Vehicle Standard (Australian Design Rule 110/00 – Hydrogen-Fuelled Vehicle Safety Related Performance) 2023

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

Explanatory Statement

Approval by Senator the Hon Carol Brown, Assistant Minister for Infrastructure and Transport

October 2023

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1. LEGISLATIVE AUTHORITY

1.1. National Road Vehicle Standards

Vehicle Standard (Australian Design Rule 110/00 – Hydrogen-Fuelled Vehicle Safety Related Performance) 2023, also referred to as ADR 110/00, 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.

The making of the 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".

1.2. Exemption from Sunsetting

ADR 110/00 is exempt from the sunsetting provisions of the *Legislation Act 2003*. It is appropriate that standards made under section 12 of the RVSA, also known as the Australian Design Rules (ADRs), remain enduring and effective to regulate ongoing road worthiness of vehicles throughout their useful life and reduce regulatory burden on vehicle manufacturers.

Source of the Exemption

A standard made under section 12 of the RVSA is not subject to the sunsetting provisions of section 50 of the *Legislation (Exemptions and Other Matters) 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 110/00 continues to remain in force, and available to regulators and industry.

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. 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 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.

1.3. International Harmonisation

ADR 110/00 is harmonised with United Nations Regulation 134. This allows manufacturers to transfer technology used in other markets to vehicles being supplied in Australia. It benefits Australia by allowing us to take advantage of the well-developed views of the international vehicle manufacturing and vehicle safety community. This ultimately leads to safer and cheaper products for Australians.

ADR 110/00 provides three pathways for manufacturers to comply. Firstly, Appendix A is an Australianised version of UN R 134, and provides the technical requirements of the ADR, clause 6 of the ADR exempts parts of Appendix A not relevant for the supply of vehicles in Australia and adds alternate procedures to deal with parts of the UN regulation that are not consistent with Australia's type approval system set out in the RVSA. For instance, manufacturers are exempt from requirements that pertain to UN type approvals, and instead, need to comply with the approval process set out in the RVSA. Additionally, requirements in the UN regulation involving negotiation between the manufacturer and a type approval authority are replaced with specific Australian requirements.

The second pathway is through one of the Alternative standards set out in section 7. This includes the technical requirements of different editions of UN R 134 and provides manufacturers some choice in which version they comply with to deal with the life cycle of vehicle models.

The third pathway is through Vehicle Standard (Australian Design Rule Harmonisation) 2012. As ADR 110/00 includes UN regulation 134 as an alternative standard, vehicle manufacturers with models covered by an approval issued by a contracting party to the UN 1958 Agreement can use that approval to satisfy the requirements of ADR 110/00.

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 Motor Vehicle Standards Act 1989 (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

To provide for ease of use, this ADR follows a similar format to other ADRs based on UN regulations, the ADR regulates vehicles that use hydrogen as a fuel because hydrogen has the potential to explode, it is important that stringent design standards apply to these systems to reduce the risk.

> **Clause 1**: Legislative Provisions, sets out the name of the ADR and the commencement date. A commencement the day after registration means that the ADR is available for applicants to comply with the day after the instrument is published on the Federal Register of Legislation at https://www.legislation.gov.au/. Clause 3 sets out when the ADR will be mandatory for vehicles of different types.
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> **Clause 2**: The Function is intended to provide readers with a high-level understanding of what the ADR is for. In this case, ADR 110/00 is intended to improve the safety of vehicles fitted with compressed hydrogen storage

systems (CHSS) to reduce the chance of leaks as a result of normal use, crash damage or long-term wear and tear.

Clause 3: ADR 110/00 is applicable to passenger and goods vehicles. It is not applicable to two or three wheeled vehicles or trailers. It is also not applicable to vehicles that are not fitted with a CHSS. Clause 3 of the ADR also sets out that it will be mandatory for new model vehicles from 1 November 2024. This means that after 1 November 2024 an applicable vehicle which is of a type that has not yet had any vehicles added to the Register of Approved Vehicles must comply. Clause 3 of the ADR also sets out that from 1 November 2025 all models of applicable vehicle must comply. In practise, approval holders must update their approvals prior to the all model applicability date to show compliance with ADR 110/00 and to avoid the possibility of supply disruption.

In accordance with section 202 of the Road Vehicle Standards Rules 2019(the Rules), an existing type approval will automatically be suspended if a National Road Vehicle Standard is amended or a new national road vehicle standard is made and the new or amended standard would affect the requirements that apply to the vehicles covered by a road vehicle type approval or component type approval. In the case of ADR 110/00, a type approval for a model that included hydrogen fuelled vehicles that had been approved, but not yet had any vehicles added to the Register of Approved Vehicles would be suspended under this provision on 1 November 2024 until the approval was amended to include ADR 110/00. Similarly, a type approval for a model that included hydrogen fuelled vehicles that did have vehicles added to the Register of Approved Vehicles would be suspended on 1 November 2025 until the approval was amended to include ADR 110/00.

Clause 4 sets out a number of sources of defined terms. For the most part, defined terms are found in Appendix A and come directly from the UN regulation. Some terms come from the Vehicle Standard (Australian Design Rule – Definitions and Vehicle Categories) 2005, such as the definitions for date of manufacture. Clause 4 includes a definition for supporting information, linking the ADR to the requirements for type approval as set out in the Rules. It also defines testing facility in accordance with the Rules and aligns with term Technical Service used in Appendix A.

Clause 5 sets out the different compliance pathways for whole vehicles and for component type approvals for CHSS and other specific components.

Clause 6 explains the parts of Appendix A that are not applicable to ADR 110/00 as well as certain circumstances where Appendix A is to be read differently to how it has been adapted from the UN Regulation.

Subclause 6.1 exempts the administrative aspects of UN regulation 100 from the ADR.

Subclause 6.2 translates UN vehicle categories into the ADR vehicle categories to allow appendix A to be read properly for Australian type approvals.

Subclause 6.3 amends UN R134 to require information used in paragraph 5.1.1 of Appendix A to determine the burst pressure of compressed hydrogen storage containers to be kept as part of the manufacturers supporting information in accordance with conditions of type approval set out in the Road Vehicle Standards Rules 2018. This does not preclude the possibility that this information may be requested as part of the application for type approval.

Subclause 6.4 amends UN R134 to remove obligations in paragraph 7 of Appendix A for a UN type approval.

Clause 7 Alternative Standards sets out standards which are considered to be acceptable alternatives to ADR 110/00. Each of the alternative standards specify that it relates to the technical requirements within the referenced standard. This means that applicants aren't required to have approvals from other regulators or provide documentation set out in the standard. Applicants for vehicle type approval will be expected to nominate one or more of the information types set out in section 19(2) of the Rules to demonstrate compliance with the alternative standard. For component type approvals applicants would similarly be expected to provide information in accordance with section 177 of the Rules.

Subclause 7.1 lists the technical requirements of the 01 series of amendments to United Nations Regulation 134 as an alternative standard. While the standard is incorporated as at the date this ADR is made, applicants are able to comply with any of the versions of regulation 134 that incorporate the 01 series of amendments. Each of the supplements and corrigenda to the 01 series of amendments made after the 01 series of amendments was made are considered to be relaxations or clarifications and don't affect the stringency of the regulation. As regulation 134 relies on different vehicle categories to those used in the ADRs, applicants must translate the requirements to suit ADR vehicle categories.

Subclause 7.2 lists the technical requirements of the 00 series of amendments to United Nations Regulation 134 as an alternative standard. While the standard is incorporated as at the date this ADR is made, applicants are able to comply with any of the versions of original series of amendments to regulation 134. Each of the supplements and corrigenda made to the 00 series of amendments after the 00 series of amendments was made are considered to be relaxations or clarifications and don't affect the stringency of the regulation. As regulation 134 relies on different vehicle categories to those used in the ADRs, applicants must translate the requirements to suite ADR vehicle categories.

Subclause 7.3 lists the technical requirements of United Nations Global Technical Regulation No.13 as an alternative standard. As vehicle categories under the UN 1998 agreement are different to ADR vehicle categories,

applicants must translate the requirements to the equivalent ADR vehicle category.

Appendix A

Appendix A is a compilation of United Nations Regulation 134 that brings together the 01 series of amendments and each of the amendments to the 01 series that were in force at the time of writing the ADR. Appendix A holds the bulk of the requirements for ADR 110/00.

Paragraph 1 Scope sets out that there are three parts to the requirements:

> **Part I –** sets out safety requirements for compressed hydrogen storage systems intended to be fitted to hydrogen fuelled vehicles.
>
> **Part II-** sets out safety requirements for certain components used in compressed hydrogen storage systems
>
> **Part III-** sets out requirements for vehicles equipped with compressed hydrogen storage systems

Part I – Specifications for Compressed Hydrogen Storage Systems – specifies that the CHSS consists of the high-pressure storage container and the primary closure devices for openings into the container. Each of the closure devices must include a thermally activated pressure relief device which allows the hydrogen to vent from the container when the temperature exceeds a threshold level; a check valve and an automatic shut off valve. These requirements control the flow of hydrogen two or from the container and protect the CHSS in the event of a leak in a hose.

All CHSS used in on road vehicle applications must have a Nominal Working Pressure of 70MPa or less – this is intended to standardise the operating range of components in the system so that a manufacturer doesn't produce a system designed to operate at a higher pressure which will overwhelm other parts of the system.

All CHSS must have a service life of 15 years or less, reflects that pressure vessels have a finite service life and must be replaced before this time is exceeded. As responsibility for in-service regulation of vehicles rests with state and territory governments, jurisdictions are considering arrangements to control the use of vehicles with CHSS and finite service life.

Each CHSS must meet a range of performance requirements described below.

Paragraph 5.1 – Verification for baseline metrics – includes calculation to determine the midline burst pressure of containers taking into consideration the material and physical characteristics of the container. Three sample containers must be tested in accordance with Annex 3 paragraph 2.1 to determine the burst pressure and these must be within ± 10 percent of the calculated midline burst pressure. These requirements are intended to ensure the design and manufacture of the containers is adequately controlled. Paragraph 5.1 also includes that storage containers achieve a burst pressure

which is at least 225 percent of the Nominal Working Pressure (NWP) and for containers using glass fibre composite at least 350 percent of NWP.

Due to the nature of pressure vessel use, three sample containers must be pressure tested with water to 125 percent of NWP for 22,000 cycles or until a leak occurs. This is in accordance with the test in Annex 3 Paragraph 2.2 and requires that a leak does not occur in the first 11,000 cycles which is assumed to equate to a 15 year service life. Where a storage container has a lower service life, the limit for the number of cycles within which a leak must not occur should be reduced proportionately. For example, a storage container with a 10 year service life must not leak within the first 7333 cycles.

Paragraph 5.2 – Verification tests for performance durability – includes a series of tests on from one to three sample containers, including a proof test, impact test, surface damage test, chemical exposure test, high temperature static pressure test, extreme temperature pressure cycling test, hydraulic residual pressure test and the residual burst strength test. These tests simulate real life but worst case conditions that a storage container may be exposed to and are intended to evaluate the robustness of the container design. The pass criteria is that the container does not leak during the tests.

Paragraph 5.3 – Verification test for expected on road performance – includes a sequence of tests to evaluate the real-world performance of the container in a typical scenario that the container might see in use, including charge – discharge cycles. Finally, the container is pressurised to burst to confirm that the performance of the container hasn't degraded significantly during the earlier tests.

Paragraph 5.4 – Verification test for service terminating performance in fire includes requirements to test a CHSS in a fire where the pressure relief valve will activate to relieve pressure without the tank rupturing. This test simulates a high risk case where a vehicle is involved in a fire.

Paragraph 5.5 – Requirements for primary closure devices specifies that the three primary closure devices attached to a CHSS are tested in accordance with the requirements in part II. This also allows for the use of closure devices attached to different containers, but requires the assembly to undergo the test in paragraph 5.4.

Part II – Specifications of specific components for the compressed hydrogen storage system includes requirements for the Thermal Pressure Relief Device (TPRD), the Check Valve and the automatic shut off valve.

Paragraph 6.1 includes a range of tests to confirm the durability and suitability of TPRDs. These tests are set out in Annex 4

Paragraph 6.2 includes a range of tests to confirm the durability and suitability of check valves and automatic shut off valves. These tests are set out in Annex 4.

Paragraph 6.3 includes marking requirements for each specific device.

Part III – Specifications of a vehicle fuel system incorporating the compressed hydrogen storage system Paragraph 7 specifies that each compressed hydrogen storage system fitted to a vehicle is type approved according to Appendix A Part I. However this paragraph has been amended by subclause 6.4 of the ADR to explain that a type approval is not required and that testing of the relevant components is sufficient for compliance with ADR 110. Additionally, applicants may rely on a component type approval issued in accordance with Road Vehicle Standards Rules 2019 that meets the specification in Appendix A part I.

Paragraph 7.1 – In-use fuel system requirements – includes a range of requirements for the fuel system to make it safe to use, including : prevention of reverse flow to atmosphere; marking requirements in the fuelling receptacle; ensuring the fuelling receptacle is positioned in a way to allow positive connection to the fuelling nozzle, protection from dirt and water, protection from tampering; protection from crash damage and leakage of gas into the passenger or luggage compartments; protection against overpressure; that the discharge of hydrogen through the TPRD and other relief valves is in a safe direction; that the concentration of hydrogen near the exhaust or in enclosed spaces is maintained at safe levels to prevent fire or explosion; that the vehicle provides a number of warning signals to the driver such as a high concentration of hydrogen; that certain categories of hydrogen fuelled vehicles are fitted with labels indicating that the vehicle is hydrogen fuelled to alert emergency services to the possibility of risk associated with a gas leak.

Paragraph 7.2 – Post-crash fuel system integrity requires light vehicles to be crash tested to UN regulation 12 or 94 for frontal impact and regulation 95 for lateral impacts. Subclause 6.5 allows vehicles to alternatively be tested in accordance with ADR 73 for frontal crashes and ADR 72 for lateral crashes. The performance of the hydrogen fuel system is measured in accordance with procedures set out in Annex 5.

Where the crash standards are not applicable the vehicle or a representative part of the vehicle must be fitted with the CHSS and subject to frontal and lateral accelerations to simulate the loads on the CHSS in a crash. Paragraph 7.2.4 includes additional installation requirements for this case. The performance of the system is measured in accordance with Annex 5. Pass fail criteria include the amount of hydrogen leaked during the test, concentration of hydrogen in enclosed spaces and the failure of the mountings for the containers.

As ADR 72/00 Dynamic Side Impact Occupant Protection and ADR 73/00 Offset Frontal Occupant Impact Protection are aligned with UN regulations 95 and 94 respectively, a test conducted for ADR 72 or 73 will be acceptable for these purposes. However, because ADRs 72 and 73 do not apply to all of the vehicles Regulations 95 and 94 apply to it may be necessary for a vehicle type

to be tested to regulations 95 or 94 even though they don't need to comply with ADRs 72 and 73.

3. MATTERS INCORPORATED BY REFERENCE

3.1. Incorporation of Documents

ADR 110 incorporates and references a large number of documents published by other organisations. Subsection 12(2) 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 road vehicle standards. This ensures that Australia' legislative framework is well-prepared for future developments in the international road vehicle space.

3.2. Other Legislative Instruments

Clause 4.1.2 of ADR 110/00 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 definitions for many terms used in the ADRs, including the vehicle categories used in ADR applicability tables.

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

Vehicle Standard (Australian Design Rule Definitions and Vehicle Categories) 2005 is incorporated as in force or existing from time to time.

3.3. Other Documents

American Society for Testing and Materials

Paragraph 1.4 and 2.4 of Appendix A Annex 4 includes references to the American Society for Testing and Materials (ASTM) B117. Standard practice for operating salt spray (Fog) apparatus. While UN Regulation 134 does not specify the version of ASTM B117 that should be followed, the version in force at the time the 01 series of amendments to R134 was made was the 2019 version. This is the current version and the version being adopted in ADR 110/00.

Paragraph 2.6 of Appendix A Annex 4 includes references to ASTM D572, standard test method for rubber-deterioration by heat and oxygen and ASTM D1149. Standard Test Methods for Rubber Deterioration—Cracking in an Ozone Controlled Environment

The version of ASTM D572 is not provided in UN R134, however the version being incorporated is the December 2019 version D572-04(2019). As this is the version in force at the time the 01 series of amendments to UN R134 was made.

The version of ASTM D1149 is not provided in UN R134, however the version being incorporated is the September 2018 version D572-04(2019). As this is the version in force at the time the 01 series of amendments to UN R134 was made.

ASTM B117, D572 and D1149 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/readinglibrary/.

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 2.12 of Appendix A in Definitions and paragraphs 1, 1.1 and 2 of Appendix A Annex 4 incorporate ISO 14687-2. 2012 -Hydrogen Fuel

Paragraph 2.6 of Appendix A Annex 4 incorporates ISO 1431/1 Rubber, vulcanized or thermoplastic — Resistance to ozone cracking — Part 1: Static and dynamic strain testing. The version of ISO 1431/1 is not provided in UN R 134, the current version is the 2022 version which was published in June 2022. As the 01 series of amendments to R134 came into force in January 2022, it is appropriate that we incorporate the version of ISO 1431/1 that was in force on that date which is the 2012 version. As the 2012 version has been withdrawn we will also accept the 2022 version.

Paragraph 7.1.7 of Appendix A Annex 6 incorporates ISO 17840-4:2018 Road vehicles — Information for first and second responders — Part 4: Propulsion energy identification

ISO 14687-2, 1431/1 and 17840-4 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 these documents at the Offices of the Department of Infrastructure, Transport, Regional Development, Communications 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.

Society of Automotive Engineers SAE

Appendix A paragraph 2.12 and Appendix A Annex 4 Paragraph 1.1 incorporate SAE J2719: (September 2011 Revision)

This document is available for purchase from the Society of Automotive Engineers at https://www.sae.org/standards/content/j2719_201511/. SAE 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 these documents at the Offices of the Department of Infrastructure, Transport, Regional Development, Communications and the Arts in Canberra.

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

United Nations Regulations and/or Resolutions

Clause 7.1 incorporates the 01 series of amendments of UN Regulation No. 134 – UNIFORM PROVISIONS CONCERNING THE APPROVAL OF MOTOR VEHICLES AND THEIR COMPONENTS WITH REGARD TO THE SAFETY-RELATED PERFORMANCE OF HYDROGEN-FUELLED CELL VEHICLES.

Clause 7.2 incorporates the 00 series of amendments of UN Regulation No. 134 – UNIFORM PROVISIONS CONCERNING THE APPROVAL OF MOTOR VEHICLES AND THEIR COMPONENTS WITH REGARD TO THE SAFETY-RELATED PERFORMANCE OF HYDROGEN-FUELLED CELL VEHICLES.

Clause 7.3 incorporates United Nations Global Technical Regulation No. 13 – Hydrogen Fuel Cell Vehicles.

Appendix A clause 1.3 footnote 2 incorporates the Consolidated Resolution on the Construction of Vehicles (R.E.3.), document ECE/TRANS/WP.29/78/Rev.6,

Appendix A clause 7.2 incorporates UN Regulation 12 – Steering Mechanism, UN Regulation 94 Frontal Collision Protection and Regulation 95 Lateral Collision Protection. These references do not include the version of the regulation. As the 01 series of amendments to R134 came into force in January 2022, it is appropriate that we incorporate the version these regulations that was in force on that date which is for UN R 12 the 04 series of amendments, for UN R 94 the 04 series of amendments and for UN R 95 the 05 series of amendments. UN regulations, global technical regulations and UN resolutions 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 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 a Preliminary Assessment (PA) meeting the requirements of the Office of Impact Analysis (OIA) as published in the *Australian Government Guide to Regulatory Impact Analysis* or the *Regulatory Impact Analysis Guide for Ministers' Meetings and National Standard Setting Bodies.*

4.2. Specific Consultation Arrangements

A PA conducted by the Department identified that regulatory and trauma savings and productivity gains would be achieved, by ensuring that an ADR for Hydrogen-Fuelled Vehicle Safety Related Performance is implemented prior to the predicted increase in Hydrogen-Fuelled Cell Vehicle sales in Australia. This increase is based on the global transition to Zero Emission Vehicles and aligns with the Australian Government's objectives to reduce road trauma, provide certainty for industry and transition the fleet to Zero Emission Vehicles. The Department undertook consultation through the Technical Liaison Group (TLG) and the Strategic Vehicle Safety and Environment Group (SVSEG). Members of both groups fully supported the implementation of the Hydrogen-Fuelled Vehicle Safety Related Performance ADR.

TLG consists of technical 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 of representative organisations of consumers and road users (particularly through the Australian Automobile Association).

SVSEG consists of senior representatives of government (Australian and State/Territory), the manufacturing and operational arms of the industry and of representative organisations of consumers and road users (at a higher level within each organisation as represented in TLG).

4.3. Public Consultation

A public consultation for Hydrogen-Fuelled Vehicle Safety Related Performance was posted on the Department's website for an eight-week public comment period, which closed on 27 March 2023. Public comment summary will be published on the Federal Register of Legislation.

5. REGULATORY IMPACT

Mandating an ADR for Hydrogen-Fuelled Vehicle Safety Related Performance, will have a positive net benefit to the economy due to the safety requirements in the UN Regulation. A Preliminary Assessment (OIA22-03727) conducted by the Department considered the impacts of mandating a new ADR on a "must comply, if fitted" basis for Hydrogen-Fuelled Vehicles. The impacts were considered minor in nature on industry while market penetration of HFCVs are still low in Australia. This view is supported by the light and heavy vehicle industry.

Based on the information provided, OIA determined the proposal is unlikely to have a more than minor regulatory impact, as all light HFCV suppliers and most heavy HFCV suppliers already meet UN Regulation No. 134 that this ADR would align with. Further, if regulatory action is not taken, the future is likely to involve fragmented State/Territory safety standards for 'in-service' use of HFCVs. 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 Commonwealth impact analysis. As such, the preparation of an Impact Analysis (IA) is not required by the OIA.

STATEMENT OF COMPATIBILITY WITH HUMAN RIGHTS

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

5.1. Overview

ADR 110/00 specifies requirements for passenger cars, forward-control passenger vehicles, off-road passenger vehicles, light omnibus, heavy omnibus, light goods, medium goods and heavy goods vehicles with regard to the safety related performance of compressed hydrogen storage systems for hydrogen-fuelled vehicles and specific components for compressed hydrogen storage systems for hydrogen-fuelled vehicles.

The purpose of the regulation is to protect occupants against hydrogen fuel leakage and hydrogen storage systems and ensure the post-crash safety of road vehicles.

5.2. Human Rights Implications

ADR 110/00 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*.

5.3. Conclusion

ADR 110/00 is compatible with human rights, as it does not raise any human rights issues.