



REDUCING HARM TO VULNERABLE ROAD USERS

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CONTENTS

1. Overview of ABMARC
2. Improving outcomes for VRUs
3. Projects





ADAS TESTING AND ADR COMPLIANCE TESTING

We also conduct a range of advanced driver assistance system testing for ADRs and UNECE tests including:

- Light and heavy vehicle test capabilities
- Left- and right-hand drive
- Multiple teams
- Day and night
- Seven days a week

ANACP tests, ANCAP pre-tests

EMISSIONS AND FUEL CONSUMPTION TESTING

- Using PEMS to perform emissions testing
- RDE real world emissions and fuel consumption testing for light duty vehicles with the Australian Automobile Association

www.realworld.org.au



- High accuracy fuel consumption measurement for evaluating the effectiveness of new fuels, additives and lubricants



VEHICLE DEVELOPMENT AND DURABILITY

Tailored programs to help develop and validate a vehicle's systems in Australia, for Australian or global markets. Examples include:

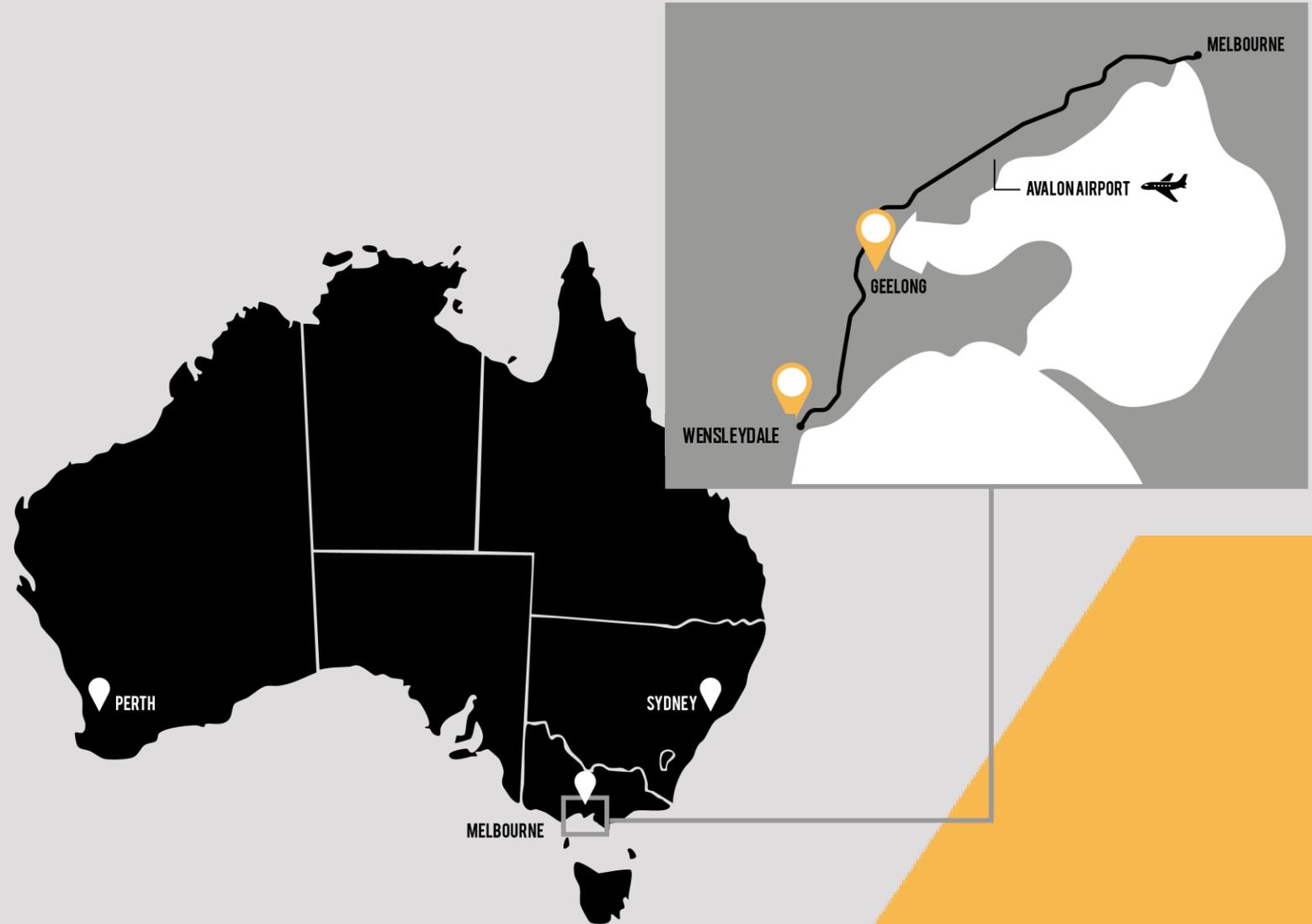
- System development, test, calibration and validation, durability testing.
- Develop and validate test protocols for new vehicle technologies (on-road or on-proving ground).
- Research & validation (participant pools, data acquisition systems, etc.).



LOCATION

Emissions, fuel and energy consumption testing in Geelong.

ADAS testing at Australian Automotive Research Centre (AARC).



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HOW DO CRASHES WITH TRUCKS HAPPEN?

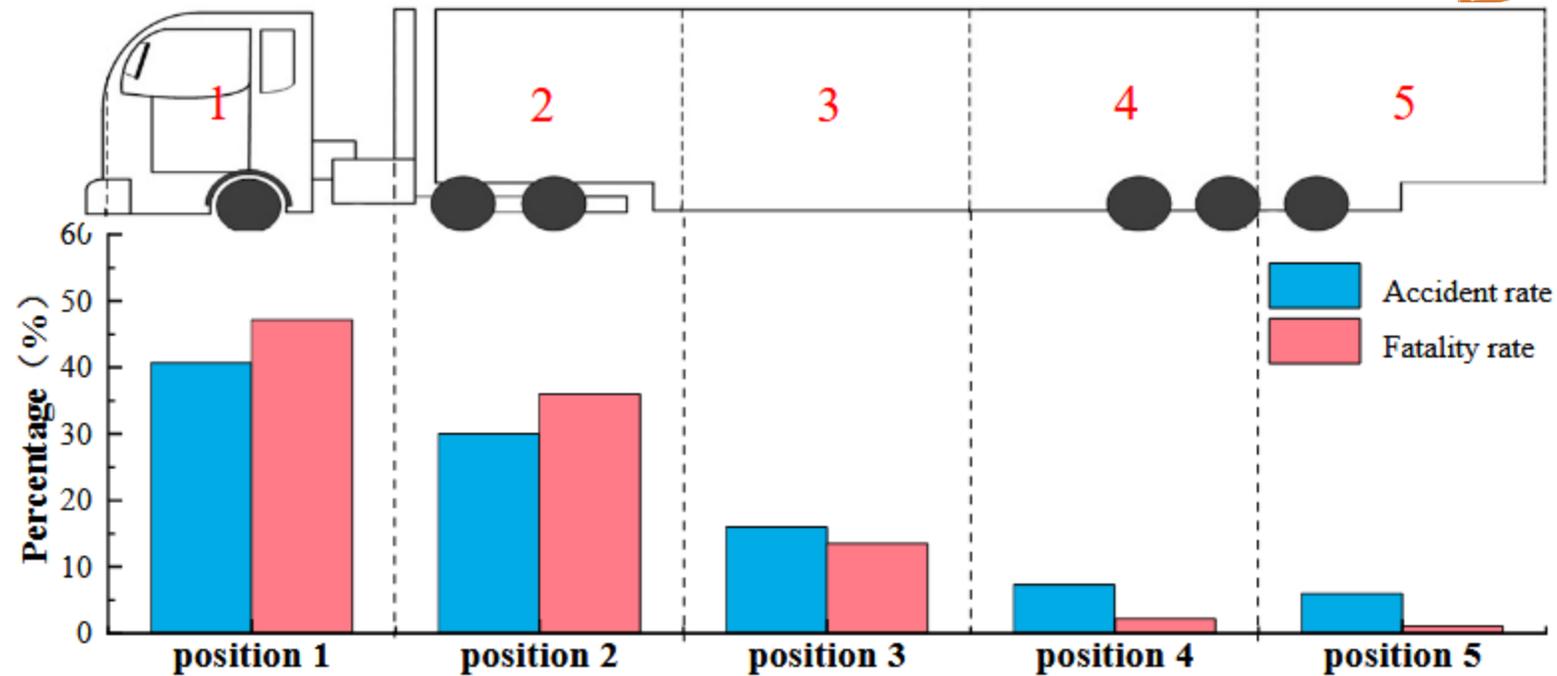


Figure 12. Proportion and accident severity in each division zone of a semitrailer truck.

Most impacts with VRUs occur in the front two sections - blind spots are a key factor.

TECHNOLOGIES THAT HELP REDUCE HARM

Feature	CLOCS-A	TfL PSS	Comment
Applicability	National, voluntary	Mandatory for HGVs over 12t in Greater London	
Tiered Standards	Yes (Bronze, Silver, Gold)	No (single set of requirements)	
Mirrors	Yes	Class V and VI mirrors (or CMS equivalents)	UNECE Reg 46 / ADR 14
Camera Monitoring System	Left side cameras from Silver level	Yes	UNECE Reg 46 / ADR 14
Blind Spot Monitoring	Yes (from Silver level)	Yes	UNECE Reg 151 / ADR 105
Moving-Off Information System	No	Yes	UNECE Reg 159
Side Underrun Protection	ADR	Yes	UNECE Reg 73 / ADR 106
Audible Warning System	From Silver level	Yes	Not specific
External Warning Signage	Yes	Yes	
Telematics	Included at Gold level	Not specified	
AEB	Included at Gold level	Covered by legislation	Legislation becoming increasingly strict over time
ESC	Included at Gold level	Covered by legislation	
Autonomous Reverse Braking	Included at Gold level	Not specified	
Emissions Standards	Euro V (Silver), Euro VI or Zero Emissions (Gold)	Covered by legislation	
Driver Training Requirements	Recommended	Not specified	

These protocols have been developed to improve outcomes for Vulnerable Road Users.



ARE THESE TECHNOLOGIES SUCCESSFUL?

Impact	 London	 Great Britain
Fatalities	Decreased 30%	Decreased 7%
Serious injuries	Decreased 24%	Decreased 13%

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PROJECTS EVALUATING VRU PROTECTIONS

Projects underway

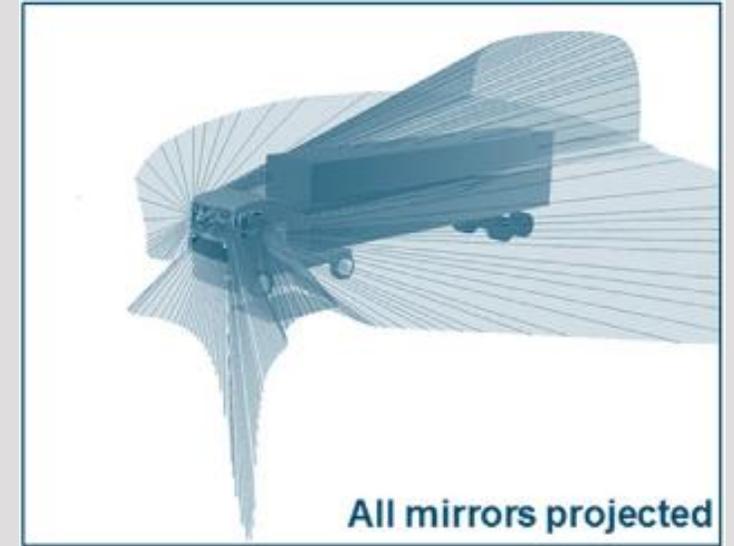
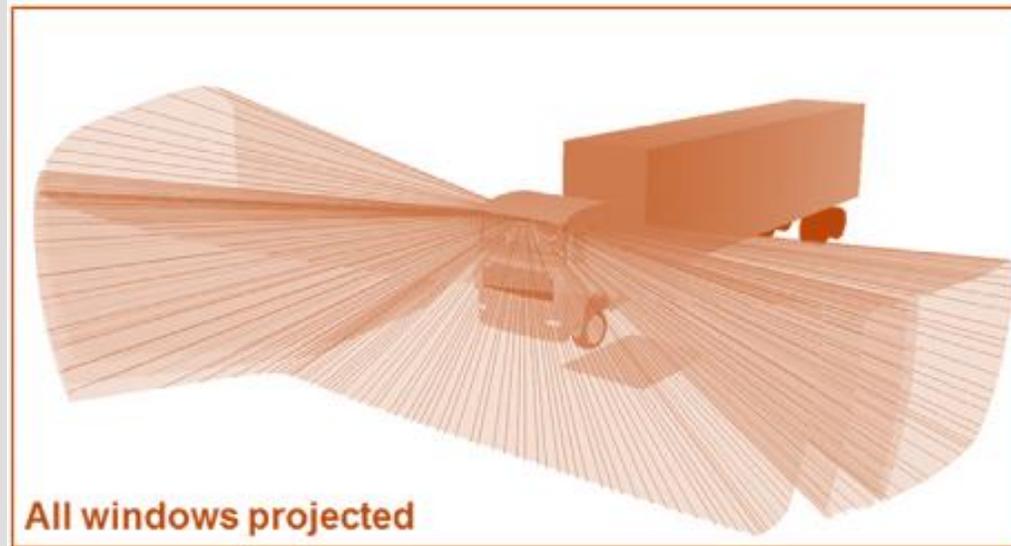
- HVSI BSIS Project (TIC, NHVR, DITRDCA partnership)

Projects commencing soon

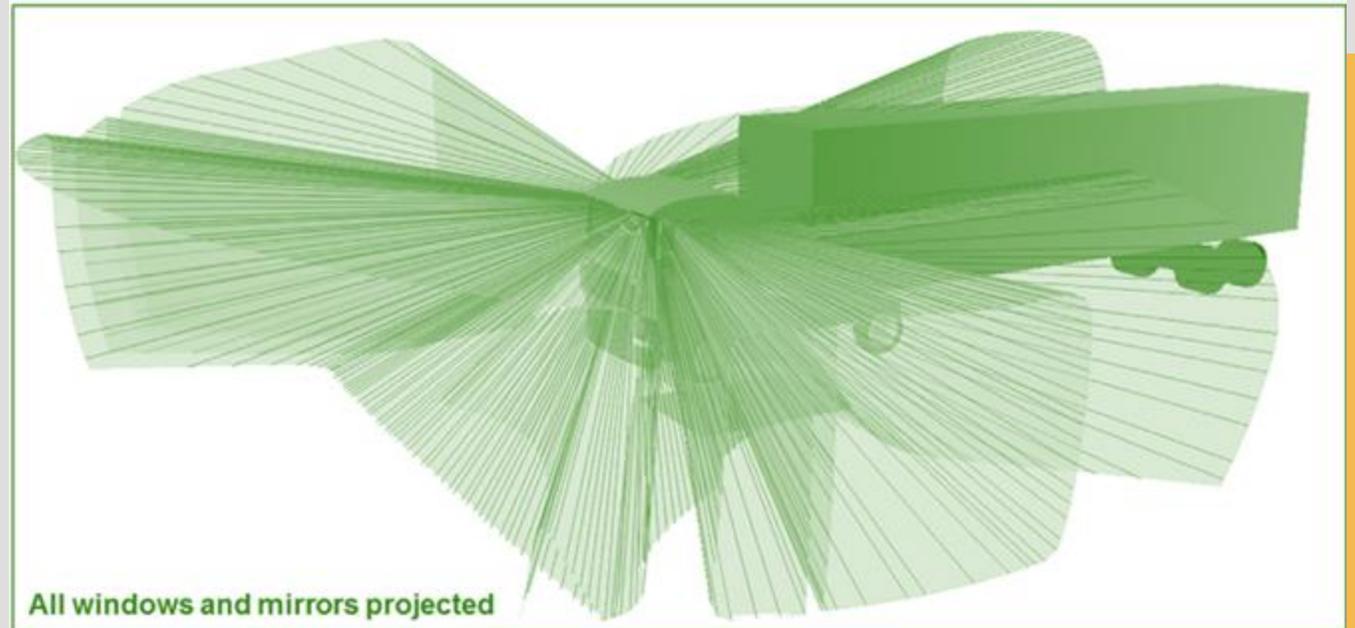
- Examining vision on **new** trucks (including bonneted) i.a.w. UNECE requirements
 - DITRDCA, ANCAP and others
 - Final project specifications pending
- Examining vision on **in-service** trucks
 - Australian Automobile Association, TIC and others
 - Final project specifications pending



VISION



- **Direct vision** is what a driver can see directly through their vehicle's windows.
- **Indirect vision** is what a driver can see using mirrors or camera displays.



REGULATOR EVALUATION OF VISION

DITRDCA and ANCAP project – UNECE Reg 167

- Examining direct vision on **new** trucks (including bonneted) i.a.w. UNECE requirements

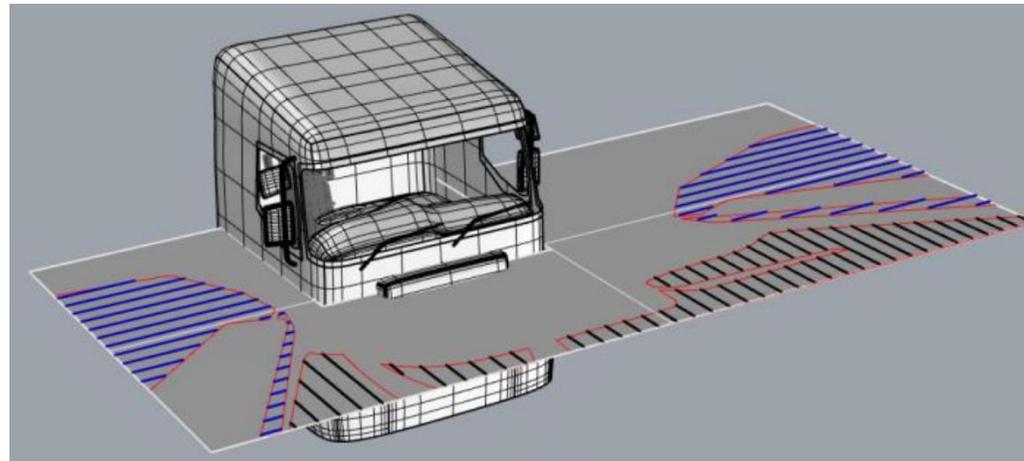
The project will evaluate UNECE Reg 167 to:

- Assess its applicability to the Australian market, local vehicle types and typical usage.
- Evaluate direct vision performance in bonneted trucks.
- Explore how the regulation could be implemented with an Australian perspective (if/as required).



TIC Advocacy

- TIC believes that it will be very difficult to fully implement UNR167 (direct vision) in Australia.
 - Many long-haul (“inter-urban”) trucks have a second life operating in metro areas (tippers, etc.).



RESEARCHERS EVALUATING VISION

Australian Automobile Association (AAA) project

- Funded by the (AAA).
- Examining vision on **in-service** trucks.
- Collaboration with TIC (and others) (TBC)



HVSI – BSIS PROJECT / ADR 105 IN AN AUSTRALIAN CONTEXT

The Truck Industry Council is conducting a study on Blind Spot Information Systems (BSIS) for bonneted trucks, supported through a Heavy Vehicle Safety Initiative (HVSI) project grant.

Purpose of the study:

- **Regulatory Assumptions:**
 - UNECE Regulation 151, the basis of ADR 105, was developed using cab-over trucks. No international studies exist assessing BSIS performance on bonneted trucks, or confirming the suitability of the UNECE 151 test protocol for bonneted trucks.
- **OEM compliance requirements**
 - Manufacturers selling bonneted trucks in Australia may need to conduct local testing to demonstrate compliance with ADR 105.



ADR 105/00 - BSIS

ADR105/00 is based on UNR151 which only requires cyclist detection.

Designed to detect the presence of a cyclist on the near side of the vehicle.

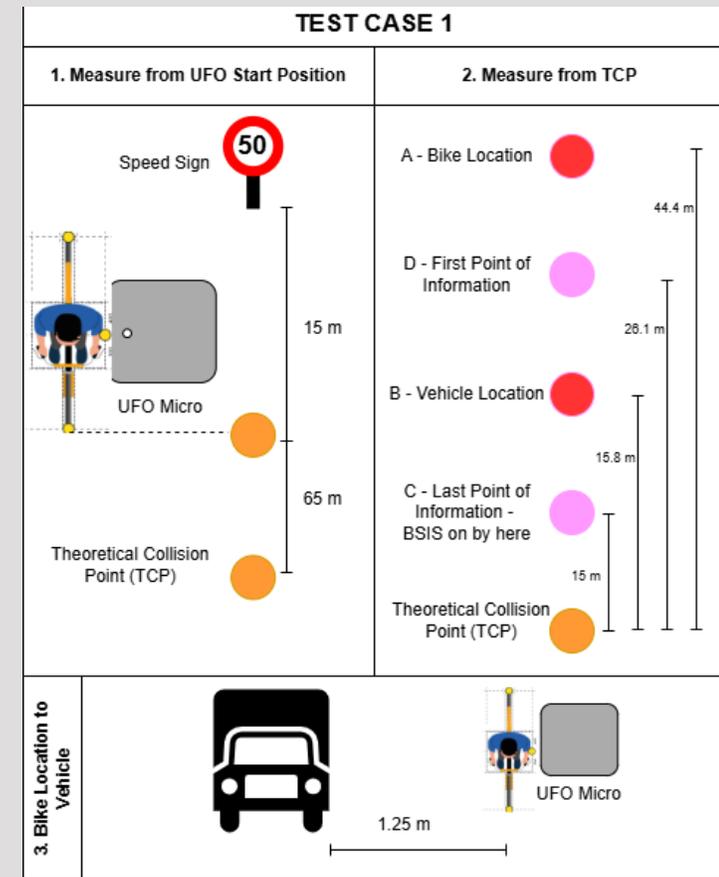
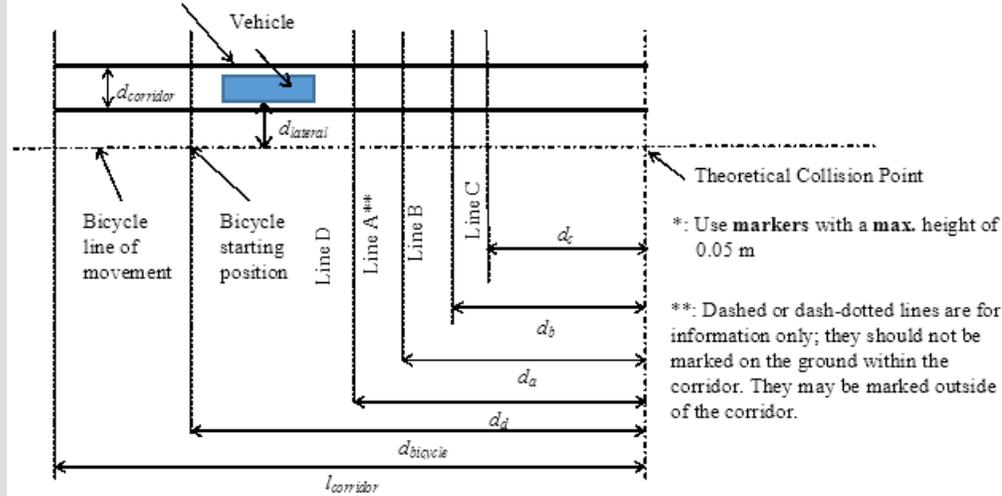
ADR105/00 will apply to:

- New models >2.5m wide from Nov. 2025.
- All vehicles >2.5m wide from Feb 2027.

HVSI - BSIS PROJECT / ADR 105 IN AN AUSTRALIAN CONTEXT

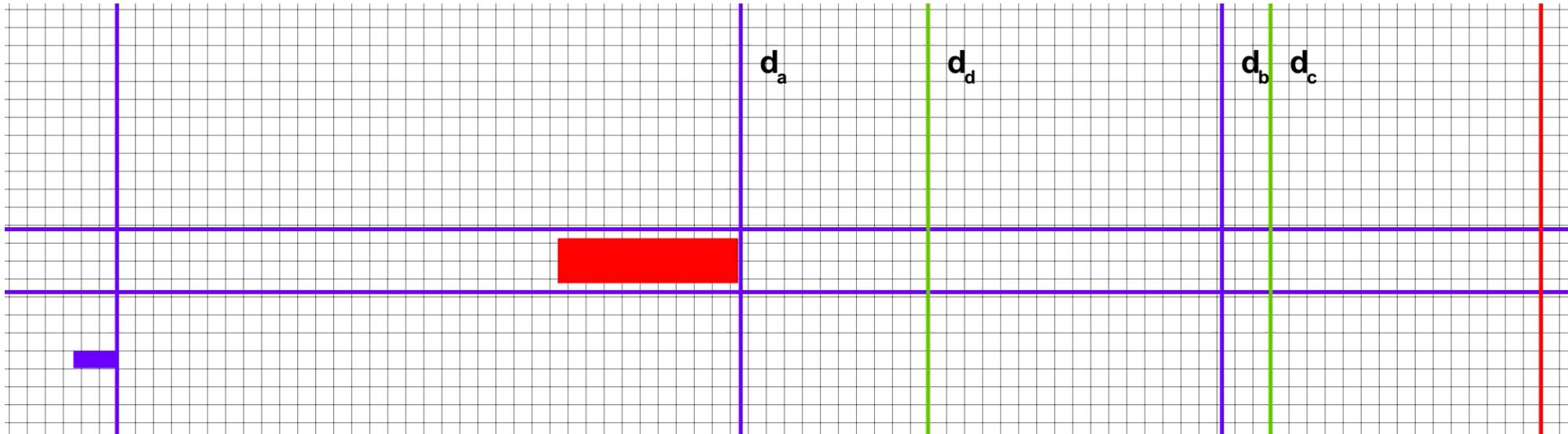
Dynamic tests

Mark corridor using markers *, spacing not more than 5 m



Test Case	$v_{bicycle}$ [km/h]	$v_{vehicle}$ [km/h]	$d_{lateral}$ [m]	d_c [m]	d_b [m]	d_a [m]	d_d [m]	$d_{bicycle}$ [m]	$l_{corridor}$ [m]	$d_{corridor}$ [m]	For information only (not influencing test parameters)	
											Impact Position [m]	Turn Radius [m]
1	20	10	1.25	44.4	15.8	15	26.1	65	80	vehicle width + 1 m	6	5
2	20	10			22	15	38.4				0	10
3	20	20			38.3	38.3	-				6	25
4	10	20	4.25	22.2	43.5	15	37.2				0	25
5	10	10			19.8	19.8	-				0	5
6	20	10			14.7	15	28				6	10
7	20	10	44.4	44.4	17.7	15	34				3	10

HVSI – BSIS PROJECT / ADR 105 IN AN AUSTRALIAN CONTEXT



d_{corridor} (m) 3.5
vehicle width + 1m
 v_{vehicle} (km/h) 10
 v_{bicycle} (km/h) 0.00

**BSIS signal
Deactivated**

Test Case 7



Drone Wide View

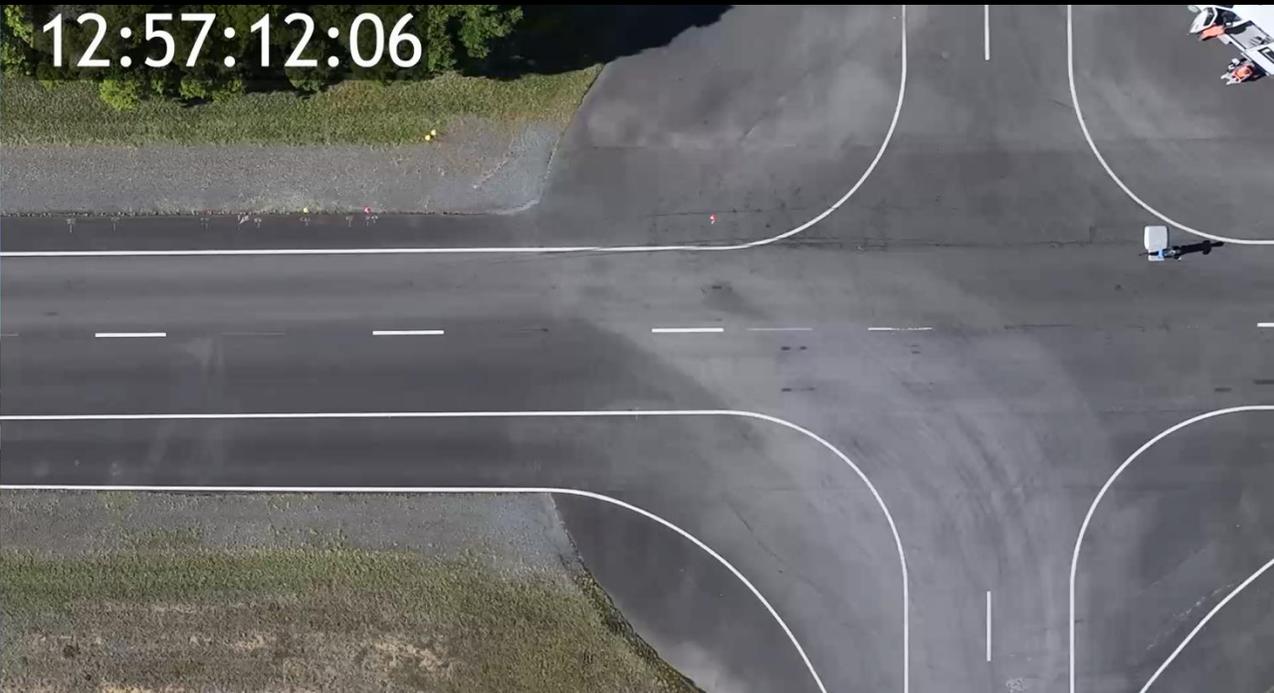


BSIS Information

Outside Door Camera



Drone Tight View



HVSI – BSIS PROJECT / ADR 105 IN AN AUSTRALIAN CONTEXT



USEFUL LINKS & CONTACTS

UNECE Regulations

R151 (Blind Spot Information Systems):

<https://unece.org/transport/standards/transport/vehicle-regulations-wp29/un-regulations/r151>

R159 (Moving Off Information Systems):

<https://unece.org/transport/standards/transport/vehicle-regulations-wp29/un-regulations/r159>

R 167 (Direct Vision) <https://unece.org/transport/documents/2023/06/standards/un-regulation-no-167>

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USEFUL LINKS & CONTACTS

Loughborough University (2021), Understanding Direct and Indirect Vision in HGVs

https://repository.lboro.ac.uk/articles/report/Understanding_direct_and_indirect_driver_vision_in_heavy_goods_vehicles_-_Summary_Report/9353636

DEKRA Road Safety Report (2021)

<https://www.dekra-roadsafety.com/en/road-safety-report-2021/>

Fraunhofer/Scania AEB Trial Results (2020)

Summary (German): <https://www.fraunhofer.de/de/presse/presseinformationen/2020/januar/fraunhofer-entwicklung-fuer-sichere-nutzfahrzeuge.html>

BMW Turn Assist Study (2019)

<https://www.bmvi.de/SharedDocs/EN/Articles/StV/turn-assist-system.html> (BMW now part of BMVI – Federal Ministry for Digital and Transport)

BITRE (2023), Fatalities Involving Trucks and Buses

<https://www.bitre.gov.au/publications/ongoing/fatal-heavy-vehicle-crashes>

NHTSA / Volpe Research on Sensors and Blind Spots

<https://www.nhtsa.gov/technology-innovation/vehicle-safety-research>
<https://www.volpe.dot.gov/our-work/safety/heavy-vehicle-safety-research>

UNECE Regulations

R151 (Blind Spot Information Systems): <https://unece.org/transport/standards/transport/vehicle-regulations-wp29/un-regulations/r151>

R159 (Moving Off Information Systems): <https://unece.org/transport/standards/transport/vehicle-regulations-wp29/un-regulations/r159>

R 167 (Direct Vision) <https://unece.org/transport/documents/2023/06/standards/un-regulation-no-167>

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