Vehicle Standard (Australian Design Rule 13/00 – Installation of Lighting and Light Signalling Devices on other than L-Group Vehicles) 2005 Amendment 2

Made under section 7 of the Motor Vehicle Standards Act 1989

Explanatory Statement

Issued by the authority of the Minister for Transport and Regional Service

June 2007

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1. LEGISLATIVE CONTEXT

Vehicle Standard (Australian Design Rule 13/00 – Installation of Lighting and Light Signalling Devices on other than L-Group Vehicles) 2005 is made under the *Motor Vehicle Standards Act 1989* (the Act). The Act enables the Australian Government to establish nationally uniform standards for road vehicles when they are first supplied to the market in Australia. The Act applies to such vehicles whether they are manufactured in Australia or are imported as new or second hand vehicles.

The making of the vehicle standards necessary for the Act's effective operation is provided for in section 7 which empowers the Minister to "determine vehicle standards for road vehicles or vehicle components".

Australian Design Rule (ADR) 13/00 was originally determined in *Determination of Motor Vehicle Standards - Order No 1 of 1989* and has been amended in ten subsequent determinations. It was then remade in 2005 to meet the requirements of the *Legislative Instruments Act 2003*.

2. CONTENT AND EFFECT OF ADR 13/00 AND AMENDMENTS

2.1. Overview of the ADR

ADR 13/00 provides requirements for the layout and installation of vehicle lighting systems for four wheeled road vehicles. This includes main-beam and dipped-beam headlamps, fog, direction indicator, position, stop, reversing, parking, daytime running and corning lamps, hazard warning signals and retroreflectors.

Its technical content is based on internationally accepted United Nations Economic Commission for Europe (UNECE) standards. Four wheeled road vehicles equipped with headlamps must meet the requirements of this standard. ADR 13 works in conjunction with ADR 46 Headlamps, ADR 51 Filament Lamps, ADR 77 Gas Discharge Headlamps and ADR 78 Gas Discharge Light Sources.

2.2. Changes to the ADR

Currently, the ADRs for lighting equipment require headlamps that are either equipped with filament lamps or gas discharge lamps. This indicates a regulatory failing as technology development has outpaced regulation and manufacturers are prevented from utilising headlamps equipped with Light Emitting Diode (LED) light sources. The purpose of this amendment is to allow for the use of this new headlamp option.

The World Forum for Harmonization of Vehicle Regulations (WP.29), the recognised international body for vehicle regulations development is currently developing a regulation for LED headlamps. This regulation is not expected to come into force until late 2008. The European Union has utilised a legislative exemption to allow LED headlamp equipped vehicles onto the roads in Europe as an interim measure. Since the *Motor Vehicle Standards Act 1989* does now allow for such exemptions, the only option is to amend relevant ADRs using the current draft LED headlamp requirements provided by WP.29.

This amending instrument will be repealed and replaced with a finalised standard when it becomes available in 2008. Further information regarding the need for this

amendment (including benefits, costs and risks) can be found in the attached regulation impact statement (Attachment A).

Sunsetting provisions in clause 1.3.1 have been included to make it clear that this is a temporary measure. This limits any potential risk if the final regulation produced by WP.29 is markedly different. If the international regulation is delayed this sunsetting date will be reviewed and extended if necessary. The date is based of the assumption that the LED headlamp proposal will be presented to WP.29 at its November 2007 session, followed by a month or two before the formal depository notification is released and a six month voting period. The automotive industry tends to operate in six monthly periods so a date of 1 January has been set for simplicity.

Items [1] and [2] of Schedule 1 amends the ADR to allow the use of LED headlamps. Item [3] adds a note to the ADR to make it clear to readers that the LED headlamp requirements are subject to a sunsetting clause. Schedule 2 provides the technical requirements for LED headlamps. As this is a temporary measure, these technical requirements have been provided as amendments to the existing ADR. A user of the ADR will need to read the amending text in conjunction with the original text. When the final LED headlamp regulation is released it will be compiled into a single document for ease of use.

3. BEST PRACTICE REGULATION

3.1. Business Cost Calculator

The use of LED headlamps is optional; any additional cost that may be incurred by their use is at the manufacturers' discretion. There is a negligible education cost as industry will need to make themselves aware of the changes to ADR 13. Industry has indicated that the introduction of LED headlamps will not impose any additional costs on business.

3.2. 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 Federal 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.

Depending on the nature of the proposed changes, consultation could involve the Technical Liaison Group (TLG), Transport Agencies Chief Executives (TACE), and the Australian Transport Council (ATC).

- TLG consists of 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).

- TACE consists of the chief executives of Australian and State/Territory departments of transport and road vehicle administrations.

- ATC consists of the Australian, State/Territory and New Zealand Ministers with responsibility for transport issues.

Editorial changes and changes to correct errors are processed by the Department of Transport and Regional Services. This approach is only used where the amendments do not vary the intent of the vehicle standard.

New standards, or significant changes that increase the stringency of existing standards, are subject to a vote by ATC Ministers. Unless disapproved by a majority of ATC Ministers, the Minister for Local Government, Territories and Roads, can then determine the new or amended standards, under the authority of the Minister for Transport and Regional Services. Proposals that are regarded as significant need to be supported by a Regulation Impact Statement meeting the requirements of the Office of Best Practice Regulation as published in *Best Practice Regulation Handbook* and the Council of Australian Governments *Principles and Guidelines for National Standard Setting and Regulatory Action for Ministerial Councils and Standard-Setting Bodies.*

3.3. Specific Consultation Arrangements for this Vehicle Standard

The draft RIS was provided to TLG for one week. Positive responses were received from the FCAI, AAA and most state and territory governments. No response was received from the NSW government. As the responses indicated that the introduction of LED headlamps is a non-contentious issue it will not be submitted to TACE or the ATC.

3.4. Regulation Impact Statement

The OBPR has approved the RIS that supports regulatory change to allow the use of LED headlamps (OBRR ID 9150). See Attachment A for the RIS.

ATTACHMENT A

Australian Government

Department of Transport and Regional Services

Regulation Impact Statement for

Headlamps Equipped with Light Emitting Diodes

FINAL 25 May 2007

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

CONTENTS

1. Introduction

One of the latest innovations in road vehicle headlamps is the use of Light Emitting Diode (LED) arrays for light sources instead of conventional incandescent filament bulbs or high-energy gas discharge light sources. The performance of LED headlamps is comparable with headlamps equipped with these other light sources while providing improved reliability and the potential for better efficiency, leading to improved road safety and reduced motoring costs for consumers. The early introduction of these lamps is predicted to reduce CO_2 emissions by nearly 1 g/km.

Currently, the Australian Design Rules (ADRs) for lighting equipment require headlamps that are either equipped with filament lamps or gas discharge lamps. This indicates a regulatory failing as technology development has outpaced regulation and manufacturers are prevented from utilising this new headlamp option.

Furthermore, even the current international regulations adopted by the United Nations Economic Commission for Europe (UNECE), with which the ADRs are aligned, do not accommodate LED headlamps. Amendments to the relevant UNECE lighting equipment regulations are at an advanced stage of development but are not expected to enter into force until about September 2008.

A manufacturer has approached the Department of Transport and Regional Services (DOTARS) with a request to consider appropriate amendments to the relevant ADRs so that vehicles with LED headlamps could be allowed to operate on Australian roads. The manufacturer has provided evidence that the European Union (EU) has invoked a special exemption to allow vehicles equipped with LED headlamps provided they comply with the proposed amendments to the UNECE regulations mentioned above. The EU has a provision in its whole of vehicle approval Directive that allows for the exemption of vehicles for the purpose of ushering technological innovations. Their process involves finding a sponsor from among EU member countries (in this case the UK) to put up a petition to the European Parliament. The European has accepted the UK's petition and manufacturers can market vehicles in the EU with LED headlamps notwithstanding that neither the UNECE regulations nor the specific EU Directives for headlamps currently cater for LED headlamps.

The UK petition cited compliance with the draft UNECE amendments as a condition of granting the exemption. This Australian Government proposal cites the same draft amendments as the basis for the ADR amendments and although not yet ratified as an international standard the amendments will not constitute a unique Australian regulation since it will be the same as the EU standard. The EU exemption could result in other vehicle manufacturers seeking the same consideration and in time the number of submissions in Australia could increase. Rather than having to deal with each case separately this proposal will facilitate entry to the market in an equitable manner. That is, any vehicle that qualifies for the EU exemption will likewise qualify for entry to the Australian market.

Unlike the EU legislative framework, the Australian legislation does not provide for special exemptions and the only legal course is to amend the relevant ADRs to cater for LED headlamps. One option considered below is to annex the proposed amendments to the UNECE regulations to the relevant ADRs. ADRs will need to be

further amended to adopt the finalised UNECE amendments when they are officially brought into force in 2008.

Waiting for the UNECE regulations to fall into place would result in denying access to vehicles so equipped for the intervening period. Since the Australian market is relatively small it is unlikely manufacturers supplying to the world market will contemplate modifying their products for the Australian market.

It is important to note this amendment proposal does not constitute a barrier to trade since vehicles complying with the current international UNECE regulations will not be barred for entry to the Australian market.

1.1. Current Regulation

The *Motor Vehicle Standards Act 1989* requires that all road vehicles must comply with relevant Australian Design Rules before being supplied to the market for use in transport. The ADRs are predominately performance based standards that set out minimum requirements for vehicle safety, security and emissions control. Where possible these standards make use of content that is internationally accepted, in particular the standards produced by the UNECE.

Currently the ADRs for headlamps require the use of either filament lamps or gas discharge lamps. Although primarily a performance based standard, they were written for existing lighting technology and include prescriptive requirements for some test procedures and to ensure bulb interchangability. These prescriptive requirements prevent manufacturers from installing LED headlamps in new road vehicles being supplied to the Australian market.

The existing headlamp requirements are set out in ADR 46/00 Headlamps, ADR 51/00 Filament Globes, ADR 77/00 Gas Discharge Headlamps and 78/00 Gas Discharge Light Sources. These ADRs incorporate relevant UNECE international standards in keeping with Australia's policy of reducing technical barriers to trade through harmonization with international standards.

1.2. International Standards

There is currently no UNECE standard for LED headlamps. The World Forum for the Harmonization of Vehicle Regulations (WP.29), the premiere body for vehicle standards development, is currently preparing amendments to the UNECE regulations to cater for LED headlamps as mentioned above. The EU has introduced an exemption to allow manufacturers to supply LED headlamp equipped vehicles in Europe.

2. Options

Lighting equipment regulations are necessarily a mixture of performance and prescriptive requirements since it is generally accepted that lamps with replaceable light sources (as distinct from sealed beam lamps which need to be discarded upon failure and replaced as a complete unit) will undergo several bulb replacements during their serviceable life spans. Australia's lighting regulations are harmonised with the international regulations adopted by the UNECE and are therefore in no way unique

in this regard. However, the disadvantage of the existing performance/prescriptive regulations is that they require specific amendments to accommodate new technology.

A more desirable outcome would be the use of a non-prescriptive, performance based standard. Such a standard would specify quantitative requirements for light sources that are independent of the type of light source. Although ideal and in keeping with the principles behind Technical Barriers to Trade, such a standard is impractical as it would remove several key consumer protections related to filament lamps, including the requirement that filament lamp bulbs must be interchangeable.

Furthermore, light sources can differ in relation to the radiation emitted and this can necessitate particular testing for stability and durability where for example, significant ultraviolet radiation is involved.

The available options are therefore adopting an existing standard for LED lamps, developing a new standard or taking no action. Several non-regulatory options will also be given consideration but are unlikely to be acceptable due to the destabilising influence they could have on Australia's vehicle certification system.

3. Analysis

3.1. Taking No Action

This option involves maintaining lighting related ADRs as is and not allowing the use of LED headlamps. This would be disadvantageous to industry as it would prevent manufacturers from supplying imported LED headlamp equipped vehicles to the Australian market or from developing such vehicles locally. As LED headlamp equipped vehicles are currently available in Europe, not adapting to this new technology is an unacceptable option.

3.2. Developing a New Standard

Developing a unique Australian standard for LED headlamps would take a significant investment in resources and time. Such a standard would require the involvement of DOTARS, Standards Australia, industry, special interest groups and research organisations. This would take several years and any resulting standard would still suffer from the limitation of being unique to Australia. Additionally, it is likely that during the development process, or shortly after, the international community would release a LED headlamp standard, making any Australian standard redundant.

3.3. Adopting an Existing Standard

3.3.1. The International Automotive Industry

The automotive industry is now a global one. Components used in a single car may be sourced from many different countries and design and development, component manufacture and final production may not be carried out in the same location. It is no longer practical to produce local Australian standards to apply to Australian vehicles and most of these vehicles are now partially or wholly produced overseas. Continuing to develop vehicle standards in isolation will result in many vehicles not being sold to the Australian market as it would uneconomical to do so due to the small size of the Australian Market.

Due to the global nature of the automotive industry it is beneficial, where possible, to adopt standards that are internationally accepted. This better facilitates trade including the reduction of technical barriers to trade (in keeping with Australia's WTO obligations).

3.3.2. Draft Amendments to UNECE Regulations

Currently there is no international standard for LED headlamps. The lighting working group (GRE) within the World Forum for the Harmonisation of Vehicle Regulations (WP.29) is in the process of developing this standard and it is expected to be presented at the November 2007 meeting and if voted on, would not come into force until September 2008. This draft contains modifications to the relevant headlamp and lighting equipment installation regulations. The new technical specifications recognise the special requirements for LED headlamps including heat dissipation (as it affects photometric stability), ultraviolet degradation of plastic components, the need for maintaining proper aim regardless of vehicle attitude through automatic levelling mechanisms and the need to ensure that the beam distribution pattern is not compromised through the accumulation of dirt on the outer lens.

3.3.3. Cost to Business

The current new vehicle certification system administered by DOTARS imposes several costs on industry. Before a new vehicle can be issued an identification plate (allowing it to be supplied to the market) evidence must be provided to prove that the vehicle meets all relevant ADRs. Primarily this evidence is summaries of tests preformed on various components or the whole vehicle. Many of these tests are destructive (not an issue for LED headlamps) and require specialist training, equipment and facilities.

The introduction of LED headlamps will not dramatically change the compliance cost for headlamps. All vehicles must be equipped with headlamps and currently manufacturers bear a compliance cost for either filament lamps or gas discharge lamps. It is expected that the cost of testing LED headlamps will be similar to existing lamps and that there will be negligible changes to record keeping, enforcement and procedural costs.

A new standard for LED headlamps would impose a small education cost on business as they will have to familiarise themselves with the new requirements. This cost would be optional, as any new headlamp ADR will contain options for existing filament and gas discharge lamps as well as LED lamps. Business appreciates the added flexibility inherent in this proposal and is not likely to object to the minor additional costs.

3.3.4. Trade Facilitation

The introduction of a standard allowing the use of LED headlamps will allow the import and local manufacture of road vehicles equipped with LED headlamps and headlamp components. The use of an international standard will allow local manufacturers to supply to both the Australian and international markets and offer new markets to both existing vehicle lighting manufacturers and other manufacturers with experience in LED technology.

The World Trade Organisation's Technical Barriers to Trade Agreement tries to ensure that regulations, standards, testing and certification procedures do not create unnecessary obstacles to trade. This proposal is in keeping with this principle.

3.4. Non-Regulatory Options

Currently filament and gas discharge light sources used as headlamps must comply with the relevant ADRs under Australia's certification system for new vehicles. As LED modules are an alternative light source for headlamps, giving consideration to non-regulatory measures would create an imbalance where some technologies are regulated and others are not. As the existing regulation ensures that all headlamps provide a minimum level of functionality it could be detrimental to both industry and road users to allow LED headlamps that are not functionally the same as filament and gas discharge lamps.

In this instance reliance on market forces, the *Trade Practices Act 1974*, consumer information and awareness campaigns or industry codes of conduct are not appropriate as the only recourse would be after the fact, possibly following serious accidents.

4. Consultation

The proposal to amend the relevant ADRs was put to the Technical Liaison Group (TLG), which is the consultative committee for the development of the ADRs and is comprised of representatives from governments, industry and consumer groups. They were asked to provide comment within one week. A summary of responses is set out in appendix A.

The Federal Chamber of Automotive Industry which represents the bulk of vehicle and component manufacturers (both local manufacturers and importers) supports the proposal to introduce the draft standard to be later replaced with a final UNECE standard. The Australian Automobile Association that represents the various state and territory automobile clubs (RACV, NRMA etc) also agree with the proposal.

The vehicle regulatory authorities of Queensland, Australian Capital Territory, Victoria, Tasmania, the Northern Territory, Western Australia and South Australia also support the proposal (still waiting on a response from New South Wales). They did advise caution that although in this case the introduction of a draft standard as a temporary measure was acceptable it should not set a precedent for the early introduction of still developing standards. Although government has an obligation to avoid unnecessary regulation and barriers to trade, industry must be aware of current regulation and government processes and take into account the time and resources required to develop new standards or further develop existing standards.

5. Conclusions and Recommendations

The only viable option is to amend the relevant ADRs by annexing the amendments proposed by the UNECE as outlined in 3.3.2 above. This is a temporary measure to allow the use of LED headlamps until WP.29 finalise an internationally accepted standard. At such a time the temporary provisions would be replaced with the UNECE standard.

6. Implementation and Review

The amendment to the relevant ADRs would be determined by the Minister for Local Government Territories and Roads under section 7 of the *Motor Vehicle Standards Act 1989*. Since the UNECE proposal cannot be finalised until November 2007 and therefore is not likely to enter into force until September 2008, there is a small risk that the final amendments may be different to the requirements proposed for annexation to the ADRs. To offset the possibility of a divergence of standards, the proposed amendments to the ADR will include a sunset clause in favour of the finalised amended UNECE regulations (the actual sunset date will be settled in agreement with industry before the determination under section 7 of the MVSA is registered). That is, the final amendments will replace these interim amendments when available.

7. References

Australian Design Rules are available from
http://www.dotars.gov.au/roads/motor/design/adr_online.aspx

- Vehicle Standard (Australian Design Rule 46/00 – Headlamps) 2006
- Vehicle Standard (Australian Design Rule 51/00 – Filament Globes) 2006
- Vehicle Standard (Australian Design Rule 77/00 – Gas Discharge Headlamps) 2006
- Vehicle Standard (Australian Design Rule 78/00 – Gas Discharge Light Sources) 2006

WP.29 GRE documents are available from
http://www.unece.org/trans/main/wp29/wp29wgs/wp29gre/greage.html

- ECE/TRANS/WP.29/GRE/2007/12 LIGHT-EMITTING DIODE (LED) MODULES FOR ROAD ILLUMINATION DEVICES Regulation No. 112 (Headlamps emitting an asymmetrical passing beam) Proposal for draft amendments to Regulation No. 112
- ECE/TRANS/WP.29/GRE/2006/42 PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 48 (Installation of lighting and light-signalling devices)
- ECE/TRANS/WP.29/GRE/2006/42/Corr.1 PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 48 (Installation of lighting and light-signalling devices)

Appendix A – Responses from the Technical Liaison Group

Organisation	Support Proposal	Comments	VSS Response
Australian Automobile Association	Yes		
Territory and Municipal Services (ACT)	Yes	Suggested typographical corrections to the RIS.	
Department for Transport, Energy and Infrastructure (SA)	Yes		
Department of Infrastructure, Energy and Resources (TAS)	Yes		
Federal Chamber of Automotive Industry	Yes		
Queensland Transport	Yes	Consideration should be given to amending the Motor Vehicles Standard Act 1989 to allow for exemptions in a similar manner to the European Union.	For future consideration. Unlikely to fit within the current timetable,

VicRoads	Yes	Some mechanism is needed to limit the use of the draft standard if there is significant changes in the final UNECE standard. The draft standard states a LED module shall be considered to have failed if any one of its LEDs has failed. Does this imply that in service, if one LED fails the Module should be replaced?	The proposed draft LED headlamp standard will be introduced via a legislative instrument that amends all relevant ADRs. This amending instrument will include a sunset. This will prevent vehicles being certified to the draft standard after the sunset date. That requirement is used to determine if the LED module passes or fails the tests set our in the standard. It will be up to in-service regulators to determine what is an acceptable level of degradation in a LED module.
Department of Planning and Infrastructure (NT)	Yes	Similar response to Queensland	
Department of Planning and Infrastructure (WA)	Yes	Provided the beam projection pattern is the same as current Headlamp ADRs. Also, agrees with Queensland's comments.	Yes, the beam projection pattern is the same.