Light Truck ADAS Safety Comparison

Final Report for NHVR

REPORT DATE: 1 August 2025
GRANT PROGRAM: Heavy Vehicle Safety Initiative (Round 8)

CONTENTS

ATTACHMENTS:

A. ANCAP Media Release – 13 May 2025
B. *Light Truck ADAS Safety Comparison Report* – May 2025
C. ANCAP TESTING & ASSESSMENT PROTOCOL Light Truck Safety Assist V1.0

1 OVERVIEW

1.1 Project Overview

The Light Truck ADAS Safety Comparison project is an initiative of ANCAP Safety, designed to promote the safety of light and medium goods vehicles (NB category).

The objective of this project is to provide objective and independent information to fleet buyers and small business customers on the safety performance of selected light truck models. The focus of this initial stage of the project is on four NB category two-axle light duty goods vehicles between 4.5 and 7.5 tonnes Gross Vehicle Mass (GVM).

The project involves the independent technical testing, assessment, and review of the performance of active safety features (also known as ADAS or Advanced Driver Assistance Systems) fitted to light trucks in the Australian market.

Light trucks are an important market segment, making up a significant and growing proportion of vehicles on Australian roads. While consistent national fatality and serious injury data specific to light trucks is limited, broader data indicates that goods vehicles such as commercial vans and trucks across all size categories are over-represented in fatal and serious injury crashes in Australia. These vehicles make up less than three per cent of all registered vehicles on Australia's roads, yet they are involved in approximately 15 per cent of fatal collisions[1].

This project builds on ANCAP's thirty years of experience in the independent assessment of the safety performance of vehicles. In particular, it draws on ANCAP's ongoing work with commercial vans through the Commercial Van Safety Comparison Program.

The project has been partially funded by the Australian Government through the Heavy Vehicle Safety Initiative administered by the National Heavy Vehicle Regulator (NHVR).

1.2 Background

ANCAP Safety is Australia and New Zealand's independent voice on vehicle safety. For over thirty years, ANCAP has published independent safety assessments for thousands of new vehicle makes, models, and variants. Each assessment involves the independent technical testing and assessment of a vehicle's safety features and safety performance, including through crash tests, active collision avoidance tests, and through analysis of safety specifications available on local vehicle models. ANCAP has historically examined and rated passenger cars (MA, MB and MC category) and light commercial vehicles (NA category) such as utes and vans, and has recently expanded into assessment of a wider range of vehicle types.

ANCAP's provision of independent and objective information about the safety of mainstream vehicle models, has led to a dramatic improvement in safety specifications in the market segments covered by ANCAP. This in turn has contributed to measurable improvements in vehicle crash performance and resulting road trauma reduction.

1.3 Purpose of this Report

This report provides an account of the activities undertaken by ANCAP, the money expended, and the outcomes achieved through this initial stage of the Light Vehicle ADAS Safety Comparison program. The information contained within this report is as agreed under Schedule 4 of the HVSI Grant Agreement, which requires the following information:

[1] Road Trauma involving Heavy Vehicles - Annual Summary 2021, BITRE

(a) financial statements in respect of payment of the Funding (less any Repaid Amount, if any), which must include a definitive statement as to whether the financial information in relation to the Grantee's obligations under this Agreement represents the financial transaction fairly and is based on proper accounts and records;

(b) the activities undertaken by the Grantee in accordance with Schedule 2 – Work Program;

(c) how the Grantee has achieved the Deliverables under Schedule 2 – Work Program (including details of relevant mechanisms and processes adopted by the Grantee);

(d) any limitations or setbacks encountered by the Grantee in the delivery of the Project and how those limitations or setbacks were addressed by the Grantee;

(e) how, in the Grantee's view, the objective outlined in Schedule 1 – Contract Details has been achieved by delivery of the Project, or reasons why, in the Grantee's view, the objective has not been achieved; and

(f) any other information related to the Project as requested by the NHVR acting reasonably.

2 PROJECT SCOPE

The project scope was detailed in the Grant Agreement between ANCAP and the National Heavy Vehicle Regulator.

2.1 Overall Scope

The project is to test and grade active, collision avoidance safety systems fitted to four models of NB category light or medium goods vehicles, and to provide the resulting independent safety comparison information to Australian light truck purchasers.

This project will build on ANCAP's existing experience in testing and rating passenger cars, SUVs and light commercial vehicles (through its established star rating system) and the testing and grading of active safety systems on commercial vans.

The testing and grading project will be internally managed by an ANCAP engineer. Communications activities will be undertaken by ANCAP's communications team. Oversight of the project will be provided by the Chief Technical Officer, the Director – Policy, and the Director – Communications & Advocacy, in addition to ANCAP's CEO.

ANCAP will identify three high-selling NB category vehicles, as well as testing a fourth NB category vehicle with an electric drivetrain.

The safety features to be tested, and reported on include:

- AEB (vehicle to car)
- AEB (vehicle to pedestrian)
- AEB (cyclist)
- Lane support systems
- Blind spot monitoring
- Driver monitoring system
- Seat belt reminder – driver and passenger
- Speed limiter

2.2 Deliverables

The major project deliverable will be a Light Truck ADAS Safety Comparison report, which will provide an analysis of the performance of the safety systems fitted to the four light trucks selected by ANCAP for testing.

Additional project deliverables will include:

- Technical reports on each of the vehicles tested
- Publication of results and the report on the ANCAP website
- ANCAP attendance as exhibitors or presenters at industry conferences

2.3 Activities and stages

2.3.1 Stage 1 – Preparation and purchase of vehicles

ANCAP will:

- Select four NB category goods vehicles for testing
- Purchase the selected vehicles and transport to the testing site
- Develop a light truck testing and grading protocol (NB category light or medium goods vehicles)
- Establish a testing schedule for the selected vehicles
- Develop a marketing and communications plan for the reporting of test results

2.3.2 Stage 2 – Testing of vehicles

ANCAP will:

- Undertake testing and grading of the performance of the safety features of the four selected vehicles in line with the protocol developed in Stage 1, including through:
  - Testing autonomous emergency braking features using appropriate test targets and road scenarios
  - Testing lane support systems using appropriate test road scenarios
  - Comparing performance of vehicles across different load types in specified test road scenarios
  - Any other test requirements set out in the protocol

2.3.3 Stage 3 – Publication and reporting of test results

ANCAP will:

- Deliver a Light Truck ADAS Comparison report, which will provide an analysis of the performance of the safety systems fitted to the four light trucks selected by ANCAP for testing according to the protocol developed in stage 1 (to be reviewed by NHVR)
- Deliver additional deliverables including:
  - Technical reports on each of the vehicles tested (to be reviewed by NHVR)
  - Publication of results and the report on the ANCAP website
- Work with the NHVR communications team to launch the report, including through:
  - Issuing an ANCAP media release announcing the testing report release
  - Conducting a launch event with media, with the opportunity for NHVR involvement
  - Production of a number of hardcopy reports for distribution by ANCAP and NHVR

2.3.4 Stage 4 – Promotion of test results

ANCAP will:

- Establish a dedicated webpage hosting an overview of the test program and a link to test results on the ANCAP website, with acknowledgement of the NHVR's support for the program
- Promote the report and results of the testing, including through:
  - Pitching features articles to key truck industry publications
  - Informational posts on ANCAP social media channels
  - Sharing testing results and videos on ANCAP's YouTube channel
  - Engaging with the NHVR communications team to identify joint opportunities to promote the program and its results
- Attend two or more industry conferences to present testing findings

2.3.5 Stage 5 – Evaluation

Following the conclusion of the above stages, ANCAP will:

- Provide an evaluation report to the NHVR which will include details of what was successful and what was unsuccessful in the delivery of the Project, as well as whether the Project met its objectives.

3 PROJECT ACTIVITIES

Activity	Details	Completed by
Stage 1		
Selection of vehicles	In Q2 2024, ANCAP selected the three top-selling ICE light trucks (Fuso Canter, Hino 300, Isuzu N Series) and the top-selling electric light truck (Foton T5) on the basis of recent sales data. ANCAP's project team then identified specific variants of each light truck model that were appropriate for testing.	Q2 2024
Purchase of vehicles	Following the model and variant selection process, ANCAP purchased the selected vehicles and transported them to the Cudal test site in Q2 2024 **Setbacks or limitations**: Due to delays in the commencement of the project, some activities for Stage 1 were slightly delayed from the original planned completion date of 30 May 2024.	Q2 2024
Development of testing protocol	ANCAP's technical team prepared a detailed protocol document, which outlined the testing procedures which would be applied to the light trucks, and how the results from those tests would be considered, assessed, and graded. The Light Truck ADAS Assessment protocol document built on and referred to other testing and assessment protocols developed by ANCAP for other vehicle types such as light passenger vehicles and commercial vans, with appropriate adjustments to account for the different features of light trucks. The protocol was also influenced by Euro NCAP's heavy goods vehicles test protocol. The first draft of the protocol was prepared for use in the testing in February 2024. The protocol was adjusted throughout the testing until the final grading method was established. The Light Truck ADAS Assessment protocol was then published as final in April 2025 **Setbacks or limitations**: The initial draft of the protocols were completed as scheduled. Finalisation of the protocols was subject to extensive technical engagement with industry representatives and the completion of the testing program.	Q2 2024 (draft) Q2 2025 (final)
Establishment of testing schedule	ANCAP worked with the Future Mobility Testing and Research Centre (FMTRC) at Cudal to establish a testing schedule, identifying appropriate time windows where the facility was available to test the	Q2 2024

Activity	Details	Completed by
	performance of the purchased vehicles. **Setbacks or limitations**: Due to delays in the commencement of the project, some activities for Stage 1 were slightly delayed from the original planned completion date of 30 May 2024. The testing schedule would later have to be adjusted again to account for technical issues with the purchased vehicles.	
Vehicle purchase and delivery	ANCAP purchased the selected vehicles and arranged for transport to the testing site at Cudal. **Setbacks or limitations**: Due to delays in the commencement of the project, some activities for Stage 1 were slightly delayed from the original planned completion date of 30 May 2024.	Q2 2024
Marketing and communications plan	ANCAP worked to the approved Communications & Marketing Plan, preparing, executing and delivering key deliverables including: • Mainstream and industry media opportunities - media releases, fact sheet, interviews, quotes • Development, printing and circulation of the program report • Production and distribution of supporting visuals – still images & video footage • Exhibition presence at 2025 Brisbane Truck Show • Stakeholder notification and engagement • Social media posts	Q2 2025
Stage 2		
Testing and assessment – initial work	ANCAP's technical team worked closely with the team at FMTRC Cudal to undertake testing on the safety features of the four purchased vehicles in line with the protocol developed in Stage 1. This was completed by 30 September 2024. Once the testing was complete, ANCAP's technical team analysed the results alongside information provided by manufacturers. This analysis was conducted according to the assessment protocols developed in Stage 1 of the project. **Setbacks or limitations**: ANCAP experienced a number of delays during the testing process as technical issues were identified with some of the purchased vehicles. After	Q3 2024

Activity	Details	Completed by
	consultation with manufacturers, these issues were rectified, and testing was able to proceed. Some technical concerns were raised by stakeholders during the assessment process. To address these concerns, ANCAP proposed that additional testing and assessment work would be undertaken in Q1 2025, delaying final completion of the project until Q2 2025. A project variation was agreed with the NHVR to adjust the milestone dates under the Grant Agreement.	
Additional testing and assessment work	In December 2024, ANCAP agreed to a project variation with the NHVR to undertake additional testing and assessment work in Q1 2025 (and to delay final completion of the project until Q2 2025). This additional testing allowed ANCAP to address the technical concerns raised by stakeholders. This work was undertaken at FMTRC Cudal in Q1 2025 and completed on schedule. **Setbacks or limitations:** No setbacks. This activity was completed on the schedule agreed through the project variation.	Q1 2025
Stage 3		
Delivery of Light Truck ADAS Comparison report for review by NHVR	An initial draft of the Light Truck ADAS Comparison Report was prepared and provided to the NHVR in Q4 2024. Following the agreement of the project variation, a revised version of the report was provided to the NHVR in Q2 2025, incorporating the results of the additional testing conducted in Q1 2025. **Setbacks or limitations:** Final completion of this activity occurred on the schedule agreed through the project variation.	Q2 2025
Delivery of individual technical reports	Drafts of the individual technical reports for each of the four light trucks were prepared and provided to the NHVR in Q4 2024. Following the agreement of the project variation, revised versions were provided to the NHVR in Q2 2025, incorporating the results of the additional testing conducted in Q1 2025. **Setbacks or limitations:** Final completion of this activity occurred on the schedule agreed through the project variation.	Q2 2025
Working with NHVR on communications activities	ANCAP's communications team consulted with the NHVR throughout the program and sought review and approval of all promotional and communications materials/activities.	Q2 2025

Activity	Details	Completed by
	Setbacks or limitations: Final completion of this activity occurred on the schedule agreed through the project variation.	
Stage 4		
Delivery of dedicated Light Truck webpage within ANCAP website	ANCAP launched the dedicated light truck webpage on its website on the date of official launch - 13 May 2025. **Setbacks or limitations:** Final completion of this activity occurred on the schedule agreed through the project variation.	Q2 2025
Promotion of results	ANCAP undertook a number of promotional activities in relation to the launch of the Light Truck report and webpage, including issuing a media release, engaging with mainstream and truck industry media, and exhibiting at the 2025 Brisbane Truck Show. Positive media coverage and fleet interest was achieved. **Setbacks or limitations:** Final completion of this activity occurred on the schedule agreed through the project variation.	Q2 2025
Stage 5		
Delivery of final evaluation report	This report serves as the final evaluation report.	Q3 2025

4 PROJECT OUTCOMES

4.1 Objectives

The objectives of this project, as listed in Schedule 1 of the Grant Agreement between ANCAP and the National Heavy Vehicle Regulator, were as follows:

1. Increase awareness of active safety technologies among fleet and small business vehicle purchasers.
2. Provide a framework for objective comparison of vehicle safety specification and performance.
3. Encourage vehicle manufacturers to continually improve vehicle specification and capability.

4.2 Evaluation of Project Outcomes

The project was successful in achieving its objectives as set out by ANCAP and the Grant Agreement.

Objective 1: Increase awareness of active safety technologies among fleet and small business vehicle purchasers.

A detailed report, *Light Truck ADAS Safety Comparison*, was published and widely circulated to truck industry stakeholders, fleet purchasers, the media, and general consumers outlining performance insights and presence of active safety technologies on the selected vehicles. ANCAP also exhibited at Australia's largest heavy vehicle event, the 2025 Brisbane Truck Show, to promote the program's inaugural insights, and more broadly generate awareness of the safety features and technologies available in light trucks.

In the period 1 May – 18 July 2025, ANCAP recorded the following engagement metrics:

- 57 media items mentioning ANCAP's Light Trucks analysis were published, with a potential audience reach of 273,800
- There were 1,885 views total of the Light Trucks page and media release on the ANCAP website (1,649 and 236 respectively)
- ANCAP's electronic direct mail (EDM) announcing the Light Truck comparison was sent to over 2,190 recipients, with an open rate of 42.8% and a click-through rate of 6.6%
- ANCAP exhibited at the Brisbane Truck Show over 15-18 May 2025, with 54,790 attendees

This is ANCAP's first public project engaging directly with the light truck market. These engagement metrics indicate that ANCAP's light truck assessment program has successfully reached a large number of stakeholders and consumers through our communications and engagement strategy.

Objective 2: Provide a framework for objective comparison of vehicle safety specification and performance

ANCAP was successful in developing and implementing a methodology for establishing fitment and performance of ADAS (or active safety) features on light trucks in the Australian market through use of established best practice testing and evaluation methods.

This methodology built on ANCAP's extensive experience with best practice testing and evaluation methods in the vehicle safety space. The methodology developed by ANCAP addressed a number of specific issues in relation to light trucks, including load management.

The methodology and protocols were refined through close technical engagement with the vehicle manufacturers, NHVR, Euro NCAP, the Heavy Vehicle Industry Association and the Truck Industry Council. This engagement allowed ANCAP to ensure that the protocols, test methods, test vehicle set-up, and assessment methodology were suitable for use with light trucks. This refinement included further testing to ensure the robustness of the testing protocols used and its applicability to light trucks. This additional testing addressed the concerns of industry and showed that the protocols used were suitable and appropriate for evaluating the performance of ADAS systems on light trucks.

The results of this project provide a baseline against which the specifications and safety performance of other light truck models can be tested and assessed. The testing and assessment protocols can be found as Attachment C to this report.

Objective 3: Encourage vehicle manufacturers to continually improve vehicle specification and capability.

The vehicles tested by ANCAP through this project represent a large proportion of the light trucks sold in Australia each year. The project has shown that the level of installed ADAS capability on the tested vehicles lags behind the levels seen in other market segments, such as utes and commercial vans.

All vehicles tested displayed some level of AEB (autonomous emergency braking) functionality in scenarios involving a car target. However, performance in these scenarios varied between the vehicles.

Three out of four vehicles tested did not meet a prerequisite level of performance when testing their AEB Truck-to-Pedestrian systems. This means they were ineligible to score any points for this system. One vehicle did however demonstrate some level of performance in this suite of tests. While there is currently no ADR requirement for NB2 vehicles to have an AEB capability to prevent or minimise injury to vulnerable road users (VRUs), the fact that one vehicle was able to demonstrate performance in this category means that there is no fundamental technical obstacle to fitting these systems to light trucks. This finding should serve to encourage more manufacturers in this category to fit AEB systems that protect VRUs from impact and injury.

The development of the assessment methodology provides a clear framework for encouraging vehicle manufacturers to improve the specification and capability of light trucks. In confidential discussions with ANCAP, a number of light truck manufacturers have indicated their intent to improve the specification of future models following the establishment of this assessment and testing framework.

Additionally, a number of manufacturers whose vehicles were not selected as part of the initial cohort of light trucks for the program have indicated a strong interest in bringing their vehicles forward for testing. It is clear that manufacturers have identified there is value in being assessed as having a high level of safety performance, by an independent assessor under an objective framework.

13 May 2025

Light truck best-sellers assessed for

In an Australian first, ANCAP has examined some of Australia's top-selling light trucks as part of a new initiative to boost safety standards and assist business operators and private consumers make informed purchasing decisions.

While light trucks are increasing in popularity, safety experts believe advancements in safety features and technologies in the light truck segment haven't kept pace with other vehicle classes. Light trucks, along with other goods vehicles such as commercial vans and medium and heavy trucks, remain over-represented in fatal and serious injury crashes in Australia. These vehicles make up less than 3% of all registered vehicles on Australia's roads, yet they are involved in approximately 15% of all fatal crashes.

To combat this, ANCAP's *Light Truck ADAS Safety Comparison* launched today seeks to bring greater accountability and safety standards to the light truck segment through a new assessment regime.

The comparison has been undertaken to identify a baseline level of safety performance.

The program is an expansion of ANCAP's highly trusted and respected safety regime which offers consumers and fleets with free, independent and trusted information to make informed decisions. ANCAP has been testing and rating the safety performance of passenger vehicles for over 30 years and this information has led to a dramatic improvement in the safety of these vehicles, ensuring Australian road users benefit from the highest safety standards.

Light trucks represent an important segment of the vehicle market, responsible for the 'last mile' delivery to Aussie homes and as the transport vehicle of choice for many small to medium businesses nationwide. Compared to other vehicle segments, light trucks offer carrying capacity at a relatively affordable price point, with the ability to be driven on a C Class (car) driver licence. These factors and the growing scale of online shopping and delivery demand since the pandemic has led to an increased presence on the roads, with Australian light truck sales increasing by an average of 6.6% per year since 2012.

ANCAP Chief Executive Officer, Carla Hoorweg said this is a new chapter for the segment and the first-time light trucks have come under independent examination.

prioritise improving the safety features in their vehicles and recognise the positive role they can play in making our roads safer for all Australians.

“As you can see from the performance insights, each of the truck models examined bring their individual merits, and all have complied with the Australian Government’s regulatory safety requirements ahead of their mandating, yet in comparison to other vehicle segments and consumer expectations, there is still a fair way to go.”

‘It’s not just about having the technology on board, we want to understand how well it works and where there can be areas of improvement.”

“Through this program we are aiming to drive positive change among the truck industry, fleet operators, and small business owners.

“From these inaugural findings, we expect to see safety performance improve quite quickly through voluntary updates introduced by manufacturers.”

Light Truck ADAS Safety Comparison

Australia’s three top-selling light trucks, the **Isuzu N-Series**, **Fuso Canter** and **Hino 300 Series** and, together with the highest-selling battery-electric (EV) light truck, the **Foton T5**, were selected for examination in this inaugural comparison.

The model ranges of these four trucks account for 74% of all new Light Duty trucks sold (10,788 vehicles) in 2024.

Each of the four trucks were assessed at the Transport for NSW Future Mobility Testing & Research Centre - a National Association of Testing Authorities (NATA) accredited laboratory - and their performance was examined against criteria and procedures refined with input from truck manufacturers and industry representatives.

Each of the four trucks were purchased independently on the retail market and tested to the same standards and processes to ensure a fair, accurate and independent safety assessment. The purchase of these vehicles from dealerships is essential to ensuring ANCAP’s independent testing process, as it ensures the vehicles being tested are the same as a buyer would be receiving and driving on Australian roads.

also examined, with all four trucks lacking these features for the centre passenger seating position.

Considering the potential weight of goods being transported, assessments were undertaken with each truck laden to 50% of its good carrying capacity. Additional assessments were carried out with differing load conditions to examine any variance in performance.

Findings from the comparison show that advanced safety technologies are available for and can be fitted to light trucks, yet current generation systems are limited in functionality. With new and updated models expected to be introduced by truck manufacturers soon, the opportunity exists for manufacturers to go beyond regulatory basics and provide their customers with the best products possible. Safety improvements are expected in new generations set for late 2025 and beyond.

The findings from this comparison have been used to determine baseline performance benchmarks with performance gradings to be introduced from 2026.

Full details can be found within the *Light Truck ADAS Safety Comparison* report at www.ancap.com.au/light-trucks.

About ANCAP

For the past three decades, ANCAP has been testing and rating the safety performance of passenger cars (MA, MB and MC category) and light commercial (NA category) vehicles. Over this time, the availability of independent, objective information about the relative safety of mainstream vehicle models has led to a dramatic improvement in safety specification, and a significant, measurable improvement in vehicle crash performance and resulting road trauma reduction.

The most recent expansion to ANCAP's safety testing regime came in late 2020 with the release of safety gradings for commercial vans, with two updates to van gradings published since.

The new *Light Truck ADAS Safety Comparison* testing and assessment program - which examines NB category goods vehicles with a GVM of 4,501kg-8,000kg - is a further step in ANCAP's focussed expansion to provide

Light Truck ADAS Safety Comparison

Meet the family.
They're no dummies.

Light Trucks.
How do they compare?

Thinking electric?
Our future can be safe AND green.

Commercial vans.
Are you delivering on safety?

Stay in the know.

Sign-up for the latest ratings and news.

Subscribe

Ask an expert.

Your vehicle safety questions, answered!

Ask an expert

acknowledge their ongoing connection to Country.

ANCAP
SAFETY

Light Truck ADAS Safety Comparison

INAUGURAL INSIGHTS

MAY 2025

ANCAP acknowledges that the light trucks tested in this project were compliant with the minimum regulatory Australian Design Rule (ADR) requirements for safety in Australia. ANCAP also acknowledges that several safety features in addition to the regulatory minimum requirements of the ADRs were available on the trucks tested. These features did not form part of ANCAP testing.

The opportunity: An expanding safety focus

For more than 30 years, ANCAP has been testing and rating the safety performance of passenger cars (MA and MC category) and light commercial (NA category) vehicles - such as utes and vans.

Over this time, the availability of independent, objective information about the relative safety of mainstream vehicle models has led to a dramatic improvement in safety specification among these market segments, and a significant, measurable improvement in vehicle crash performance and resulting road trauma reduction.

However, due to limited regulation among the segment, the presence and performance of safety features within the light truck market segment **significantly lags** that of passenger vehicles and light commercial vehicles.

There is also no consumer advocacy platform to communicate or promote safety among this industry segment or consumer market to encourage voluntary, non-regulatory change.

"Unlike the light vehicle fleet, there are no national consumer safety rating schemes for new heavy vehicles [trucks]. These vehicles are generally configured with an emphasis on productivity, with a lower level of passive and active safety features than is typical of light vehicles." [1]

ANCAP's expansion into the testing and assessment of light trucks provides the industry and community with tangible safety information by:

- **Enabling** businesses, fleets and other light truck buyers to compare the performance of safety-centric technologies across the light truck market through independent, reliable, and consumer-friendly information. Until now, this information has not existed.
- **Improving awareness** of the types of safety features and technologies available across the light truck segment, and relative performance.
- **Identifying what 'good' looks like** for both fitment and performance of active collision avoidance safety features; establishing a benchmark for a formal safety grading assessment program in future years; and providing an incentive for poorer performers to improve.

14,500
LIGHT TRUCKS SOLD EACH YEAR

1 Reducing Heavy Vehicle Lane Departure Crashes: Consultation Regulation Impact Statement (RIS), April 2022 (infrastructure.gov.au)

LIGHT TRUCKS

were involved in crashes that resulted in 65 fatalities and 1,024 serious injuries across SA, VIC, QLD and NSW^ between 2018 and 2022*

^ NSW date range covers period 2019-2023
* State government crash data (SA, VIC & QLD), accessed Sept 2024

Why?
The road safety challenge

Goods vehicles such as commercial vans, light trucks, medium and heavy trucks are **over-represented** in fatal and serious injury crashes in Australia. These vehicles make up less than three per cent of all registered vehicles on Australia's roads, yet they are involved in approximately 15 percent of all fatal crashes[1].

The average age of the Australian truck fleet is 15.7 years*.

Light trucks operate predominantly in urban areas and travel on average almost twice as far as passenger cars per year (21,100kms vs. 11,100kms)[2]. More than 60% of fatal light truck crashes occur on roads in major cities and other urban areas.

While consistent national fatality and serious injury data specific to light trucks is limited, the outcomes of light truck crashes generally follow the trend of heavy trucks where the majority (75%) of those killed are occupants of a light vehicle (passenger car, SUV or light commercial ute or van) or other road user (pedestrian, motorcyclist, or pedal cyclist)[3].

By comparison, national crash data covering all vehicle types indicates that fatal crashes overall are disproportionately single-vehicle crashes (60%) where the vehicle's driver or passengers are impacted[4].

This highlights the difference between light truck crashes – which disproportionately affect *other* road users – and passenger vehicles – which disproportionately affect same-vehicle occupants.

Operating in urban areas means that light trucks have increased interactions with vulnerable road users and other vehicles. The ability of these trucks to avoid collisions with other road users is therefore vital.

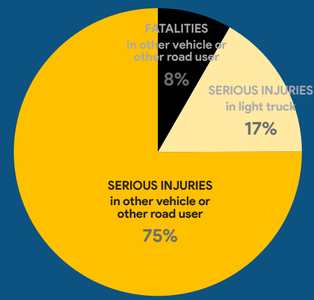
Fatality and serious injury data from NSW between 2019 and 2023 shows there were 374 fatal and serious injury crashes involving light trucks resulting in 34 fatalities and 375 serious injuries. Among those killed, 21 were occupants of other vehicles involved in the crashes, rather than the light truck itself. Additionally, 88 vulnerable road users, including pedestrians, cyclists and motorcyclists, were either killed or seriously injured[5].

In Queensland between 2018 and 2022, light trucks were involved in 358 serious crashes, including 12 fatal crashes (13 fatalities and 476 hospitalised casualties)[6].

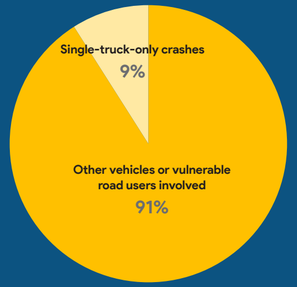
In Victoria in the five year period from 2018 to 2022, there were 230 fatal and serious injury crashes involving light trucks resulting in 12 fatalities and 261 serious injuries. 17% resulted in a serious injury or fatality for a pedestrian, cyclist, or motorcyclist. The statistics are even more stark for all road users - which includes occupants of other motor vehicles - where 75% of all crashes involving light trucks resulted in a serious injury or a fatality for a person who was not an occupant of a light truck[7].

Overall, 91 per cent of all serious crashes involving light trucks in Victoria impacted other vehicles or other road users. Only nine per cent of serious crashes involving light trucks were single-truck-only crashes (impacting the driver of the truck only)[7].

FATALITIES & SERIOUS INJURIES IN CRASHES INVOLVING LIGHT TRUCKS (NSW)
2019-2023



FATAL & SERIOUS INJURY CRASHES INVOLVING LIGHT TRUCKS (VICTORIA)
2018-2022



1 Road Trauma involving Heavy Vehicles - Annual Summary 2021, BITRE
* https://www.nhvr.gov.au/files/media/document/564/202410-1578-nhvr-annual-report-2023-24.pdf
2 ABS Survey of Motor Vehicle Use, June 2020
3 https://www.bitre.gov.au/publications/ongoing/road-trauma-involving-heavy-vehicles
4 Road Trauma Australia – 2022 Statistical Summary, BITRE
5 Transport for New South Wales, 25 November 2024
6 Queensland Transport & Main Roads, 2018-2022
7 Victorian Road Crash Data, Victorian Government, 2018-2022 (accessed September 2024)

Availability and performance of Advanced Driver Assistance Systems (ADAS) in Light Trucks

Establishing an inaugural benchmark for safety in the light truck segment.

Light trucks are an important market segment – frequenting our roads as they undertake their role of transporting goods to consumers and delivering materials to service trades.

The COVID-19 pandemic further amplified their use with a significant increase in the home delivery of groceries and other online purchases.

To assist **business operators** and **private consumers** to make informed purchasing decisions, and to encourage the uptake and improvement of safety features in light trucks, ANCAP is now shining a light on the performance of active safety features on Australia's top-selling light trucks.

The objective of this program was to **identify a baseline** level of light truck safety specification and ADAS performance - **over and above** what is currently required by the regulatory Australian Design Rules (ADRs).*

This **starting point** provides valuable information for truck manufacturers and their customers - to help guide safety upgrades expected to be introduced in model updates from mid-2025 onwards. It also helps establish a benchmark for future testing and formal performance grading assessments.

This specialised assessment differs to ANCAP's traditional star rating approach applied to passenger cars, SUVs and utes.

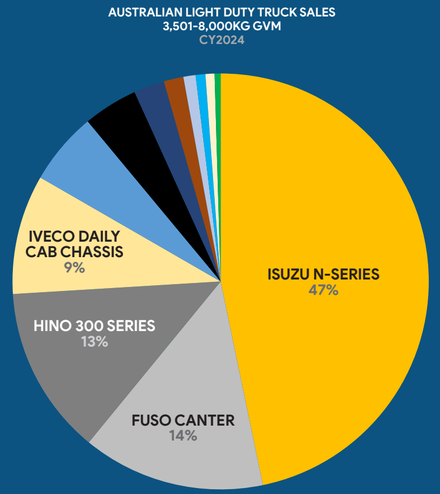
For light trucks, our focus is on Advanced Driver Assistance Systems (ADAS), or **active safety collision avoidance** features. We have examined the **fitment** and **performance** of low and high-speed autonomous emergency braking (AEB), lane support systems (LSS), speed assistance systems (SAS) and occupant detection systems. Physical crash testing does not form part of these assessments.

This inaugural program examines four NB category two-axle, light duty goods vehicles between 4.5 and 7.5 tonne Gross Vehicle Mass (GVM).

This *Light Truck ADAS Safety Comparison* is the first time the safety of this segment has come under independent examination.

* ANCAP acknowledges that the light trucks tested in this project were compliant with the minimum regulatory Australian Design Rule (ADR) requirements for safety in Australia. ANCAP also acknowledges that several safety features in addition to the regulatory minimum requirements of the ADRs were available on the trucks tested. These features did not form part of ANCAP testing.

Vehicle selection



14,500
NEW LIGHT TRUCKS SOLD EACH YEAR

In 2024, 14,558 new light trucks were sold in Australia[1].

Light trucks are growing in popularity among tradespeople and fleets, offering increased payload and goods carrying capacity over dual cab utes, at a relatively affordable price-point.

Since 2012, Australian light truck sales have increased by an average of 6.6% per year[2].

The growing scale of the delivery economy has been a driver in the growth of the light truck market. Major retail customers such as supermarkets have substantially increased their delivery operations since the COVID-19 pandemic, and many of those deliveries are made by vehicles in this market segment.

In 2024, the **Isuzu N-Series**, **Fuso Canter** and **Hino 300 Series** were the top-selling models in this segment comprising **74% of sales** (10,778 vehicles)[1]. The Foton T5 was the highest-selling battery electric (EV) light truck.

The Light Duty truck market segment comprises vehicles within the 3,500-8,000kg GVM range within the ADR category ***NB - Medium Goods Vehicles***.

The models selected for testing are available in the 3,500-4,500kg GVM range (NB1) - able to be driven on a C Class (car) driver licence - as well as the 4,501-8,000kg GVM range (NB2) which requires a LR Light Rigid (truck) driver licence.

The trucks tested were models available with both the lighter and heavier GVM configurations.

Performance of the ADAS functions for each truck model was expected to be similar between the different vehicle categories (NB1 and NB2). For each model, ANCAP selected a variant that was available with either NB1 or NB2 rating. Each test truck was purchased in NB2 specification.

In order to confirm the applicability of test findings to NB1 variants, a number of critical test scenarios were repeated on the trucks with a lighter payload reflective of NB1 configurations. These additional tests provided valuable insight into the effect of mass variation on braking performance, AEB and forward collision warning (FCW) activation.

ANCAP confirmed with the respective truck manufacturers that the crash avoidance systems fitted to tested variants were functionally the same as those fitted to lighter variants (where applicable).

1 T-Mark 12 Month Sales, LD Truck GVM 3,501-8,000kg (TIC) CY2024
2 VFACTS National Sales Reports, 2013, 2015, 2017, 2019 & 2021

What we tested and what we learnt

TESTED VARIANTS

Test vehicles were purchased by ANCAP through an independent broker. All vehicles were dealer-fitted with a tray suitable for carrying general freight, and for the safe loading of ballast used in ANCAP testing.

Each of the tested models offer variants with GVMs equal to or below 4.5 tonne (NB1 category - able to be driven with a car licence) and over 4.5 tonne (NB2 category). It was not possible to select variants with identical specifications between the four models.

Tested models were NB2 specification with a GVM between 6.0 and 7.5 tonne. For each model, ANCAP chose an NB2 variant that was also available derated to NB1 (4.5t GVM or less) - with the same equipment. This allowed testing that was representative of the more common (popular-selling) NB1 configuration as well as for higher NB2 GVMs.

ANCAP acknowledges that there are variations in the braking systems, wheelbase, tyre size and cab height within each model range, and that these factors could have an effect on braking performance within these variants.

The ADAS functionality and components fitted to variants of each model (excluding 4WD variants) are, however, generally similar.

Each of the four light trucks tested meet the regulatory standards required through the Australian Government's Australian Design Rules (ADRs).

The test scenarios and assessment criteria used in ANCAP testing of light trucks sit well above the minimum regulatory performance standards and provide insight on where safety sits in comparison to other vehicle types that share the road with these vehicles.

THE EFFECT OF LOAD

Testing revealed valuable insights in relation to the effect of load on AEB and forward collision warning performance between different truck models and the different ADAS sensor technologies used.

While it is widely understood that the differing mass of a vehicle – fully laden, partially laden, or unladen – can affect braking performance and stopping distance, changes in loading can also change the vehicle's attitude (pitch) and therefore the field of view of camera and/or radar sensors.

The Isuzu N-Series is fitted with a dual camera detection system. The Fuso Canter and Foton T5 have radar based systems. The Hino 300 Series is fitted with a camera and radar fusion system.

Performance tests were conducted with a load representing a 50% payload applicable for each vehicle's gross vehicle mass. Additional tests were conducted in unladen and fully laden conditions to examine the effect of loading changes.

Additional testing was done to consider any difference in performance due to load type (solid vs water ballast) and load position on the trayback.

Minimal changes were observed in the stopping performance of vehicles with the change in load. For some vehicles, a difference in the detection of test targets was observed, which is likely to have resulted from changes in the pitch (angle) of the vehicle changing.

Insights

Of the models tested, the Isuzu N-Series (2WD variants) showed performance in the widest range of test scenarios, with an AEB system that is capable of avoiding or mitigating collisions with cars (truck-to-car rear) as well as pedestrians and cyclists. However, performance in the pedestrian and cyclist test scenarios was mixed – showing a clear opportunity for improvement.

Both the Fuso Canter and Hino 300 have systems that are able to avoid or mitigate collisions with the rear of a car. These models were found to avoid collisions with pedestrians and cyclists – but only when the truck is travelling at 30km/h or more and the vulnerable road user is walking or cycling in the same direction and in the lane the truck is driving in. Neither vehicle was able to detect pedestrians or cyclists that cross in front of the truck.

The Foton T5 is fitted with truck-to-car AEB, but its ADAS system is not able to detect or respond to pedestrians or cyclists.

Each of the four trucks tested are fitted with a Lane Departure Warning (LDW) system. All four trucks met the upcoming ADR requirement for LDW functionality (warning provided before vehicle strays 300mm beyond the lane marking), however only the Hino 300 provided a warning to the driver within ANCAP's more stringent parameters (200mm beyond the lane edge).

None of the trucks tested are able to avoid impact with a pedestrian while reversing, and none had active lane keeping or any form of active speed assistance system.

All four trucks provide frontal airbags and seatbelt reminders for the driver and outboard passenger seating positions. The Fuso, Hino and Isuzu have seatbelt pre-tensioners for the driver and front outboard passenger - the Foton does not. None of the trucks tested provide these features for the centre passenger seating position.

In all four trucks, side head-protecting curtain airbags are not available, and a lap-only seatbelt is provided for the centre passenger.

The level of crash avoidance technologies fitted to this category of vehicle is below that offered in passenger cars, commercial vans and some heavy trucks currently available.

Importantly, however, the safety specification and safety performance of the four light trucks tested is superior to older truck models where features such as autonomous emergency braking are not available.

Light trucks spend a lot of time on the road, and tend to be in service for an extended period. There is a clear opportunity for manufacturers to offer proven collision avoidance technologies which will assist in reducing the number of serious injuries and fatalities on Australian roads.

ANCAP encourages the purchase and use of light truck models with the highest level of safety specification and subsequent safety performance.

VEHICLE QUALITY CONTROL & SET-UP

Other unexpected insights obtained through this inaugural program were the delivery and vehicle set-up conditions. Issues were identified with two of the four of the light trucks tested.

Unlike passenger vehicles (cars, SUVs etc.) that are sold and delivered to the customer in a completed state, most trucks are provided in a cab-chassis configuration.

The truck customer generally outlines the truck's intended use to the dealer at the time of purchase - in particular if the customer is completing the truck build (body and equipment fitment) themselves, or using a third-party (not the selling dealer) - to complete the truck build. This enables the dealer to provide advice on any upgrades, software updates/calibration that should be applied to the completely built truck to ensure the safety systems can perform at their intended and optimal level of performance.

FUTURE MODEL UPDATES

The inaugural comparison program has confirmed that it is possible to fit advanced safety technologies to light trucks. Autonomous emergency braking is fitted to each of the four trucks tested, but current generation systems are limited in their functionality.

These vehicles are commonly used in the urban environment where they mix with a wide range of other vehicles and road users.

ANCAP encourages manufacturers to fit improved autonomous emergency braking systems that can detect and respond to pedestrians, cyclists, and motorcyclists in a variety of scenarios.

A key insight from this inaugural assessment identified the opportunity for truck manufacturers to fit AEB systems that offer a broader field of view. This would allow autonomous braking performance across a far wider range of real-world use scenarios, including for pedestrians in speed zones consistent with high pedestrian activity (40km/h zones), and across a range of load conditions.

Other active collision avoidance systems such as blind spot monitoring, active lane keep assist, speed assist, and driver monitoring systems were not available on the models tested.

We recognise and are encouraged by the advice from truck manufacturers that specification updates and new generation models will soon be offered in the Australian market.

This presents a further opportunity for light truck manufacturers to introduce safety specification and functionality upgrades to models beyond the features required by regulation. Pleasingly, a number of the trucks tested have offered regulatory AEB and LDW performance some years prior to the regulatory requirement taking effect.

There is also the opportunity for vehicle preparation, delivery and service-related improvements to be implemented in line with the functionality and expectation seen in the passenger vehicle market.

"This Light Truck ADAS Safety Comparison is the first time the safety of this segment has come under independent examination."

"While ANCAP has had a close eye on passenger cars, SUVs and utes for many years, the presence and performance of safety features on light trucks has gone without scrutiny."

"This leaves a critical gap in consumer information available for this segment of the truck market, and importantly, a gap in potential safety benefits."

"What we have seen through this inaugural testing is that due to the lack of breadth in regulatory safety requirements applied to this segment, the safety of Australia's top-selling light trucks has not kept pace with the performance of safety advancements available in other vehicle segments."

"The aim of this work is to start a conversation among the light truck industry, fleet operators, and small business owners to encourage them to think about the level of safety these trucks are, or aren't yet, providing."

"We're laying a foundation. Establishing a safety baseline. And from that, we expect to see relatively quick voluntary improvements to the safety offering across this segment."

ANCAP Chief Executive Officer, Carla Hoorweg

Where to from here?

FUTURE FOCUS

The findings from this inaugural ***Light Truck ADAS Safety Comparison*** set a 'State of the Market' benchmark for truck manufacturers and future ANCAP light truck testing.

A number of specification upgrades and new models are expected to be introduced by manufacturers from mid-2025. Regulatory requirements - including Lane Departure Warning (LDW) systems - will be introduced via ADR (ADR 99/00 and ADR 99/01) for NB Light Duty trucks from September 2026.

The performance findings obtained from this inaugural program will be used to inform the establishment of a formal safety grading assessment system for light trucks from 2026 onwards.

As is in place for similar ADAS-focused programs, a PLATINUM, GOLD, SILVER, BRONZE grading system will be adopted for future programs.

This will allow business operators and light truck buyers to identify comparable safety performance between light truck models and help make informed purchasing decisions.

LIGHT TRUCK ROADMAP

These current Light Truck protocols will remain in effect until December 2027.

ANCAP will consider industry progress and Euro NCAP's *Truck Safety* program developments in future protocol changes relating to light trucks. This will be done in consultation with industry.

ANCAP will also consider whether to include direct and indirect vision as part of future light truck assessments.

Light Truck ADAS Safety Comparison

TEST PERFORMANCE OBSERVATIONS

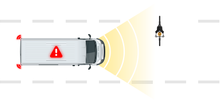
ADAS systems tested

To further assist buyers, ANCAP has indicated the fitment of airbags in this document. However, the crash performance of these vehicles has not been assessed.

All testing was conducted at the Future Mobility Test & Research Centre in Central West NSW, with funding for this inaugural program provided by ANCAP members and the Heavy Vehicle Safety Initiative, supported by the Australian Government.

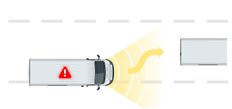
AUTONOMOUS EMERGENCY BRAKING (Truck-to-Car)

A driver assistance system that can detect stationary or slowing vehicles in front of the test truck, and autonomously apply braking to avoid a collision, or reduce the speed of impact (mitigation).



AUTONOMOUS EMERGENCY BRAKING (Pedestrian & Cyclist)

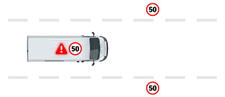
A driver assistance system that can detect pedestrians and cyclists that are in the path of the test truck, and autonomously apply braking to avoid a collision, or reduce the speed of impact. This report makes specific reference to the presence and effectiveness of pedestrian and cyclist-detecting systems in forward scenarios, and pedestrian-detecting systems in turning scenarios.



LANE SUPPORT SYSTEMS (LSS)

Lane Departure Warning (LDW)
A driver assistance system that can detect lane markings on the road and warn the driver if they are drifting out of the lane. Warnings may be audible and/or visual.

Lane Keep Assist (LKA)
A driver assistance system that can detect lane markings on the road and provide active steering or braking input to avoid the test truck unintentionally leaving its lane.

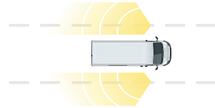


SPEED ASSISTANCE SYSTEMS (SAS)

A system that assists the driver to avoid excessive speed. This may be through a manual speed limiter set by the driver, or a Speed Limit Information Function (SLIF) which uses GPS map and/or camera information to determine the applicable speed limit, inform the driver and alert them if the speed is exceeded.

DRIVER MONITORING SYSTEMS (DMS)

A system that informs the driver of driver fatigue or loss of attention. These systems can detect driver performance by measuring steering and other driver inputs, lane position and other driving events. More sophisticated systems monitor driver attention directly, using cameras to follow eye movements and signs of inattention or fatigue.



BLIND SPOT MONITORING (BSM)

A warning system which continuously monitors blind spots on both sides of the truck and displays a visual and/or audible warning if an adjacent vehicle is present.

INTELLIGENT SEATBELT REMINDERS

A warning device that informs and reminds the driver - through visual and audible warnings - if they, or a passenger, are not wearing a seatbelt.

Models tested

LIGHT DUTY (4.5T-8.0T GVM) NB

FOTON

FOTON T5
ELECTRIC LD 81kW

6,000kg GVM
2,670kg UNLADEN MASS
1,770kg TEST PAYLOAD

AEB SENSOR
Radar

FUSO

FUSO CANTER
815 WIDE CAB

7,500kg GVM
2,790kg UNLADEN MASS
2,455kg TEST PAYLOAD

AEB SENSOR
Radar

HINO

HINO 300 SERIES^
721 WIDE

6,500kg GVM
3,150kg UNLADEN MASS
1,770kg TEST PAYLOAD

AEB SENSOR
Radar + camera fusion

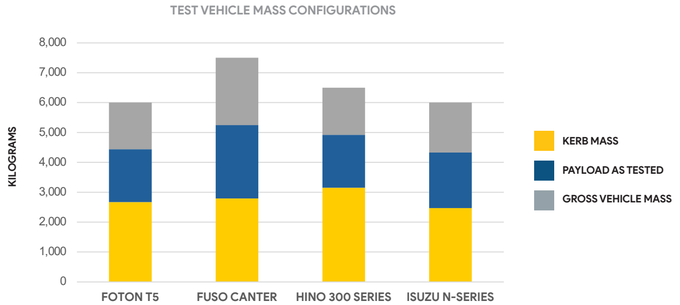
ISUZU TRUCKS

ISUZU N-SERIES
NMR 60/45-150 AMT

6,000kg GVM
2,470kg UNLADEN MASS
1,865kg TEST PAYLOAD

AEB SENSOR
Dual camera

^. Hino advised that the truck purchased by ANCAP had not received a final calibration of the ADAS systems prior to dealer delivery and, as a result, performance variability could be expected.



All trucks tested were purchased from a dealer fitted with the dealer-supplied aluminum worktray.

LOAD

Each truck was **loaded to 50%** of its goods carrying capacity (payload) using concrete or water-filled ballast tanks.

Loads were positioned in the centre of the load area (tray) and load-blocked between the load and the headboard to provide a standardised and repeatable test scenario for all trucks. This criteria is the same as is applied to heavier goods vehicles (large trucks) by ANCAP's European counterpart, Euro NCAP.

Additional testing was conducted with loads positioned at the front of the tray (against the headboard) to examine whether load positioning had any effect on the performance of the ADAS systems fitted.

In tests where water ballast was used, the water tanks were either fully filled, or filled to at least 80% capacity with space fillers, to minimise potential 'load slosh' in testing.

The load type, load position, and the volume of water carried did not have any material effect on vehicle performance in testing given the position selected for placement of the ballast load and the direction of travel used in testing (i.e. straight, longitudinal).

VARIANT APPLICABILITY

Each model of light truck tested is available in a range of variants and mass ratings. The variants used in ANCAP testing were selected based on availability of the variant in both 3.5-4.5 tonne GVM range and in the 4.5-7.5 tonne GVM range, 2WD, single-cab with all available safety features fitted.

ANCAP confirmed with each truck manufacturer that the safety systems fitted to the tested variant are the same as fitted across the model range listed in this report.

Test performance however may differ between variants within a model range, and these findings should be taken as indicative of general capability only.

Vehicle specifications

FEATURES

AEB (T2C)	Autonomous Emergency Braking (Truck-to-Car)
AEB (PED)	Autonomous Emergency Braking (Pedestrian-detecting)
AEB (CYC)	Autonomous Emergency Braking (Cyclist-detecting)
AEB (BACKOVER)	Reverse Autonomous Emergency Braking
FCW	Forward Collision Warning
LDW	Lane Departure Warning
ELK / LKA	Emergency Lane Keeping / Lane Keep Assist
BSM	Blind Spot Monitoring
DMS	Driver Monitoring System
SBR	Seat Belt Reminder (driver & passenger)
SPEED CONTROL	Speed Control Function
SLIF	Speed Limit Information Function
SAS	Speed Assistance System
AIRBAGS	Driver, passenger, curtain airbags
PRE-TENSIONERS	Seatbelt pre-tensioners
OSM	Occupant Status Monitoring

Performance

On-track collision avoidance testing was conducted on each available ADAS safety feature. Performance criteria was then applied to determine an assessment classification of GOOD, ACCEPTABLE, MARGINAL, WEAK or POOR for each safety feature. These standard performance categories are used across each of ANCAP's safety programs.

The performance of ADAS systems were tested regardless of whether the system is available as Standard or Optional. Where a safety feature was not available or not fitted, performance testing was not conducted, and a nil score applied.

Performance in each assessment area was used to calculate a total score.

The test scenarios used in ANCAP assessments are different to and extend beyond the minimum criteria required by the regulatory Australian Design Rules (ADRs).

FITMENT

- **STANDARD**
- **AVAILABLE ON SOME VARIANTS**
- **OPTIONAL**
- **NOT AVAILABLE**

- **GOOD**
- **ACCEPTABLE**
- **MARGINAL**
- **WEAK**
- **POOR**
- **NOT AVAILABLE / NOT TESTED (NO FUNCTIONALITY)**
- **SOME PERFORMANCE OBSERVED YET PRE-REQUISITE NOT MET**

Light Truck ADAS Safety Comparison

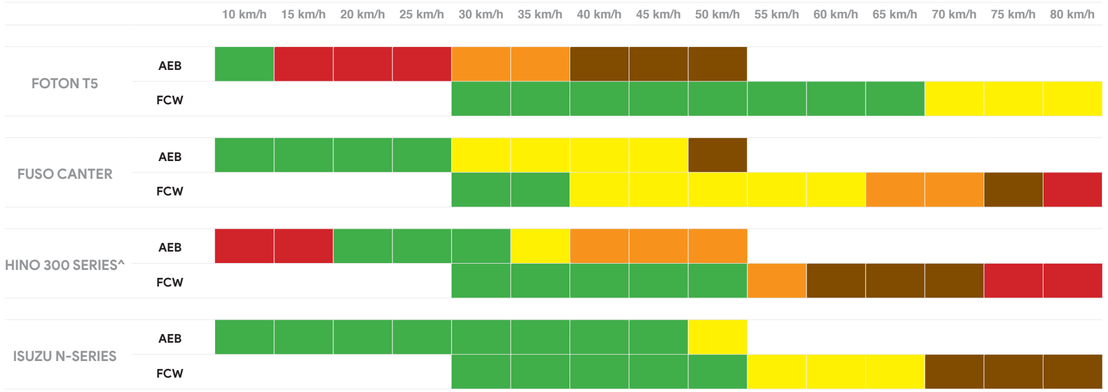
SPECIFICATION SUMMARY

	ADR requirement	FOTON T5 *Built from Jun 2022*	FUSO CANTER *Built from Feb 2019*	HINO 300 SERIES *From MY20*	ISUZU N-SERIES *Built from Sept 2021*
AUTONOMOUS EMERGENCY BRAKING (Truck-to-Car)	New models NOV 2023 All models FEB 2025	●	●	●	●
AUTONOMOUS EMERGENCY BRAKING (Truck-to-Pedestrian)	No ADR requirement	▬	●	●	●
AUTONOMOUS EMERGENCY BRAKING (Truck-to-Cyclist)	No ADR requirement	▬	●	●	●
AUTONOMOUS EMERGENCY BRAKING (Backover)	No ADR requirement	▬	▬	▬	▬
LANE DEPARTURE WARNING	New models SEPT 2026 All models SEPT 2027	●	●	●	●
EMERGENCY LANE KEEPING / LANE KEEP ASSIST	No ADR requirement	▬	▬	▬	▬
BLIND SPOT MONITORING	No ADR requirement	▬	▬	▬	▬
DRIVER MONITORING SYSTEM	No ADR requirement	▬	▬	▬	▬
SEAT BELT REMINDER (Driver)	No ADR requirement	●	●	●	●
SEAT BELT REMINDER (Passenger)	No ADR requirement	▬	●	●	●
SPEED CONTROL FUNCTION	No ADR requirement	▬	▬	▬	▬
SPEED LIMIT INFORMATION FUNCTION	No ADR requirement	▬	▬	▬	▬
AIRBAG (Driver)	No ADR requirement	●	●	●	●
AIRBAG (Passenger)	No ADR requirement	●	●	●	●
CURTAIN AIRBAGS	No ADR requirement	▬	▬	▬	▬
SEAT BELT PRE-TENSIONERS	No ADR requirement	▬	●	●	●

Performance observed

AUTONOMOUS EMERGENCY BRAKING

TRUCK-TO-CAR TEST SCENARIO (TCRs)
Truck approaching stationary target vehicle



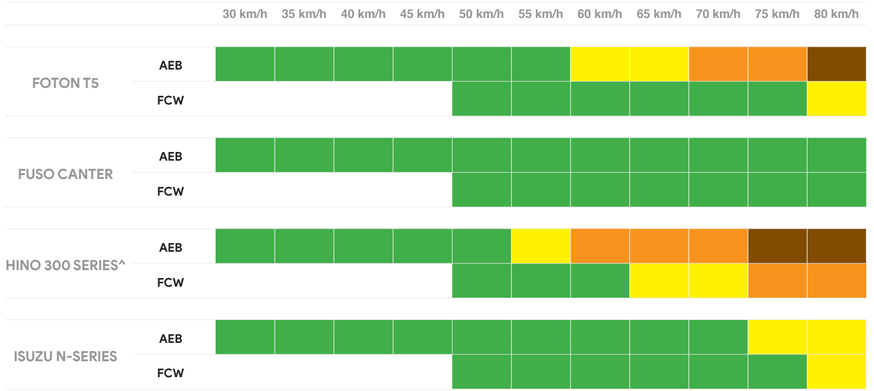
AEB truck-to-car tests were first conducted with the trucks in the 6.5-7.0 tonne GVM configuration. Testing began at the 50% overlap, increasing in speed in 10km/h increments until non-performance was observed. Test scenarios then proceeded at the 75% overlap on the opposite side of the truck, followed by 100% overlap scenarios.

TCRs AEB test scenarios are conducted at 5km/h speed intervals between 10-50km/h.
TCRs FCW test scenarios are conducted at 5km/h speed intervals between 30-80km/h.

^ Hino advised that the truck purchased by ANCAP had not received a final calibration of the ADAS systems prior to dealer delivery and, as a result, performance variability could be expected.

AUTONOMOUS EMERGENCY BRAKING

TRUCK-TO-CAR TEST SCENARIO (TCRm)
Truck approaching moving target vehicle

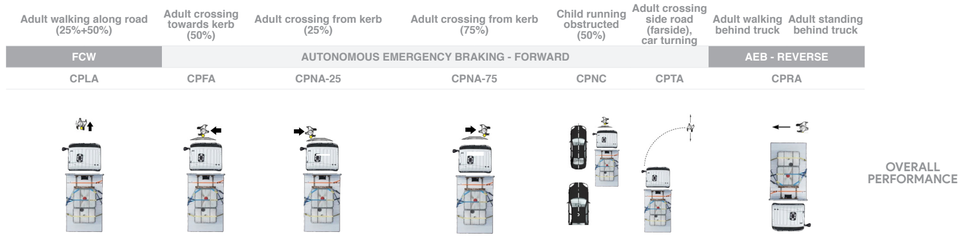


TCRm AEB test scenarios are conducted at 5km/h speed intervals between 30-80km/h.
TCRm FCW test scenarios are conducted at 5km/h speed intervals between 50-80km/h.

^ Hino advised that the truck purchased by ANCAP had not received a final calibration of the ADAS systems prior to dealer delivery and, as a result, performance variability could be expected.

AUTONOMOUS EMERGENCY BRAKING

TRUCK-TO-PEDESTRIAN TEST SCENARIO
Truck approaching walking pedestrian

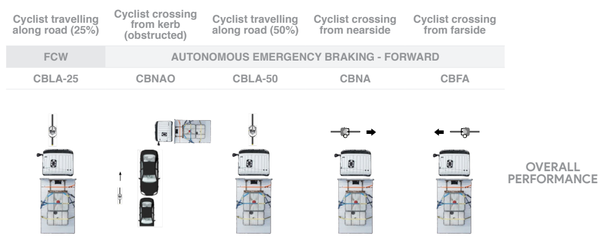


FOTON T5												NOT AVAILABLE
FUSO CANTER	*											*
HINO 300 SERIES^	*											*
ISUZU N-SERIES												MARGINAL

The Fuso Canter and Hino 300 Series are equipped with an AEB system capable of detecting a pedestrian. However, in testing of their respective AEB systems, these trucks did not meet ANCAP's prerequisite level of performance. The prerequisite requires the truck - travelling at 10km/h - to detect a slow-moving pedestrian crossing laterally in front of the truck. Scoring is not awarded where prerequisite test performance is not met.

* Test performance prerequisite not met. No score awarded.
^ Hino advised that the truck purchased by ANCAP had not received a final calibration of the ADAS systems prior to dealer delivery and, as a result, performance variability could be expected.

TRUCK-TO-CYCLIST TEST SCENARIO
Truck approaching moving cyclist



FOTON T5						NOT AVAILABLE
FUSO CANTER	*		*			*
HINO 300 SERIES^	*		*			*
ISUZU N-SERIES						MARGINAL

The Fuso Canter is equipped with an AEB system capable of detecting a cyclist. However, testing of the Fuso's AEB system did not meet ANCAP's prerequisite level of performance.

The prerequisite requires the truck - travelling at 20km/h - to detect a slow-moving cyclist crossing laterally in front of the truck. Scoring is not awarded where prerequisite test performance is not met.

Testing of the Fuso Canter at higher vehicle speeds confirmed performance in the longitudinal test scenario - where the cyclist is travelling in front of and in the same direction as the truck.

Hino advised that the AEB system fitted to the 300 Series is capable of detecting and reacting to cyclists. The Hino detected the cyclist target in some test scenarios at higher vehicle speeds, although neither the FCW or AEB intervention was early enough to reduce the impact speed significantly.

* Test performance prerequisite not met. No score awarded.
^ Hino advised that the truck purchased by ANCAP had not received a final calibration of the ADAS systems prior to dealer delivery and, as a result, performance variability could be expected.

FOTON T5 ELECTRIC

Market Segment

Light Duty (3,500-8,000kg GVM) NB

Built From

June 2022

Applicable to

Foton T5 Electric LD 81 kW

Sales

68*

On Sale From

September 2022

The Foton T5 is a battery-electric truck which is equipped as standard with a radar-based autonomous emergency braking (AEB) system. The Foton T5's AEB system is capable of detecting other vehicles however it does not detect pedestrians or cyclists, nor function in reverse.

The Foton T5 offers a driver and front outboard passenger airbag. Head-protecting side curtain airbags are not available, neither is an airbag for the front centre seating position. A lap-only seatbelt is provided for the centre seating position. A seatbelt reminder is provided for the driver seating position however a seatbelt reminder is not available for the centre or front outboard passenger seating positions. Seatbelt pre-tensioners and occupant detection are not available.

Performance testing of the Foton T5 showed its autonomous emergency braking system is capable of detecting and autonomously applying the brakes when approaching another vehicle from behind, however its performance was the most variable with impacts recorded in almost all truck-to-car rear stationary approach scenarios.

At most test speeds, forward collision warnings (FCW) were given with sufficient time for a driver to react, apply the brakes and avoid a collision. However, the AEB activation for collisions with stationary vehicles, or higher approach speeds against slower moving vehicles, was ineffective at significantly mitigating or avoiding impacts. The AEB truck-to-car system fitted to the Foton T5 was assessed as *Marginal*.

A lane departure warning (LDW) system is standard. The LDW system fitted to the Foton T5 did not perform well - exceeding the ANCAP criteria of 200mm movement out of the lane markings before issuing a warning to the driver. The Foton T5 does not have an active lane keep assist (LKA) system and therefore cannot prevent the vehicle leaving its intended lane.

A Speed Limit Information Function (SLIF) is not available. Speed limiting or intelligent adaptive cruise control are also not available. A driver monitoring system (DMS) to detect drowsiness or distraction is not available.

Specifications

AEB (T2C)	AEB (PED)	AEB (CYC)	AEB (BACKOVER)
●	▬	▬	▬
LDW	**ELK / LKA**	**BSM**	**DMS**
●	▬	▬	▬
SBR (DRIVER)	**SBR (PASSENGER)**	**SPEED CONTROL**	**SLIF**
●	▬	▬	▬
AIRBAG (DRIVER)	**AIRBAG (PASSENGER)**	**CURTAIN AIRBAGS**	**BELT PRE-TENSIONERS**
●	●	▬	▬

Performance

AEB (T2C)	AEB (PED)	AEB (CYC)
13.2 out of 30	0.0 out of 10	0.0 out of 10
LANE SUPPORT	**OSM**	**SAS**
0.0 out of 20	0.0 out of 15	0.0 out of 15

TOTAL POINTS

13.2

* T-Mark 12 Month Sales, LD Truck GVM 3,501-8,000kg (TIC) CY2024

FUSO CANTER

Market Segment

Light Duty (3,500-8,000kg GVM) NB

Built From

February 2019

Sales

2,064*

On Sale From

May 2019

The Fuso Canter has a radar-based autonomous emergency braking (AEB) system that is designed to detect other vehicles and pedestrians; a lane departure warning (LDW) system; and frontal airbags and seatbelt pre-tensioners for the driver and front outboard passenger. Seatbelt reminders are provided for the driver and outboard passenger, however they do not meet ANCAP's functional requirements. A centre seating position is provided in the Fuso Canter, however there is no airbag coverage for this seating position and it is fitted with a lap-only seatbelt (with no pre-tensioner).

Performance testing of the Fuso Canter 815's AEB system showed full avoidance with another vehicle was possible at most test speeds however forward collision warnings (FCW) were not issued with enough time for a driver to effectively brake when approaching a stationary vehicle at some of the higher test speeds (50-80km/h).

Overall, the truck-to-car AEB system fitted to the Canter achieved the highest performance result in this aspect of assessment across all four trucks tested, assisted by the fact it was the only truck tested to completely avoid an impact in all truck-to-car moving AEB and FCW test scenarios.

At a travel speed of 20km/h, the Fuso Canter 815 was unable to avoid a collision with a pedestrian walking laterally across the path of the truck. Performance in this test scenario is a prerequisite for ANCAP scoring. Fuso advised the Canter has pedestrian-detection and cyclist-detection capability at higher travel speeds. The Fuso Canter was able to detect and respond to a pedestrian in forward-travel test scenarios at speeds above 30km/h where the pedestrian was walking in front of and in the same direction as the truck. This higher-speed performance was confirmed in testing, however no score was awarded as performance in the prerequisite test scenario was not seen. Similarly, performance of the Fuso's cyclist-detecting capability was confirmed in the longitudinal test scenario at higher test speeds (from 30km/h) - where the cyclist is travelling in front of and in the same direction as the truck - however a score was not awarded as performance in the prerequisite test scenarios was not met.

The Fuso Canter 815 does not have any function to autonomously avoid collisions with pedestrians, cyclists or other obstacles when reversing.

A lane departure warning system is fitted to the Fuso Canter with audible and visual alerts, however the system exceeded the ANCAP criteria of 200mm out of the lane before issuing the lane departure warning to the driver. The Fuso Canter does not have active lane keep assist functionality so is unable to prevent the vehicle leaving its lane or steer the vehicle back into its current lane of travel.

A Speed Limit Information Function (SLIF) is not available. Speed limiting or intelligent adaptive cruise control are also not available. A driver monitoring system (DMS) to detect drowsiness or distraction is not available.

Tested variant

Fuso Canter 815 Wide Cab

Other variants for which similar performance is expected

Fuso Canter 515
Fuso Canter 615
Fuso Canter 815
Fuso Canter 918

Specifications

AEB (T2C)	AEB (PED)	AEB (CYC)	AEB (BACKOVER)
●	●	●	▬
LDW	**ELK / LKA**	**BSM**	**DMS**
●	▬	▬	▬
SBR (DRIVER)	**SBR (PASSENGER)**	**SPEED CONTROL**	**SLIF**
●	●	▬	▬
AIRBAG (DRIVER)	**AIRBAG (PASSENGER)**	**CURTAIN AIRBAGS**	**BELT PRE-TENSIONERS**
●	●	▬	●

Performance

AEB (T2C)	AEB (PED)	AEB (CYC)	
15.2 out of 30	0.0 out of 10	0.0 out of 10	
LANE SUPPORT	**OSM**	**SAS**	**TOTAL POINTS**
0.0 out of 20	0.0 out of 15	0.0 out of 15	**15.2**

* T-Mark 12 Month Sales, LD Truck GVM 3,501-8,000kg (TIC) CY2024

HINO 300 SERIES^

Market Segment

Light Duty (3,500-8,000kg GVM) NB

Built From

MY2020

Sales

1,909*

On Sale From

MY2020

The Hino has a camera/radar fusion autonomous emergency braking (AEB) system that can detect vehicles, pedestrians and cyclists. A lane departure warning (LDW) system is fitted as standard. Lane keep assist (LKA), a blind spot monitoring (BSM) system, and a driver monitoring system (DMS) are not available. Speed control (speed limiter or intelligent adaptive cruise control) and speed limit information function (SLIF) systems are not available.

The driver and front outboard passenger seating positions are fitted with frontal airbags and seatbelt pre-tensioners. Seatbelt reminders are fitted to these two seating positions however they do not meet ANCAP's functional requirements. The passenger seat lacks occupant detection. A centre seating position is provided in the Hino, however there is no airbag coverage for this seating position and it is fitted with a lap-only seatbelt (with no pre-tensioner). Side head-protecting curtain airbags are not offered.

Performance testing of the Hino 300 Series showed its autonomous emergency braking system is capable of detecting and applying the brakes when approaching another vehicle (truck-to-car scenarios). Full avoidance was possible in the truck-to-car scenarios at full overlap at urban test speeds (10-50km/h). At reduced overlaps or speeds above 50km/h, the Hino's ability to avoid (full avoidance) or mitigate collisions (impact at a reduced speed) was significantly reduced. Overall, performance of the Hino 300's AEB truck-to-car capability was assessed as *Marginal*.

At a travel speed of 20km/h, the Hino 300 Series 721 was unable to avoid a collision with a pedestrian walking laterally in front of the path of the truck. Performance in this test scenario is a prerequisite for ANCAP scoring. Hino advised the 300 Series has pedestrian-detection and cyclist-detection capability, however performance was only seen at test speeds above 30km/h in the test scenario where the pedestrian was travelling in front of and in the same direction as the truck. As performance in the prerequisite test was not achieved, scoring was not awarded.

In performance tests of cyclist-detecting capability, the Hino was able to detect the cyclist in longitudinal scenarios - where the cyclist is travelling in front of and in the same direction as the truck - although FCW and AEB intervention was not sufficiently early to reduce impact speed. The Hino 300 Series does not have any function to autonomously avoid collisions with pedestrians, cyclists or other obstacles when reversing.

The LDW system fitted to the Hino 300 provides audible and visual alerts. The Hino was the only truck able to issue an audible lane departure warning consistently before the truck exited 200mm out of its lane. The Hino 300 Series does not have an active lane keep assist (LKA) system so cannot prevent the vehicle leaving its lane or steer the vehicle back into its lane if deviating from its intended lane.

Tested variant

Hino 300 Series 721 Wide^

Other variants for which similar performance is expected

Hino 300 Series 616
Hino 300 Series 617
Hino 300 Series 716
Hino 300 Series 717
Hino 300 Series 721

Specifications

AEB (T2C)	AEB (PED)	AEB (CYC)	AEB (BACKOVER)
●	●	●	▬
LDW	**ELK / LKA**	**BSM**	**DMS**
●	▬	▬	▬
SBR (DRIVER)	**SBR (PASSENGER)**	**SPEED CONTROL**	**SLIF**
●	●	▬	▬
AIRBAG (DRIVER)	**AIRBAG (PASSENGER)**	**CURTAIN AIRBAGS**	**BELT PRE-TENSIONERS**
●	●	▬	●

Performance

AEB (T2C)	AEB (PED)	AEB (CYC)	
13.4 out of 30	0.0 out of 10	0.0 out of 10	
LANE SUPPORT	**OSM**	**SAS**	**TOTAL POINTS^**
2.5 out of 20	0.0 out of 15	0.0 out of 15	**15.9**

^ Hino advised that the truck purchased by ANCAP had not received a final calibration of the ADAS systems prior to dealer delivery and, as a result, performance variability could be expected.
* T-Mark 12 Month Sales, LD Truck GVM 3,501-8,000kg (TIC) CY2024

ISUZU N-SERIES

Market Segment
Light Duty (3,500-8,000kg GVM) NB

Built From
September 2021

Sales
6,805*

On Sale From
October 2021

The Isuzu N-Series is equipped as standard with a camera-based autonomous emergency braking (AEB) system that can detect vehicles, pedestrians and cyclists. It is also fitted as standard with a lane departure warning (LDW) system. Lane keep assist (LKA), reverse AEB, and blind spot monitoring (BSM) systems are not available.

The driver and front outboard passenger seating positions have frontal airbags and seatbelt pre-tensioners. Seatbelt reminders are fitted to these two seating positions however they do not meet ANCAP's functional requirements. The passenger seat lacks occupant detection. The centre (bench) seating position has a lap-only belt and is not protected by an airbag. Side head-protecting curtain airbags are not offered.

Performance testing of the Isuzu N-Series showed its AEB system is capable of detecting and autonomously applying the brakes when approaching another vehicle in truck-to-car scenarios. In AEB test scenarios where the N-Series was approaching a stationary or slow-moving vehicle from behind, its AEB system was able to avoid most collisions. Crash mitigation (impact at a reduced speed) was recorded for higher-speed approaches toward the stationary target vehicle. Overall, performance of the AEB truck-to-car system was *Marginal*.

The presence and functionality of an audible forward collision warning (FCW) is assessed as part of ANCAP testing. The FCW system fitted to the N-Series alerted the driver in sufficient time to enable driver-initiated braking so that most collisions could be avoided when approaching the slower-moving vehicle target as well as in lower-speed approaches to the stationary target vehicle.

The AEB system fitted to the Isuzu N-Series is able to detect and respond to pedestrians and cyclists, however its performance in these test scenarios was mixed and overall it achieved *Marginal* performance. The system does not detect pedestrians in turning scenarios or in reverse.

The LDW system fitted to the N-Series offers audible and visual alerts. When tested, the LDW system exceeded the ANCAP criteria of 200mm movement out of the lane before a warning was issued. The N-Series does not have an active lane keep assist (LKA) system so cannot prevent the vehicle leaving its lane or steer the vehicle back into its lane if deviating from its intended lane. LKA testing was therefore not conducted.

A Speed Limit Information Function is not available. There is also no Speed Control Function (speed limiter or intelligent adaptive cruise control). A driver monitoring system (DMS) to detect drowsiness or distraction is not available.

Tested variant
Isuzu N-Series NMR 60/45-150 AMT

Other variants for which similar performance is expected
Isuzu N-Series NLR
Isuzu N-Series NNR
Isuzu N-Series NPR

Specifications

AEB (T2C)	AEB (PED)	AEB (CYC)	AEB (BACKOVER)
●	●	●	▬
LDW	**ELK / LKA**	**BSM**	**DMS**
●	▬	▬	▬
SBR (DRIVER)	**SBR (PASSENGER)**	**SPEED CONTROL**	**SLIF**
●	●	▬	▬
AIRBAG (DRIVER)	**AIRBAG (PASSENGER)**	**CURTAIN AIRBAGS**	**BELT PRE-TENSIONERS**
●	●	▬	●

Performance

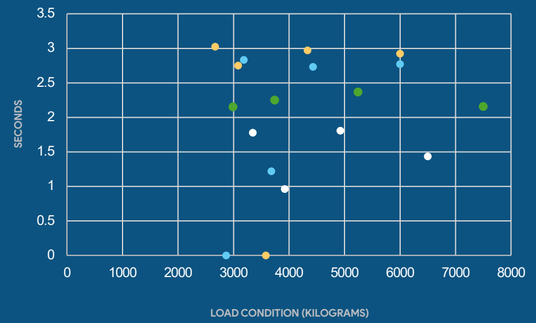
AEB (T2C)	AEB (PED)	AEB (CYC)	
14.7 out of 30	3.2 out of 10	2.8 out of 10	
LANE SUPPORT	**OSM**	**SAS**	**TOTAL POINTS**
0.0 out of 20	0.0 out of 15	0.0 out of 15	**20.7**

* T-Mark 12 Month Sales, LD Truck GVM 3,501-8,000kg (TIC) CY2024

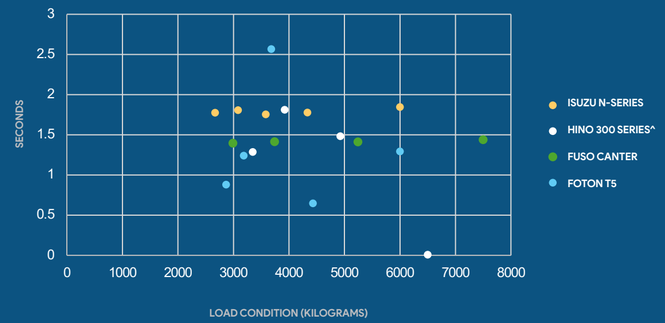
Load condition testing

MASS & VEHICLE PERFORMANCE

FCW TIMING



AEB INTERVENTION TIMING



Commercial vehicles will typically operate with a range of payloads, from unladen up to their full capacity (Gross Vehicle Mass or GVM). The mass of the vehicle can affect braking performance and stopping distance, and changes in loading can also change the vehicle's attitude and therefore the field of view of camera and/or radar sensors.

Each of the light trucks tested by ANCAP have been tested with 50% payload.

ANCAP conducted additional tests with variation to the loading in order to examine the effect of loading on AEB and FCW performance.

^ Hino advised that the truck purchased by ANCAP had not received a final calibration of the ADAS systems prior to dealer delivery and, as a result, performance variability could be expected.

FOTON T5

When unladen, the T5 did not issue a forward collision warning (FCW). Activation of autonomous emergency braking (AEB) occurred when unladen but braking was too late to avoid a collision with the target. With a heavier load, the FCW and AEB systems activated at a similar time to the standard test load, but the T5 was unable to prevent a relatively high impact speed. This test at 50km/h was at the upper end of the T5's AEB performance range, though the FCW is effective at higher speeds.

TRUCK-TO-CAR FCW & AEB APPROACH
100% offset, 50 km/h test speed
(TCRs)

LOAD STATE	TRUCK MASS (kg)	IMPACT	FCW TTC (sec)	AEB TTC (sec)
Unladen	2,870		0.00	0.878
50% payload (4.495T GVM)	3,683		1.220	2.565
50% payload (6.0T GVM)	4,500		2.733	0.645
GVM	6,000		2.774	1.292

FUSO CANTER

Varied loading conditions appeared to have minimal effect on the Canter's detection capability, with consistent timing for forward collision warning and autonomous emergency braking application. The Canter either avoided impact or provided significant mitigation in all loading conditions.

LOAD STATE	TRUCK MASS (kg)	IMPACT	FCW TTC (sec)	AEB TTC (sec)
Unladen	2,990		2.154	1.394
50% payload (4.495T GVM)	3,743		2.252	1.412
50% payload (7.5T GVM)	5,245		2.368	1.410
GVM	7,500		2.159	1.437

HINO 300 SERIES^

Performance of the 300 Series varied when tested with different loading. With higher loading, a forward collision warning was issued, however the vehicle did not apply braking, resulting in impact with the target. This suggests that the loading may affect the vehicle's detection capability.

LOAD STATE	TRUCK MASS (kg)	IMPACT	FCW TTC (sec)	AEB TTC (sec)
Unladen	3,350		1.779	1.286
50% payload (4.495T GVM)	3,923		0.964	1.809
50% payload (6.5T GVM)	4,925		1.809	1.482
GVM	6,500		1.437	0.006

ISUZU N-SERIES

Varied loading conditions appeared to have minimal effect on the N-Series' detection capability, with consistent timing for autonomous emergency braking application. The vehicle issued an early forward collision warning, avoiding a collision in each of the different load tests.

LOAD STATE	TRUCK MASS (kg)	IMPACT	FCW TTC (sec)	AEB TTC (sec)
Unladen	2,470		3.025	1.773
50% payload (4.5T GVM)	3,585		0.000	1.754
50% payload (6.0T GVM)	4,335		2.973	1.776
GVM	6,000		2.925	1.845

^ Hino advised that the truck purchased by ANCAP had not received a final calibration of the ADAS systems prior to dealer delivery and, as a result, performance variability could be expected.

Test & assessment protocols

ANCAP has been successful in its **non-regulatory** encouragement of safety improvements across the passenger car, SUV and utility segments for more than 30 years. As a result, the maturity level of safety systems fitted to these passenger vehicles is high.

As ANCAP's traditional safety rating scope has until now not spanned to capture vehicles beyond 3.5 tonne GVM, these larger commercial vehicles - in particular light and medium duty trucks - generally do not yet offer the same safety features or expected level of safety performance or maturity.

In acknowledgment of this, the *Light Truck ADAS Safety Comparison* is based on slightly modified versions of the following ANCAP test and assessment protocols applied to the similar commercial vehicle segment, NB category commercial vans.

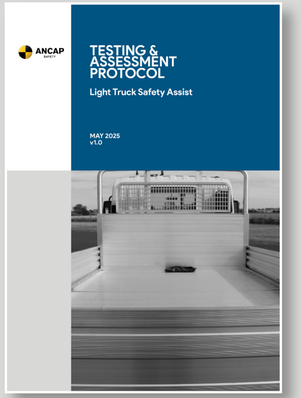
These protocols are also intentionally one stanza (3 years) behind the protocols applied to passenger cars, SUVs and utes in recognition of the maturity stage of safety features available across the light truck market.

The **Testing & Assessment Protocol: Light Truck Safety Assist (v1.0)** comprises:

- **TESTING PROTOCOL - AEB CAR-TO-CAR V3.0.2**
- **TESTING PROTOCOL - AEB VULNERABLE ROAD USER SYSTEMS V3.0.3**
- **TESTING PROTOCOL - LANE SUPPORT SYSTEMS V3.0.2**
- **TESTING PROTOCOL - SPEED ASSIST SYSTEMS V2.0**
- **ASSESSMENT PROTOCOL - VULNERABLE ROAD USER PROTECTION V10.0.4**
- **ASSESSMENT PROTOCOL - SAFETY ASSIST V9.1**
- **ASSESSMENT PROTOCOL - SAFE DRIVING V10.1.2**

Each of the trucks tested through this program meet the **regulatory** vehicle safety standards set by the Australian Government's Australian Design Rules (ADRs). The ADRs establish the base level safety requirements each new vehicle sold in Australia must comply with.

As a leader in the non-regulatory encouragement of safety improvements, the test scenarios used in ANCAP testing for light trucks are above and beyond the minimum regulatory performance standards required by the ADRs. This approach rewards manufacturers that demonstrate a level of safety performance above that required by regulation.



REGULATION AND ANCAP

It is important to recognise that all four trucks tested by ANCAP meet the minimum regulatory (ADR) standards applicable to this vehicle category. These vehicles were all on sale and met the relevant regulatory requirements **ahead** of their mandated introduction dates - a positive approach.

To encourage further safety specification and performance improvements, ANCAP's **non-regulatory program** applies a much broader set of scenarios and encourages a higher standard of safety performance beyond the regulatory base.

The **non-regulatory** test scenarios and scoring used by ANCAP are listed in the following table. The current **regulatory** test requirements for light trucks are shaded in blue.

This same broad test matrix is applied by ANCAP with the testing of commercial vans, providing truck and van buyers and fleet operators with comprehensive safety comparison information within the *Light Duty* market segment.

The ADRs do not currently require minimum levels of active safety performance for any other aspect examined by ANCAP.

Changes to regulatory requirements for light trucks will come into force from September 2026 (ADR 99/00 and ADR 99/01) when lane departure warning systems become mandatory for all new models entering the Australian market.

Definitions for each of the scenarios tested by ANCAP are shown on page 37.

NOTE: ANCAP has not tested or verified ADR compliance through this program.

Test scenarios

REGULATORY VS. NON-REGULATORY

	ADAS FEATURE	TEST SCENARIO	TRUCK SPEED(S)	SPEED of TARGET	OVERLAP(S)	AEB REQUIREMENT	FCW REQUIREMENT
ADR SCENARIOS	AEB TRUCK-TO-CAR	TCRs	80 km/h	0 km/h	100%	Speed reduction more than 20km/h	1 warning issued 1.4sec before AEB 2 warnings issued 0.8sec before AEB
		TCRm	80 km/h	12 km/h	100%	No impact	1 warning issued 1.4sec before AEB 2 warnings issued 0.8sec before AEB
ANCAP SCENARIOS	AEB TRUCK-TO-CAR	TCRs	10-50 km/h (AEB) 30-80 km/h (FCW)	0 km/h	-50%, -75%, 100%, 75%, 50%	Points awarded based on level of speed reduction	Brake is applied a specific time after FCW is issued. Points awarded based on level of speed reduction.
		TCRm	30-80 km/h (AEB) 50-80 km/h (FCW)	20 km/h	-50%, -75%, 100%, 75%, 50%	Points awarded based on level of speed reduction	Brake is applied a specific time after FCW is issued. Points awarded based on level of speed reduction.
		TCRb	50 km/h	50 km/h	100%	Points awarded based on level of speed reduction	Brake is applied a specific time after FCW is issued. Points awarded based on level of speed reduction.
		HMI	-	-	-	-	-
		TCFTap	10, 15, 20 km/h	30, 45, 55 km/h	-	Points awarded for full avoidance	-
	AEB TRUCK-TO-PEDESTRIAN	TPFA	10-60 km/h	8 km/h	50%	Points awarded based on level of speed reduction	-
		TPNA	10-60 km/h	5 km/h	25%, 75%	Points awarded based on level of speed reduction	-
		TPNCO	10-60 km/h	5 km/h	50%	Points awarded based on level of speed reduction	-
		TPLA	20-60 km/h (AEB) 50-80 km/h (FCW)	5 km/h	25%, 50%	Points awarded based on level of speed reduction	FCW is issued 1.7 seconds before impact
		TPTA	10, 15, 20 km/h	5 km/h	50%	Points awarded for full avoidance	-
		TPRA-m	4, 8 km/h	5 km/h	50%	Points awarded for full avoidance	-
		TPRA-s	4, 8 km/h	0 km/h	25%, 50%, 75%	Points awarded for full avoidance	-
	AEB TRUCK-TO-CYCLIST	TBNA	10-60 km/h	15 km/h	50%	Points awarded based on level of speed reduction	-
		TBLA	25-60 km/h (AEB) 50-80 km/h (FCW)	15 km/h (AEB) 20 km/h (FCW)	25%, 50%	Points awarded based on level of speed reduction	FCW is issued 1.7 seconds before impact
		TBFA	10-60 km/h	20 km/h	50%	Points awarded based on level of speed reduction	-
		TBNAO	10-60 km/h	10 km/h	50%	Points awarded based on level of speed reduction	-
	LANE SUPPORT SYSTEMS	ELK	72 km/h	-	-	-	-
		LKA	72 km/h	-	-	-	-
		LDW	72 km/h	-	-	-	-
	SPEED ASSIST SYSTEMS	SLIF, SCF	-	-	-	-	-
	OCCUPANT STATUS MONITORING	SBR, DSM	-	-	-	-	-

TEST SCENARIO GLOSSARY

TCRs: Truck-to-Car Rear Stationary
Where the truck travels forwards towards a stationary car and the front of the truck strikes the rear of the car.

TCRm: Truck-to-Car Rear Moving
Where the truck travels forwards towards a car that is travelling at constant speed and the front of the truck strikes the rear of the car.

TCRb: Truck-to-Car Rear Braking
Where the truck travels forwards towards a car that is travelling at constant speed and then decelerates, and the front of the truck strikes the rear structure of the car.

TCFTap: Truck-to-Car Front Turn-Across-Path
Where the truck turns across the path of an oncoming car travelling at constant speed, and the front of the truck strikes the front of the car.

TPFA-50: Truck-to-Pedestrian Farside Adult 50%
Where the truck travels forwards towards an adult pedestrian crossing its path (walking briskly from the farside) and the front of the truck strikes the pedestrian at 50% of the truck's width when no braking is applied.

TPNA-25: Truck-to-Pedestrian Nearside Adult 25%
Where the truck travels forwards towards an adult pedestrian crossing its path (walking from the nearside) and the front of the truck strikes the pedestrian at 25% of the truck's width when no braking is applied.

TPNA-75: Truck-to-Pedestrian Nearside Adult 75%
Where the truck travels forwards towards an adult pedestrian crossing its path (walking from the nearside) and the front of the truck strikes the pedestrian at 75% of the truck's width when no braking is applied.

TPNCO-50: Truck-to-Pedestrian Nearside Child Obstructed 50%
Where the truck travels forwards towards a child pedestrian crossing its path (running from behind an obstruction from the nearside) and the front of the truck strikes the pedestrian at 50% of the truck's width when no braking is applied.

TPLA-25: Truck-to-Pedestrian Longitudinal Adult 25%
Where the truck travels forwards towards an adult pedestrian (walking in the same direction in front of the truck) where the truck strikes the pedestrian at 25% of the truck's width when no braking is applied or an evasive steering action is initiated after a FCW.

TPLA-50: Truck-to-Pedestrian Longitudinal Adult 50%
Where the truck travels forwards towards an adult pedestrian (walking in the same direction in front of the truck) where the truck strikes the pedestrian at 50% of the truck's width when no braking is applied.

TPTA-50: Truck-to-Pedestrian Turning Adult
Where the truck turns towards an adult pedestrian crossing its path (walking across a junction in either the same or opposite direction as the truck before the truck made the turn) and the front of the truck strikes the pedestrian at 50% of the truck's width when no braking is applied.

TPRA-50: Truck-to-Pedestrian Reverse Adult/Child Moving 50%
Where the truck is reversing towards an adult or child pedestrian crossing its path (walking from the nearside) and the rear of the truck strikes the pedestrian at 50% of the truck's width when no braking is applied.

TPRA-s: Truck-to-Pedestrian Reverse Adult/Child Stationary
Where the truck is reversing towards an adult or child pedestrian standing still and the rear of the truck strikes the pedestrian at 25%, 50% or 75% of the truck's width when no braking is applied.

TBNA-50: Truck-to-Cyclist Nearside Adult 50%
Where the truck travels forwards towards a bicyclist crossing the truck's path (cycling from the nearside) and the front of the truck strikes the bicyclist when no braking is applied.

TBLA-50: Truck-to-Cyclist Longitudinal Adult 50%
Where the truck travels forwards towards a bicyclist riding in the same direction (in front of the truck) and the front of the truck strikes the bicyclist at 50% of the truck's width when no braking is applied.

TBLA-25: Truck-to-Cyclist Longitudinal Adult 25%
Where the truck travels forwards towards a bicyclist riding in the same direction (in front of the truck) and the front of the truck strikes the bicyclist at 25% of the truck's width when no braking is applied or an evasive steering action is initiated after a FCW.

LKA: Lane Keep Assist
An active safety system that can detect lane markings and provide steering assistance to help keep the vehicle within its intended lane.

TBFA-50: Truck-to-Cyclist Farside Adult 50%
Where the truck travels forwards towards a bicyclist crossing its path (riding from the farside) and the front of the truck strikes the bicyclist at 50% of the truck's width when no braking is applied.

TBNAO: Truck-to-Cyclist Nearside Adult Obstructed 50%
Where the truck travels forwards towards a bicyclist crossing its path (riding from the nearside from behind an obstruction) and the front of the truck strikes the bicyclist at 50% of the truck's width when no braking is applied.

ELK: Emergency Lane Keeping
An active safety system that can detect lane departures that are likely to lead to a collision, including across marked and unmarked road edges. It can provide active steering or braking to help keep the vehicle within its intended lane.

LDW: Lane Departure Warning
A driver assistance system that can detect lane markings on the road and warn the driver if they are driving out of their intended lane without indicating. A combination of visual and audible warning is required.

SLIF: Speed Limit Information Function
A system that can display the current speed limit to the driver through map-based and/or camera-based technology.

SCF: Speed Control Function
A system that can control the vehicle speed via a driver-set 'manual' speed limiter, an intelligent speed limiter, or through intelligent adaptive cruise control (iACC).

Performance required by ADRs

ANCAP
SAFETY

ANCAP.COM.AU/LIGHT-TRUCKS

This project was funded by the
Heavy Vehicle Safety Initiative,
supported by the Australian Government

ANCAP
SAFETY

TESTING & ASSESSMENT PROTOCOL

Light Truck Safety Assist

MAY 2025
v1.0

ANCAP
SAFETY

PREFACE

During test preparation, vehicle manufacturers are encouraged to liaise with ANCAP and to observe the way the vehicle is set up for testing. Where a vehicle manufacturer feels that a particular aspect should be altered, they should raise this with the ANCAP assessor present at the test, or in writing to the ANCAP Chief Executive Officer if no assessor is present. ANCAP will consider the matter and at their sole discretion give direction to the test facility.

Vehicle manufacturers warrant not to, whether directly or indirectly, interfere with testing and are forbidden from making changes to any aspect that may influence the test, including but not limited to dummy positioning, vehicle setting, laboratory environment etc.

Some illustrations in ANCAP protocol documents are reproduced from Euro NCAP publications, and therefore show Euro NCAP markings on left-hand-drive vehicles. Where relevant, the layouts depicted should be adapted to right-hand-drive application.

VERSION

VERSION	PUBLISHED	DETAILS
0.1	February 2024	First draft of protocol.
0.2	March 2024	Finalise test mass.
0.3	September 2024	Draft protocol with input after testing.
1.0	May 2025	First published version.

DISCLAIMER

ANCAP has taken all reasonable care to ensure that the information published in this protocol is accurate and reflects the current technical decisions taken by the organisation. In the event this protocol contains an error or inaccuracy, ANCAP reserves the right to make corrections and determine the assessment and subsequent result of the affected requirement(s).

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AUSTRALASIAN NEW CAR ASSESSMENT PROGRAM (ANCAP)

TESTING AND ASSESSMENT PROTOCOL – LIGHT TRUCK SAFETY ASSIST

Table of Contents

Definitions

Throughout this protocol the following terms are used:

Adaptive Cruise Control (ACC) – a system that controls the vehicle speed while maintaining a set distance to vehicles ahead.

Advanced Driver Assistance Systems (ADAS) – vehicle functions provided to assist the driver in maintaining safe driving or in avoiding an imminent collision.

Autonomous Emergency Braking (AEB) – braking that is applied automatically by the vehicle in response to the detection of a likely collision to reduce the vehicle speed and potentially avoid the collision.

AEB Truck-to-Car (TCx) – a function intended to avoid a collision in which the VUT travels forwards towards a passenger car that is stationary, travelling at constant speed, braking or oncoming (at a road junction).

AEB Truck-to Pedestrian (TPx) - a function intended to avoid a collision in which the VUT travels forwards or reverses towards a pedestrian that is stationary, crossing the vehicle path, walking in-line with the vehicle path, or crossing an intersecting road (junction).

AEB Truck-to-Bicyclist (TBx) - a function intended to avoid a collision in which the VUT travels forwards towards a bicycle that is crossing the vehicle path, or cycling in-line with the vehicle path.

Blind Spot Information System (BLIS) – a warning that is provided automatically by the vehicle in response to the detection of overtaking traffic in the adjacent lane.

Driver State Monitoring (DSM) – System that is able to (in)directly determine the state of the driver

Emergency Lane Keeping (ELK) – default ON heading correction that is applied automatically by the Vehicle in response to the detection of the Vehicle that is about to drift beyond a solid lane marking, the edge of the road or into oncoming or overtaking traffic in the adjacent lane.

Forward Collision Warning (FCW) – an audio-visual warning that is provided automatically by the vehicle in response to the detection of a likely collision to alert the driver.

Global Vehicle Target (GVT) – means the vehicle target used in this protocol as defined in ISO 19206-3:2021.

Gross Vehicle Mass (GVM) – means the maximum laden mass of a motor vehicle as specified by the 'Manufacturer', given in kilograms [kg].

Intelligent Adaptive Cruise Control (iACC) – iACC is an ACC combined with SLIF, where the speed is set by the SLIF with or without driver confirmation.

Intelligent Speed Limiter (ISL) – ISL is a SLF combined with SLIF, where the Vadj is set by the SLIF with or without driver confirmation.

Lane Departure Warning (LDW) – a warning that is provided automatically by the vehicle in response to the Vehicle that is about to drift beyond a delineated edge line of the current travel lane.

Lane Keeping Assist (LKA) – heading correction that is applied automatically by the vehicle in response to the detection of the Vehicle that is about to drift beyond a delineated edge line of the current travel lane.

Lane Support System (LSS) – a system that corrects the vehicle heading to keep the vehicle within its driving lane and/or warns the driver.

Occupant Status Monitoring (OSM) – a system that monitors the status of a vehicle occupant. In this protocol, OSM can refer to SBR or DSM.

Seat Belt Reminder (SBR) – System that indicates the status of the seatbelt whether it is in use or not in use.

Speed Assist System (SAS) –a system that informs or warns the driver and/or controls the vehicle speed.

Speed Limit Information Function (SLIF) – a function with which the vehicle knows and communicates the speed limit.

Speed Limitation Function (SLF) – SLF means a system which allows the driver to set a vehicle speed

Vadj, to which he/she wishes the speed of his vehicle to be limited and above which he/she wishes to be warned.

Standard Protocol – protocols referenced in Section 1.1.3. References in protocols to Car as the vehicle under test (eg CCR = Car-to-Car Rear) to be replaced with Truck – eg TCR = Truck-to-Car Rear

Vadj – Adjustable speed Vadj means the voluntarily set speed for the speed control functions, which is based on **Vindicated** and includes the offset set by the driver.

Vindicated - The speed at which the vehicle travels as displayed to the driver by the speedometer.

Vehicle Under Test (VUT) – means the vehicle tested according to this protocol with a pre- crash collision mitigation or avoidance system on board.

1. Introduction

ANCAP's testing and assessment of Light Trucks is designed to provide an objective assessment of active safety functionality and performance of Light Trucks. Through this assessment and publication of information, ANCAP aims to encourage wider fitment of ADAS, promote robust performance and help fleet operator and business owners to make safer choices. The vehicle assessments (gradings) aim to:

- Accelerate standard fitment of safety functions on light trucks;
- Improve performance of advanced driver assistance systems (ADAS) on light trucks, to match, where appropriate, the state-of-the-art technology fitted to passenger cars, commercial vans and larger heavy vehicles;
- Inform fleet operators of the availability and relative performance of ADAS in the light truck market, to assist them to make safer choices when purchasing new vehicles;
- Provide a reference for information from light truck manufacturers, including on websites and in marketing material, regarding the safety features available on their vehicles.

This Assessment Protocol is an addendum to the existing passenger car safety testing protocols and details specific requirements relating to the safety testing of Light Trucks. It also describes the details of the overall scoring of Light Trucks.

1.1. Scope

1.1.1. Light Truck (LT)

A Medium Goods Vehicle with a 'Gross Vehicle Mass' (GVM) exceeding 3.5 tonnes but not exceeding 8.0 tonnes. Excluding "Commercial Vans" and "Large Pickups" that are addressed in separate ANCAP assessments.

1.1.2. Vehicle Categories

NB - MEDIUM GOODS VEHICLE - A goods vehicle with a 'Gross Vehicle Mass' exceeding 3.5 tonnes but not exceeding 12.0 tonnes in the two NB subcategories:

i. NB1 - over 3.5 tonnes, up to 4.5 tonnes 'Gross Vehicle Mass'

ii. NB2 - over 4.5 tonnes, up to 12 tonnes 'Gross Vehicle Mass'

1.1.3. Protocol Reference

The tests in scope for the 2023/2025 assessment of LTs are based on those applicable for the safety rating of passenger cars from 1st January 2020, namely (Table 1-1):

SAFETY FUNCTION	ANCAP TEST PROTOCOL	ANCAP ASSESSMENT PROTOCOL
AEB Truck-to-Car	AEB Car-to-Car Systems v3.0.2	Safety Assist v9.1
Lane Support System	Lane Support Systems v3.0.2	
AEB Pedestrian	AEB Vulnerable Road User Systems v3.0.3	Vulnerable Road User Protection v10.0.4
AEB Bicyclist		
Speed Assist System	Speed Assist Systems v2.0	SA Safe Driving - v10.1.2 Or Safety Assist v9.1
Occupant Status Monitoring	(assessed from manufacturer 'dossier')	Safety Assist v9.1

Table 1-1 Protocol References

Where this protocol conflicts with the original passenger car safety testing or assessment protocols, the details in this addendum shall be applied.

Scenarios referenced within this protocol as 'Truck-to-Car/Pedestrian/Bicyclist' are equivalent to and can be substituted with 'Car-to-Car/Pedestrian/Bicyclist' in the relevant passenger car test and assessment protocols.

1.2. Fitment Overview

Detailed fitment information of Advanced Driver Assistance Systems is provided (where possible). The availability (standard, optional or not available) is shown in a graphical format with a corresponding table for each vehicle and system on the ANCAP website.

1.3. Safety Assist Score

The protocol test scores for AEB Truck-to-Car, AEB Pedestrian, AEB Cyclist, LSS, SAS and OSM are scaled from the total scores provided in the referenced Assessment Protocols according to the following maximum scores per safety function (Table 1-2):

SAFETY FUNCTION	Scenario	Remark	Score	
			Partial	Total
AEB Truck-to-Car	TCRs, TCRm, TCRb	-	17.5	30
	HMI	-	2.5	
	TCFtap	-	10	
AEB Pedestrian	TPFA-50	Day	0.55	10
	TPNA-25, TPNA-75	Day & Night	2.77	
	TPNCO-50	Day	1.11	
	TPLA-25, TPLA-50	Day & Night	2.22	
	TPTA-50	Day	1.11	
	TPRA-50, TPRA-s	Day	2.22	
AEB Bicyclist	TBNA-50	-	1.66	10
	TBLA-50, TBLA-25	-	3.33	
	TBFA-50	-	3.33	
	TBNAO-50	-	1.66	
Lane Support Systems	ELK	Road edge, Solid line, oncoming, overtaking	15	20
	LKA	-	2.5	
	HMI	LDW, BLIS	2.5	
Speed Assist Systems	SLIF, SCF	-	15	15
Occupant Status Monitoring	SBR, DSM* *To be assessed by means of a dossier	-	15	15
TOTAL	Scenario		100	

Table 1-2 Safety Assist Score Summary

1.4. Overall Performance

The scores of each safety function are summed up and combined into an overall score for each vehicle (maximum 100, or 100%). This overall performance score places each vehicle tested in one of the following categories (Table 1-3).

CATEGORY	SCORE REQUIRED
PLATINUM	≥ 80%
GOLD	≥ 60%
SILVER	≥ 40%
BRONZE	≥ 20%
BASIC	< 20%

Table 1-3 Score categories

2. VUT Preparation

2.1. General

a. The vehicle will be tested in a new, or 'as new' condition (eg minimum travel for fitment of body, calibration, etc).

b. The vehicle must be in roadworthy condition, other than any modifications required for conduct of testing.

c. There must be no 'fault codes' displayed by the vehicle

d. Where there are fault codes displayed (eg due to installation of test equipment) that do not affect test performance (to be confirmed by ANCAP and/or the vehicle manufacturer) testing may proceed. The fault status must be recorded by the laboratory.

2.2. Tyres

The tyres must be representative of those fitted as standard by the OEM, and shall be used provided that:

- They are in roadworthy condition (no visible damage), and
- They all have a tread depth of at least 5mm. across the central three quarters of the tyre width, and
- They all are inflated to the specified pressure corresponding to the half laden testing condition.

2.3. Wheel Alignment

The test vehicle shall be subject to a vehicle (in- line) geometry check to ensure the geometry is within the tolerances set by the OEM. Where the geometry is not within the manufacturers tolerances the test laboratory should undertake remedial work to return the geometry to within the OEM tolerances.

2.4. Loading

Complete testing with the vehicle laden to represent typical NB vehicle operation, with 'as tested' mass as follows:

$$\textit{As tested mass} = \textit{Test Ready Mass} + ((\textit{GVM} - \textit{Test Ready Mass})/2)$$

With 'test ready' mass being:

$$\textit{Test Ready Mass} = \textit{Unladen kerb mass} + \textit{Occupant load}$$

And with 'occupant load' being:

$$\textit{Occupant load} = 200\text{kg} = \textit{Driver} + \textit{test equipment} + \textit{additional required ballast}$$

The procedure to prepare the vehicle for the load requirements will be followed according to below steps:

- Fill up the tank with fuel to at least 90% of the tank's capacity of fuel.
- Check the oil level and top up to its maximum level if necessary. Similarly, top up the levels of all other fluids to their maximum levels if necessary.
- Ensure that the vehicle has its spare wheel on board, if fitted, along with any tools supplied with the vehicle. Nothing else should be in the vehicle.
- Ensure that all tyres are inflated according to the manufacturer's instructions for the appropriate loading condition.
- Measure the front and rear axle masses and determine the total mass of the vehicle. The total mass is

the ‘unladen kerb mass’ of the vehicle. Record this mass in the test details.

- Fit the test equipment in the vehicle (i.e. on-board test equipment and instrumentation, associated cables, cabling boxes and power sources).
- With the driver and test equipment in the vehicle, weigh the vehicle. Record the driver plus test equipment mass by subtracting the new measured mass from the initially measured unladen kerb mass.
- Calculate the 'additional required ballast’ by subtracting the mass of the driver and test equipment from the required 200kg occupant load.
- If applicable, place weights with a mass of the ‘additional required ballast’, securely attached to the forward end of the load tray.
- Compare these loads with the ‘unladen kerb mass’.
- Add additional ballast in the cargo space to increase the ‘test ready’ mass to ‘as tested’ mass, with an overall tolerance of ±1%. Locate the centre of mass of the ballast centrally within the cargo area as far as is as practically possible with the centre of mass of the ballast approximately 0.6m above the load bed. Ballast must be securely attached to the VUT. If water is used as ballast, it should be used in full containers to prevent the movement under acceleration.
- Note the ‘as tested’ front/rear axle load distribution may not necessarily remain within 5% of the front/rear axle load distribution of the original ‘unladen kerb mass’, which is acceptable for this testing.
- The ‘as tested’ front/rear axle load must not exceed the manufacturer’s prescribed maximum load for either axle. If an axle maximum is exceeded when the ‘additional required ballast’ is in place, the load may be moved forward or rearward until each axle load is within the specified limits.

3. Testing

Available ADAS functions (whether optional or standard) on each vehicle are tested using ANCAP Test & Assessment protocols (see Table 1-1), adapted to light trucks as described below.

3.1. Boundary Conditions

All boundary conditions in the *standard protocol* are applied, except for steering wheel velocity.

The manufacturer is requested to inform ANCAP if there are any system driver override conditions that may cause suppression of any safety systems. ANCAP will advise the test laboratory on any additional boundary conditions to ensure that no system suppression occurs throughout the assessment.

3.2. AEB Truck-to-Car, AEB Pedestrian, AEB Bicyclist

Pre-requisites for scoring points, (whiplash score, VRU impact scores) do not apply. Pre-requisites for full avoidance in low speed impacts (TCRs 10 to 20 km/h – ref Section 3.3 of the Assessment Protocol – Collision Avoidance) also do not apply. Requirements relating to operational speeds above 100 km/h do not apply if the vehicle cannot reach this speed.

3.2.1. Standard Procedure

Where a manufacturer provides a grid of performance predictions, follow the *standard protocol* for selection of test points.

3.2.2. Back-up Procedure

Given the absence of grid performance predictions, proceed with AEB TCR offset testing as follows:

1. Randomly select the direction of offset and begin with the 50% overlap scenario commencing testing at the lowest VUT test speed. When there is complete avoidance, the subsequent test speed for the next test is incremented by 10 km/h. When there is contact, first perform a test at a test speed 5 km/h less than the test speed where contact occurred. After this test continue to perform the remainder of the tests with speed increments of 5km/h. Stop testing when the speed reduction seen in the test is less than 5km/h, or the relative impact speed is greater than 20 km/h for two consecutive test speeds.
2. Continue with the 75% overlap test scenario offset in the opposite side of the vehicle to that used for the 50% overlap test. Commence testing at the lowest test speed for the scenario or highest 50% overlap avoidance speed, whichever is greater. Increment subsequent test speeds as described in 3.1.2 a)
3. Continue with the 100% overlap test scenario. Commence testing at the lowest test speed for the scenario or highest 75% overlap avoidance speed, whichever is greater. Increment subsequent test speeds as described in 3.1.2 a).
4. For FCW system tests, follow the process outlined in 3.1.2 a) to c) for AEB testing. Only perform tests at the test speeds where there was no avoidance in the AEB function tests for applicable scenarios.
5. To ensure symmetry, retest the 50% and 75% two highest avoidance speeds. Where there is a difference in performance, perform all tests on the other direction of offset.
6. The scores attributed to the untested scenarios will be, for the 75% overlap, the same as the 50% up to the highest untested 75% overlap scenario, then for the 100%, the same as the 75% up to the highest untested 75% overlap scenario.

In the absence of predictions and in order to limit the number of test runs and likely impacts with the target, an alternative method of selecting test points, based on recorded test performance in each scenario may be used.

3.2.3. Variations in test mass (for reference/monitoring)

To assess the variability of the vehicle performance, a series of tests with a variety of test masses will be performed. **These tests do not form part of the scoring or assessment.**

Test method is the TCRs 100% overlap test scenario at 50 km/h.

Test at the 3 test masses:

- Test ready mass
- Test Ready Mass + (GVM – Test Ready Mass)/2
- GVM

3.3. AEB VRU

3.3.1. Standard Procedure

Where a manufacturer provides a grid prediction, proceed with AEB VRU scenarios (day and night-time) as follows:

1) AEB Pedestrian (TPFA-50, TPNA-25, TPNA-75, TPNCO-50, TPLA-25, TPLA-50):
   a) Test highest avoidance speed + 1 random speed
   b) Test all mitigations
   c) In case of discrepancies with the grid prediction, fall back to the Back-up procedure until prediction is met again
2) AEB Pedestrian (TPTA-50, TPRA-50, TPRA):
   a) Test according to the standard procedure
3) AEB Bicyclist:
   a) Test lowest avoidance speed + Highest avoidance speed + 1 random speed
   b) Test all mitigations
   c) In case of discrepancies with the grid prediction, fall back to the Back-up procedure until prediction is met again.

Predictions are to be provided by the OEM following a colour scheme as reflected below (Table 3-1):

Colour	Speed reduction	
	<=40 km/h test speed	>40 km/h test speed
Green	Full avoidance	Full avoidance
Yellow	Partial speed reduction	>=20 km/h
Red	No reaction	<20 km/h

Table 3-1 Predictions summary for AEB VRU (Standard Procedure)

3.3.2. Back-up Procedure

Given the absence of grid performance predictions, follow the *standard protocol* and complete all test scenarios (day and night-time).

3.4. LSS

For testing follow the *standard protocol*.

For Lane Departure Warning assessment, a system that has either haptic, or both optical and audible warnings, is eligible for scoring (provided other requirements are met).

3.5. SAS

Follow the 2023 SAS Assessment protocol (*SA Safe Driving - v10.1.2*), however, assessment is limited to items listed in the 2020 *standard protocol (Assessment Protocol – Safety Assist v9.1)*:

- SLIF Requirements NOT to be considered:
  - Local hazards
  - Road features
  - System updates
- Point distribution according to the 2020 Assessment protocol (Table 3-2)

SPEED LIMIT INFORMATION FUNCTION (SLIF)	Points
Basic SLIF (general requirements)	0.50
Conditional Advice	0.25
Advanced SLIF	0.50
Warning Function	0.25
SLIF TOTAL	1.50
SPEED CONTROL FUNCTION (SCF)	**Points**
Speed Limitation Function For vehicles without SLIF For vehicles with SLIF	 1.25 0.75
ISL and/or intelligent ACC	1.50
SPEED CONTROL FUNCTION TOTAL	1.50
SPEED ASSIST SYSTEM TOTAL	3.00

Table 3-2 SAS Score summary

3.6. OSM

Follow the 2020 *standard protocol* (*Assessment Protocol – Safety Assist v9.1*) (Only the driver and front row outboard passenger seat will be assessed for SBR).