN documents are incorporated as in force on the date this national road vehicle standard is made.

4. CONSULTATION

4.1. General Consultation Arrangements

It has been a longstanding practice to consult widely on proposed new or amended vehicle standards. For many years, there has been active collaboration between the

Commonwealth and the State/Territory governments, as well as consultation with industry and consumer groups. Much of the consultation takes place within institutional arrangements established for this purpose. The analysis and documentation prepared in a particular case, and the bodies consulted, depend on the degree of impact the new or amended standard is expected to have on industry or road users.

Proposals that are regarded as significant need to be supported by an Impact Analysis (IA) meeting the requirements of the Office of Impact Analysis (OIA) as published in the *Australian Government Guide to Policy Impact Analysis 2023*.

4.2. Specific Consultation Arrangements

[A further summary will be inserted here following this consultation].

5. REGULATORY IMPACT

5.1. Benefits and Costs

The introduction of a new ADR 98/02 harmonised with the 02 series of amendments to UN R152 supports the Australian Government's priorities under the National Road Safety Strategy 2021–30 that includes pursuing technological improvements and uptake of safer vehicles, and the protection of vulnerable road users. This ADR aims to deliver safer vehicles to the Australian community to reduce cyclist fatalities and injuries resulting from road crashes.

This option also forms a holistic policy consideration of the benefits and Australian Government objectives, and is in keeping with the long-standing policy of harmonisation with UN Regulations. Harmonisation with the UN Regulations allows Australia to fulfil its obligations as a Contracting Party under the 1958 Agreement and as a signatory under the World Trade Organisation Technical Barriers to Trade Agreement.

5.2. Impact Analysis

A Preliminary Impact Analysis was submitted to the OIA and it was determined in April 2025 that a detailed analysis is not required under the Australian Government's Policy Impact Analysis Framework. The OIA reference number for the IA is OIA25-09348.

6. STATEMENT OF COMPATIBILITY WITH HUMAN RIGHTS

The following Statement is prepared in accordance with Part 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

6.1. Overview

ADR 98/02 specifies requirements for the fitment of AEBS to passenger vehicles (other than omnibuses), and to light goods vehicles, to avoid or mitigate the severity of rear-end in-lane collisions and impacts with pedestrians and bicycles.

6.2. Human Rights Implications

ADR 98/02 does not engage any of the human rights and freedoms recognised or declared in the international instruments listed in section 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

6.3. Conclusion

ADR 98/02 is compatible with human rights, as it does not raise any human rights issues.

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