

Vehicle Standard (Australian Design Rule 113/00 – Acoustic Vehicle Alerting Systems for Quiet Road Transport Vehicles) 2024

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

Explanatory Statement

Approved by the Hon Carol Brown MP, Assistant Minister for Infrastructure and Transport

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1. LEGISLATIVE AUTHORITY

1.1. National Road Vehicle Standards

Vehicle Standard (Australian Design Rule 113/00 – Acoustic Vehicle Alerting Systems for Quiet Road Transport Vehicles) 2024, also referred to as ADR 113/00, is made under the *Road Vehicle Standards Act 2018* (RVSA). The RVSA enables the Australian Government to establish nationally uniform standards that apply to new road vehicles or road vehicle components when they are provided to the market in Australia. The RVSA applies to vehicles or components whether they are manufactured in Australia or imported.

Section 12 of the Act allows the Minister to determine National Road Vehicle Standards, also known as the Australian Design Rules (ADRs).

1.2. Exemption from Sunsetting

ADR 113/00 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 ADR 113/00 continues to remain in force, and available to regulators and industry.

Justification of Exemption

It is appropriate that standards made under section 12 of the RVSA remain enduring and effective to regulate ongoing road worthiness of vehicles throughout their useful life and reduce regulatory burden on vehicle manufacturers.

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 use the ADRs as the primary criteria on which vehicles are assessed for road worthiness. 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 12.1 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. The exemption from sunseting allows vehicle manufacturers to focus their efforts to ensure new models supplied to the market continue to comply.

Review of Australian Design Rules

Despite exemption from sunseting, ADRs are subject to regular reviews, when developments in vehicle technology necessitate updates to requirements. ADRs are subject to regular reviews, as resources permit, and when developments in vehicle technology necessitates updates to requirements. Comprehensive parliamentary scrutiny can be undertaken through these reviews.

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 regulations. Through this means it is sought to facilitate 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.

1.3. International Harmonisation

A majority of Australian road vehicle standards such as ADR 113/00 harmonise closely with international regulations. This is so that manufacturers can more easily comply with regulation, and so that regulations capture the well-developed views of the international community. This ultimately leads to safer and cheaper products for Australians.

Australian Design Rules (ADR) often directly incorporate United Nations (UN) Regulations as an appendix, where the appendix provides the technical requirements of the ADR and the rest of the ADR facilitates its application to Australia. To this end, Section 6 creates exemptions and alternate procedures. For instance, manufacturers are exempt from requirements that pertain to UN type approvals, and instead, need to comply with the approvals process set out in the RVSA. Likewise, Section 7 provides for the acceptance of certain alternative standards that have equivalent requirements to the appendix. For instance, a vehicle covered by a type approval under the UN Regulation would be deemed to comply with the ADR.

1.4. Acoustic Vehicle Alerting System Requirements

All Quiet Road Transport Vehicles (QRTV) (passenger (M Category) and goods carrying (N category) vehicles with an ('electrified' - hybrid, electric or fuel cell) powertrain) that can be propelled in the normal mode, in reverse or at least one forward drive gear, without an internal combustion engine operating must be fitted with an acoustic vehicle alerting system (AVAS) that produces an audible signal that meets the requirements of Section 6 of Appendix A or one of the alternative standards specified in Section 7 of this vehicle standard. The purpose of the signal is to alert vulnerable road users to the presence of a moving QRTV to reduce the risk of a collision.

2. PURPOSE AND OPERATION

2.1. Overview of the ADR

Section 2 advises this national road vehicle standard sets minimum sound emission requirements for passenger and goods vehicles that can be propelled in for any period of time without an internal combustion engine operating.

The policy intent of the Acoustic Vehicle Alerting System (AVAS) mandated by ADR 113/00 is to improve safety by enabling pedestrians and other vulnerable road users to detect the presence of a moving vehicle, when it does not produce engine noise.

Section 3 details what vehicle categories the ADR is applicable to and from what date. Section 4 details how particular terms are defined in this vehicle standard.

2.2. Design Requirement

Section 5 requires all applicable vehicles to meet the requirements set out in Appendix A of this standard, as varied by Section 6 Exemptions and Alternative Procedures, or one of the alternative standards specified in Section 7. Appendix A incorporate the 01 series of amendments of the UN Regulation No. 138, *Uniform provisions concerning the approval of quiet road transport vehicles with regard to their reduced audibility*. This regulation specifies the technical and performance requirements an AVAS fitted to an electrified vehicle must meet to comply with the ADR.

To comply with the ADR, vehicles must produce a minimum level of sound when it moving at speeds of less than 20km/h. This is because vehicles travelling faster than 20km/h are considered to produce sufficient road noise from its tyres in motion. The frequency of this sound produced by AVAS is required to shift when the vehicle is accelerating or decelerating.

2.3. Exemptions and Alternative Procedures

Exemptions

Section 6 creates exemptions from some requirements of Appendix A (UN R138) 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 R138.

Clause 6.1 states that, sections 3, 5, 7, 8, 9, 10, 11, 12 and Annexes 1 and 2 of UN R138 are not required for the purposes of complying with ADR 113/00. This is because they refer to gaining a Type Approval in the UN context.

Alternative Procedures

Clause 6.2 removes the reference to technical service in paragraph 3.2.1 of Annex 3 of Appendix A. This aligns the text with Australia’s regulatory framework under the RVSA and clarifies that it is the responsibility of manufacturers to test a vehicle to the requirements of ADR 113/00 that is representative of the vehicle intended to be provided to the Australian market.

Clause 6.3 clarifies that a “technical service” referred to in Clause 4.2 of Annex 3 of Appendix A means an “Approved Testing Facility” under the RVSA for the purposes of agreeing the analyser settings for testing.

Clause 6.4 specifies an alternative method for heavy vehicle manufacturers to demonstrate compliance where a vehicle fitted with an AVAS identical in specification to an AVAS fitted to another similar model of heavy vehicle that complies with the ADR or the equivalent alternative standards in Section 7. This provision was required due to the absence of suitable test facilities in Australia that can perform testing to the requirements of UN Regulation 138 or equivalent standards for truck and bus manufacturers that manufacture or complete vehicles in Australia, specifically for the Australian market.

Clause 6.5 and its subclauses advise that vehicles fitted with a Reversing Alarm that the requirements of clause 23.2 of ADR 42/05 (General Safety Requirements) or UN Regulation 165 UNIFORM PROVISIONS CONCERNING THE APPROVAL OF AUDIBLE REVERSE WARNING DEVICES AND OF MOTOR VEHICLES WITH REGARD TO THEIR AUDIBLE REVERSE WARNING SIGNALS need not be fitted with an AVAS that operates when the vehicle is reversing, provided the audible reverse warning signal operates over the full speed range and meets the overall minimum sound limit levels of this vehicle standard.

2.4. Alternative Standards

Section 7 sets out standards which are considered to be equivalent to ADR 113/00. If a vehicle meets the requirements of one of these standards, it also complies with ADR 113/00. Accepting equivalent alternative standards and type approvals helps minimise compliance costs incurred by manufacturers when certifying vehicles for the Australian market, without compromising the safety objectives of the ADR. Vehicle manufacturers have the flexibility to gain compliance to ADR 113/00 through clause 5.1 and Appendix A as varied by Section 6 Exemptions and Alternative Procedures, or through Section 7 Alternative Standards.

Clause 7.1 states that vehicles that comply with United Nations Regulation No. 138 – UNIFORM PROVISIONS CONCERNING THE APPROVAL OF QUIET ROAD TRANSPORT VEHICLES WITH REGARD TO THEIR REDUCED AUDIBILITY, incorporating all amendments up to and including the 01 series of amendments will be considered to meet the technical requirements of the ADR.

Clause 7.2 states that vehicles that comply with the United States Code of Federal Regulations (CFR), Part 571 – Federal Motor Vehicle Safety Standards - Subpart B 49 CFR 571.141 Standard No. 141 – MINIMUM SOUND REQUIREMENTS FOR

HYBRID AND ELECTRIC VEHICLES will be considered to meet the technical requirements of the ADR.

3. MATTERS INCORPORATED BY REFERENCE

Section 12 of the RVSA allows the Minister to incorporate a broad range of documents, both as in force at a particular time and as in force from time to time, when making national vehicle standards. This ensures that Australia's legislative framework is well-prepared for future developments in the international road vehicle space. ADR 113/00 makes use of this provision as specified below.

3.1. Other Legislative Instruments

Clause 4.1.2 of ADR 113/00 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 common definitions for many terms used in the ADRs, including the vehicle categories used in ADR applicability tables.

Clause 6.5.1 includes a reference to Vehicle Standard (Australian Design Rule 42/05 – General Safety Requirements) 2018. This vehicle standard sets a range of general safety requirements, including reversing alarms.

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

In accordance with Section 12 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

International Organization for Standardization

Paragraph 11.1 of Appendix A and Paragraph 2.1.2 of Annex 3 of Appendix A refers to ISO standard 10844:1994 and 10844:2014 - *Acoustics — Specification of test tracks for the purpose of measuring noise emitted by road vehicles*. This standard specifies the materials, design, construction and properties of a test surface to minimise variation in vehicle noise measurements.

Paragraph 2.1.3 of Annex 3 of Appendix A refers to ISO standard 26101:2012 - *Acoustics — Test methods for the qualification of free-field environments*. This standard specifies a methodology for qualifying anechoic and hemi-anechoic spaces for a variety of acoustical measurement purposes.

Footnote 7 of section 2 of the Technical Information Document in Annex 1 of Appendix A refers to ISO 612: 1978 — *Road vehicles — Dimensions of motor vehicles and towed vehicles - terms and definitions*. This standard defines terms relating to dimensions of motor vehicles and towed vehicles but does not deal with methods of measurement, the units used in reporting the results, or the accuracy required, or the order of magnitude of the dimensions defined.

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.

In accordance with subsections 14(1)(b) and 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.

International Electrotechnical Commission (IEC)

Paragraphs 1.1.1 and 3.1 of Annex 3 of Appendix A refer to IEC 61672-1-2013 - *Electroacoustics - Sound level meters - Part 1: Specifications*. This sets electroacoustical performance specifications for sound measuring instruments used in the noise test.

Paragraph 1.1.1 of Annex 3 of Appendix A also refers to IEC 60942-2003 - *Electroacoustics - Sound calibrators*. This specifies the performance requirements for sound calibrators used with the sound measuring instruments for the noise test.

Paragraph 1.1.1 of Annex 3 of Appendix A also refers to IEC 61260-1:2014 *Electroacoustics - Octave-band and fractional-octave-band filters - Part 1: Specifications*. This specifies performance requirements for specifies performance requirements for analogue, sampled-data, and digital implementations of band-pass filters for the noise test.

IEC standards are available for purchase only from the International Electrotechnical Commission (IEC) and various associated national standards bodies. While not freely available, these standards are all readily accessible and widely used by vehicle manufacturers and test facilities as part of their professional libraries.

In accordance with subsections 14(1)(b) and 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.

United Nations Regulations and/or Resolutions

Clause 6.5.2 includes a reference to United Nations Regulation No. 165 UNIFORM PROVISIONS CONCERNING THE APPROVAL OF AUDIBLE REVERSE WARNING DEVICES AND OF MOTOR VEHICLES WITH REGARD TO THEIR AUDIBLE REVERSE WARNING SIGNALS. This is an international standard that sets requirements for reversing alarms fitted to road vehicles.

Clause 7.1 includes a reference to the 01 series of United Nations Regulation No. 138 – UNIFORM PROVISIONS CONCERNING THE APPROVAL OF QUIET ROAD TRANSPORT VEHICLES WITH REGARD TO THEIR REDUCED AUDIBILITY . This is an international standard for Acoustic Vehicle Alerting Systems fitted to electrified passenger and good carrying vehicles. Annex 1 and 2 of Appendix also refer to this regulation in the context of communicating a type approval granted to this regulation under the UN 1958 Agreement.

Paragraph 1 of Appendix A and Annex 1 of Appendix A refer 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 113/00.

The Consolidated Resolution on the Construction of Vehicles (R.E.3.), document ECE/TRANS/WP.29/78/Rev.6, and the UN Regulations (including R138 and R 165), 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 subsections 14(1)(b) and 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.

United States Code of Federal Regulations (CFR)

Clause 7.2 refers to United States Code of Federal Regulations (CFR), Part 571 – Federal Motor Vehicle Safety Standards - Subpart B 49 CFR 571.141 Standard No. 141 – MINIMUM SOUND REQUIREMENTS FOR HYBRID AND ELECTRIC VEHICLES. This is the equivalent US standard for AVAS.

The US CFR may be freely accessed online at www.ecfr.gov.

In accordance with subsections 14(1)(b) and 14(2) of the *Legislation Act 2003*, these provisions of the US CFR 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 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 meeting the requirements of the Office of Impact Analysis as published in the *Australian Government Guide to Policy Impact Analysis* or the *Regulatory Impact Analysis Guide for Ministers' Meetings and National Standard Setting Bodies*.

4.2. Specific Consultation Arrangements

A draft Impact Analysis evaluating the costs and benefits of an ADR mandating UN Regulation 138 was released for public consultation from 28 March 2023 to 26 May 2023. The Department received 392 submissions in response to the draft Impact Analysis from individuals, vehicle manufacturers, state and territory governments and non-government organisations (including those representing the blind and low vision community).

A majority of the feedback received strongly or conditionally supported the implementation of a new ADRs mandating AVAS from the mid-2020s.

The Department also circulated an exposure draft of ADR 113/00 to members of its Vehicle Standards Consultative Forum. This forum comprises representatives of government (Australian and state/territory), the manufacturing and operational arms of the industry (including organisations such as the Federal Chamber of Automotive Industries and the Australian Trucking Association) and organisations representing consumers and road users (such as the Australian Automobile Association).

5. REGULATORY IMPACT

The Final Impact Analysis, found there would be a positive net benefit to the economy of at least \$201 million by 2060 if an ADR mandating the safety requirements of UN Regulation 138 was adopted. It was estimated that this ADR, could avoid at least 65 fatalities, 2,585 serious injuries and 2,863 minor injuries involving QRTVs over the next 35 years (assuming the ADR is in force for 15 years and vehicles subject to the ADR remain on the road for a further 20 years).

The Impact Analysis also noted, if regulatory action is not taken, the future is likely to involve fragmented state/territory requirements for AVAS, particularly for vehicles used for public transport. While the avoided cost of complying with multiple standards could be significant, the costs of future regulatory activities of states and territories is beyond the scope of a Commonwealth impact analysis.

The Impact Analysis considered three options; Option 1 – No intervention, Option 2 – Create a new ADR mandating AVAS for light QRTVs, Option 3 – Create a new ADR for light and heavy QRTVs. The Office of Impact Analysis has assessed this Impact Analysis as meeting ‘good practice’ (Ref: OBPR22-02051).

Option 1: No intervention (Business as Usual):

Without this new ADR vehicle manufacturers would still be able to supply QRTVs vehicles without an AVAS to the Australian market. The number of low speed crashes involving a QRTV would be expected to increase in line with the number of QRTVs on the road.

Ongoing activity by the state and territory governments, particularly in relation to vehicles used for public transport, could result in an inconsistent approach to AVAS in Australia. In the absence of a national approach, this option may also increase the regulatory burden for manufacturers in administration and monitoring of certification pathways. This would negatively impact operational efficiency and costs.

Option 2: Create a new ADR mandating AVAS for light QRTVs only

In this option, a new ADR would be made requiring that all new light vehicles “must comply with the ADR if fitted” with an electrified (hybrid, electric or fuel cell) powertrain, that can be propelled in the normal mode, in reverse or at least one forward drive gear, without an internal combustion engine operating.

This option was not supported during the consultation process, as it could give vulnerable road users a false sense of security.

Option 3: Create a new ADR mandating AVAS for light and heavy QRTVs

In this option, a new ADR would be made that requiring that all new light and heavy passenger and goods vehicles “must comply with the ADR if fitted” with an electrified powertrain, that can be propelled in the normal mode, in reverse or at least one forward drive gear, without an internal combustion engine operating.

This option was informed by the feedback received during the consultation process. Two timeframes were considered for Option 3 – Option 3a, which would mandate AVAS for light vehicles from January 2025 and heavy vehicles from November 2025 and Option 3b, which would mandate AVAS for both light and heavy vehicles from November 2025.

While Option 3a was found to have the highest net benefit (\$210 million by 2060), the Impact Analysis recommended implementing Option 3b, to minimise confusion and possibly supply disruptions by allowing sufficient time for light vehicle manufacturers to certify their new model releases to the new ADR requirements.

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 113/00 prescribes specify minimum sound emission requirements for electrified passenger and goods vehicles that can be propelled in for any period of time without an internal combustion engine operating, to improve the safety pedestrians and other vulnerable road users by improving their ability to detecting the presence of a moving vehicles.

6.2. Human Rights Implications

ADR 113/00 engages the following human rights and freedoms recognised or declared in the international instruments listed in section 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

Right to life and right to health

Article 6(1) of the International Covenant on Civil and Political Rights (ICCPR) includes a duty on governments to take appropriate steps to protect the right to life of those within its jurisdiction. The United Nations Committee General Comment 6 (1982) states: ‘...the Committee has noted that the right to life has been too often narrowly interpreted. The expression "inherent right to life" cannot properly be understood in a restrictive manner, and the protection of this right requires that States adopt positive measures.’

Article 12 (1) of the International Covenant on Economic Social and Cultural Rights (ICESCR) contains the right to health – that is, the right to the enjoyment of the highest attainable standard of physical and human health. The ICESCR has stated that the right to health extends to the underlying determinants of health such as a healthy environment.

A key objective of the ADR is to promote the right to life and the right to health (and a healthy environment) by ensuring road vehicles imported into Australia, or introduced for use in transport in Australia for the first time are fitted with technologies that minimise the risk of a vehicle colliding with a vulnerable road user. The ADR promotes the right to life and the right to health by setting minimum audibility requirements for road vehicles that suppliers must comply with prior they can be supplied for use in transport in Australia.

Rights of people with a disability

ADR 113/00 also promotes the protection of human rights under the *UN Convention on the Rights of Persons with Disabilities* (UN CRPD). Article 19 of the UN CRPD contains the right for all persons with a disability to live in the community with choices equal to others. ADR 113/00 promotes the protection of this right by improving the audibility of road vehicles, and enabling members of the blind and low

vision community to access services by providing them with greater confidence to walk on and near public roads safely.

6.3. Conclusion

ADR 113/00 is compatible with human rights because it promotes the protection of human rights and to the extent that it may limit human rights, those limitations are reasonable, necessary and proportionate.