

## ACRS Submission



# *Lane Keeping Systems for light vehicles – draft ADR 107/00*

To:

Director, Vehicle Standards Section  
Department of Infrastructure, Transport, Regional Development and Communications  
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## Introduction

The Australasian College of Road Safety (ACRS) is the region's peak membership association for road safety with a vision of eliminating death and serious injury on the road. Our members include experts from all areas of road safety including policy makers, health and transport professionals, academics, community organisations, researchers, federal, state and local government agencies, private companies and members of the public. The purpose of the College is to support our members in their efforts to eliminate serious road trauma through knowledge sharing, professional development, networking and advocacy. Our objectives include the promotion of road safety as a critical organisational objective within government, business and the community; the promotion and advocacy of policies and practices that support harm elimination; the improvement of relative safety outcomes for vulnerable demographic and user groups within the community; the promotion of post-crash policies and practices; and the promotion of a collegiate climate amongst all those with responsibilities for and working in road safety.

The ACRS believes that it is never acceptable that people are killed or seriously injured in the road traffic system, which must be made safe for all road users. Those who regulate, design and manage the road traffic system (governments, road authorities, vehicle manufacturers, organisations which provide or procure transport services) are responsible for the level of safety in the entire system. In undertaking all of these activities, the aim should be to minimise the potential for road-user error and to protect users from fatal or serious injuries when errors do occur.

## The Proposed Regulation

The function of this National Road Vehicle Standard is to require light vehicles, such as passenger cars and vehicles which can carry up to nine passengers and light goods vehicles, to be fitted with systems that provide warning to the driver and correct vehicle trajectory when the driver is unintentionally leaving the lane. This standard includes technical requirements intended to ensure lane keeping systems function appropriately. The ADR is proposed to come into effect 1 March 2024 for all new model vehicles and 1 March 2026 for all [new] vehicles.

The proposed regulation notes that "lane keeping systems primarily target crashes involving head on collisions, side-swipes and single car run-off road crashes. These types of crashes result in 55% of all road fatalities involving light vehicles. This increases to 72% at highway speeds...the risk of serious injury from a head on collision increases sharply...from 20% at 65km/hr to 95% at 110 km/hr...By staying in the lane, 22% of fatal head on collisions, side swipes and single car run-off road crashes can be avoided".

The proposal covers both Lane Departure Warning Systems (LDWS), which provide the driver with a warning when the system detects the vehicle is unintentionally leaving its lane, and also Corrective Directional Control Function (CDCF), which can provide lateral intervention to prevent lane departure through either a steering input or through differential braking. The proposed requirement for steering effort to override the system is not more than 50 N, with visual warnings to ensure the driver is aware they have overridden the system and enable them to assess if the system has been unintentionally overridden and alert them that the system is no longer active. The new ADR would be effective from 1 March 2024 for new model vehicles and from 1 March 2026 for all new vehicles.

The Regulatory Impact Statement concludes that “ADR 107/100 is expected to prevent 6,989 fatalities and 23,648 serious injuries with this reduction in road trauma providing a net benefit of \$2,442 million to the community”. While ACRS strongly believes that safety and health are more important outcomes than cost, we note the RIS finds a benefit cost ratio of 5.0 demonstrating a five-fold return on investment and recommends mandatory regulation.

## Timing of the proposal

The World Forum for Harmonisation of Vehicle Regulations, hosted by the United Nations Economic Commission for Europe (UNECE), is a global platform responsible for the regulatory frameworks regarding the safety and environmental performance of vehicles, their subsystems, and parts. Australia is a contracted party to the UNECE and signatory to an agreement for the adoption of harmonised technical regulations for wheeled vehicles.

UN Regulation No. 157, adopted by the World Forum in June 2020, has been in force since January 2021.(1) As a member of the World Forum for Harmonization of Vehicle Regulations Working Party 29 Australia participated in the development of the regulation. This regulation already applies to passenger cars and vans: many manufacturers are providing vehicles compliant with the standard to the market.(2) There is no reason Australia should not adopt the equivalent requisites for vehicles sold in Australia at the same time, in this case as soon as possible as more than a year has already passed.

Further, during November 2021 the World Forum for Harmonization of Vehicle Regulations Working Party 29, adopted an amendment to a UN Regulation on Automated Lane Keeping Systems which stipulates the technical requirements for use in heavy vehicles including trucks, buses and coaches. The amendment is expected to enter into force in June 2022 in the 54 Contracting Parties to the 1958 Agreement, which already apply UN Regulation 157.

We note also that the proposal has been adapted from the European Union Regulation EU 2021/646 Emergency Lane Keeping System (ELKS) which is the EU regulation that sets the performance and testing requirements for ELKS of motor vehicles in all of the Member States of the European Union and comes into force on 6th July 2022.

Australia should adopt the standard concurrently.

Evidence suggests that the cost of new safety technology is low, and likely to be outweighed by the benefits, both to individual drivers and in reducing the social and economic cost of road trauma. Every year of delay in adopting that technology means that there is a knock-on effect further down the track and less people will benefit from that technology in a timely manner.

Australian Design Rules (ADRs) have been identified as the best mechanism for ensuring that Australians have access to the safest new technology. The time lag between the development of new technology and updates to the ADRs is frequently raised, including in submissions and evidence provided to the Australian Parliament Joint Select Committee on Road Safety 2021.

	Not supported	Supported if amended	Supported
The scope and purpose of Draft ADR 107/00	<input type="checkbox"/>	X	<input type="checkbox"/>
The level of detail provided in Draft ADR 107/00	<input type="checkbox"/>	X	<input type="checkbox"/>
Completeness of themes covered by Draft ADR 107/00	<input type="checkbox"/>	X	<input type="checkbox"/>
The general levels of stringency adopted	<input type="checkbox"/>	X	<input type="checkbox"/>
Suitability of external standards and regulations referenced	<input type="checkbox"/>	X	<input type="checkbox"/>
The provision of alternate/harmonised pathways (such as meeting UN Regulations in lieu of some requirements)	<input type="checkbox"/>	X	<input type="checkbox"/>

### a) Scope and purpose

The stated purpose of Australian Design Rule (ADR) 107/00 is “to specify requirements for Lane Keeping Systems for passenger vehicles (ADR categories MA, MB and MC vehicles) and light goods vehicles (ADR category NA vehicles), to prevent the driver from leaving their lane unintentionally. ADR 107/00 prescribes the requirement for the fitment of lane keeping systems, performance requirements for lane keeping systems, and requires that lane keeping systems default to being active”.

With the UNR requirement for heavy vehicles, including trucks, buses and coaches about to enter into force, a new ADR on LKS should similarly apply to heavy vehicles to ensure that Australia keeps up with global standards.

The ADR does not include any vehicle constructed primarily for the purpose of carriage of goods and has a gross mass of one tonne, or if carriage of people and goods: seating positions times 68 kg is less than 50 percent of the difference between the ‘Gross Vehicle Mass’ and the ‘Unladen Mass’.

The Regulatory Impact Statement (RIS) page 23 identifies the top ten selling vehicles, with these making up 32.9% of light vehicles sold. The RIS states 60.86% were fitted with LKS, indicating that such systems and any reflection of LKS in the purchase price or vehicle functionality is not a deterrent to buyers.

Many of the top selling vehicles are those used for trades, the resources, and agricultural sectors. The National Road Safety Strategy (NRSS) 2021-30 states a priority of workplace road safety. However, due to the vehicles that are out of scope, there are likely to be many popular vehicles, including vehicles that are a part of a workplace, which will not be required to comply.

The scope should be revisited to include the vehicle categories of light omnibus and medium goods vehicles if the Australian Government is serious about achieving the targets and priorities of the NRSS. As a minimum it should include all vehicles that Australian jurisdictions include in the base class vehicle licence, in the main that being vehicles that do not exceed 4.5 tonnes of Gross Vehicle Mass and can hold up to 12 adults, including the driver.

The purpose of the ADR is limited to warn the driver and correct vehicle trajectory for unintended lane departures. The purpose does not include Imminent collision risk, Minimum Risk Manoeuvre, Emergency Manoeuvre, Detection range, minimum following distance, transition demand, Driver Availability Recognition System / driver presence, attentiveness, and activities other than driving. Such functionality is in the United Nations Regulation (UNR) on Automated Lane Keeping Systems (ALKS), the equivalent standard.

Many local roads in Australia are unsealed or are narrow sealed roads with no line markings. For example, in Western Australia, 68% of the 127,000 kms of road managed by Local Governments is unsealed. LKS essentially become redundant on such roads, and to some may simply be burdensome technology requiring deactivation or additional expense for servicing and repairs. Austroads recently released a research report Minimum Physical Infrastructure Standard for the Operation of Automated Driving Part A which may be relevant.(3) The effectiveness of LKSs should not be so limited that it will not reduce many rural and remote run off road crashes. Driver attentiveness and anti-collision functionality must be incorporated so that 'lane departure' crashes involving single vehicles running off an unsealed or unmarked road are also reduced. Inclusion of such functionality will also provide a greater return on investment for those in regions that may question the usefulness of the more limited functionality.

#### **b) Level of detail**

The draft ADR includes: "Corrective Directional Control Function (CDCF)", "Distance to Lane Marking (DTLM)", "flat road", "control strategy", failure warning, manual deactivation, automatic deactivation/suppression, speed range/s, line markings, performance requirements, steering override, warnings, test and verification requirements and documentation requirements. In comparison to the UNR, the detail provided regarding these appears less comprehensive. Greater consistency with the UNR should be achieved.

The level of detail in the Regulatory Impact Statement does not provide confidence regarding potential changes to vehicle purchasing choices, such as new or second-hand car price inflation, price of servicing technology in rural and remote areas. These issues may or may not be significant.

#### **c) Completeness of themes**

The UNR ALKS includes: modifications and vehicle extensions; imminent collision risk; minimum risk manoeuvre; emergency manoeuvre; detection range; minimum following distance; transition demand; driver availability recognition system/driver presence; driver attentiveness; and driver activities other than driving. The absence of such functionality highlights the extent to which the draft ADR 107/00 is incomplete in comparison to the UNR which Australia has participated in developing through the World Forum for Harmonization of Vehicle Regulations Working Party 29.

As has been noted in the past through submissions to the Australian Government a resulting practice due to mis-alignment of effectiveness dates and functionality required is 'de-specing' vehicles - imported vehicles sold in Australia are not equipped with new technology that would be a standard feature if the same vehicles were sold elsewhere such as in Europe.(4) This poses an ethical question regarding the Australian Government's enablement or causation of such practices.

#### **d) General level of stringency adopted**

The draft ADR states “*the manufacturer must provide the Testing Facility with an explanation of the design provisions built into the system*”. The apparent reliance on self-regulation by manufacturers through digital certification of features and no Australian regulator confirming specification, such as safety features being fitted, is inadequate. Vehicle manufactures have proven that reliance on self-certification is not satisfactory, as demonstrated by Volkswagen regarding emissions.(5, 6)

#### **e) Suitability of external standards and regulations referenced**

The draft ADR states “*...the vehicle manufacturer must demonstrate to the satisfaction of the Testing Facility that the requirements for the whole speed range and lateral departure velocity range are fulfilled. This may be achieved on the basis of appropriate documentation appended to the test report*”. Whilst the UNR states “*A vehicle representative of the vehicle type to be approved shall be submitted to the Technical Service conducting the approval tests.*”

This further illustrates deviation from the UNR ALKS developed by Working Party 29, a standard Australia participated in developing. With Australia no longer manufacturing light vehicles, there can be no argument for protecting Australian motor vehicle manufacturers from the regulatory impact of introducing more comprehensive standards and regulatory regime. Additionally, greater alignment with the UNR for ALKS could leverage the regulatory efforts carried out for manufacturers in counties of origin.

#### **f) Provision of alternate/harmonised pathways**

The requirements in the proposed ADR 107/00 have been adapted from EU Regulation EU 2021/646. However, the extent of harmonisation is limited. The exclusions are opportunities forgone to reduce road trauma on Australian roads. Notably, delays between the introduction of new or amended standards developed and adopted through the World Forum for Harmonization of Vehicle Regulations Working Party 29 are unacceptable. Australia participates in the development of such standards and could be conducting any work to determine suitability in the Australian context in parallel, for example Regulatory Impact Assessments. The adoption of similar safety technology for heavy vehicles further illustrates such unacceptable lags.

#### **g) Possibility of unintended consequences**

There are at least 2 possible unintended consequences that should be considered.

Firstly, there may be lower uptake of the ever-increasing levels of sophistication in vehicle technology in remote areas due to perceptions of what is fit-for-purpose and/or limited access to repairs (e.g., replacement windscreens with radar or cameras). Should this occur, it may contribute to raising the average age of the fleet even further in remote areas.

Secondly, the way that drivers interact with the systems in real-life requires further investigation. Issues such as crossing a lane or centre line to give cyclists a safe distance, or drivers becoming overwhelmed with multiple safety systems in a single vehicle, should be further investigated to ensure that systems such as LKS are implemented in a way that maximises their potential safety benefits.

## Conclusion and Recommendations

Australia's road safety regulations must keep pace with global standards. The proposed ADR should be amended to:

- Include all vehicles, not just light vehicles
- Be enforced as soon as possible
- Ensure the functionality matches the UNR
- Tighten requirements for manufacturer testing

The possibility of unintended negative consequences should be further investigated to ensure the implementation of LKS maximises the potential safety benefits.

ACRS appreciates the opportunity to make this submission and contribute to improving regulations for vehicle safety in Australia. Please do not hesitate to contact me should you require any additional information or have any queries in relation to this submission.



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## References

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