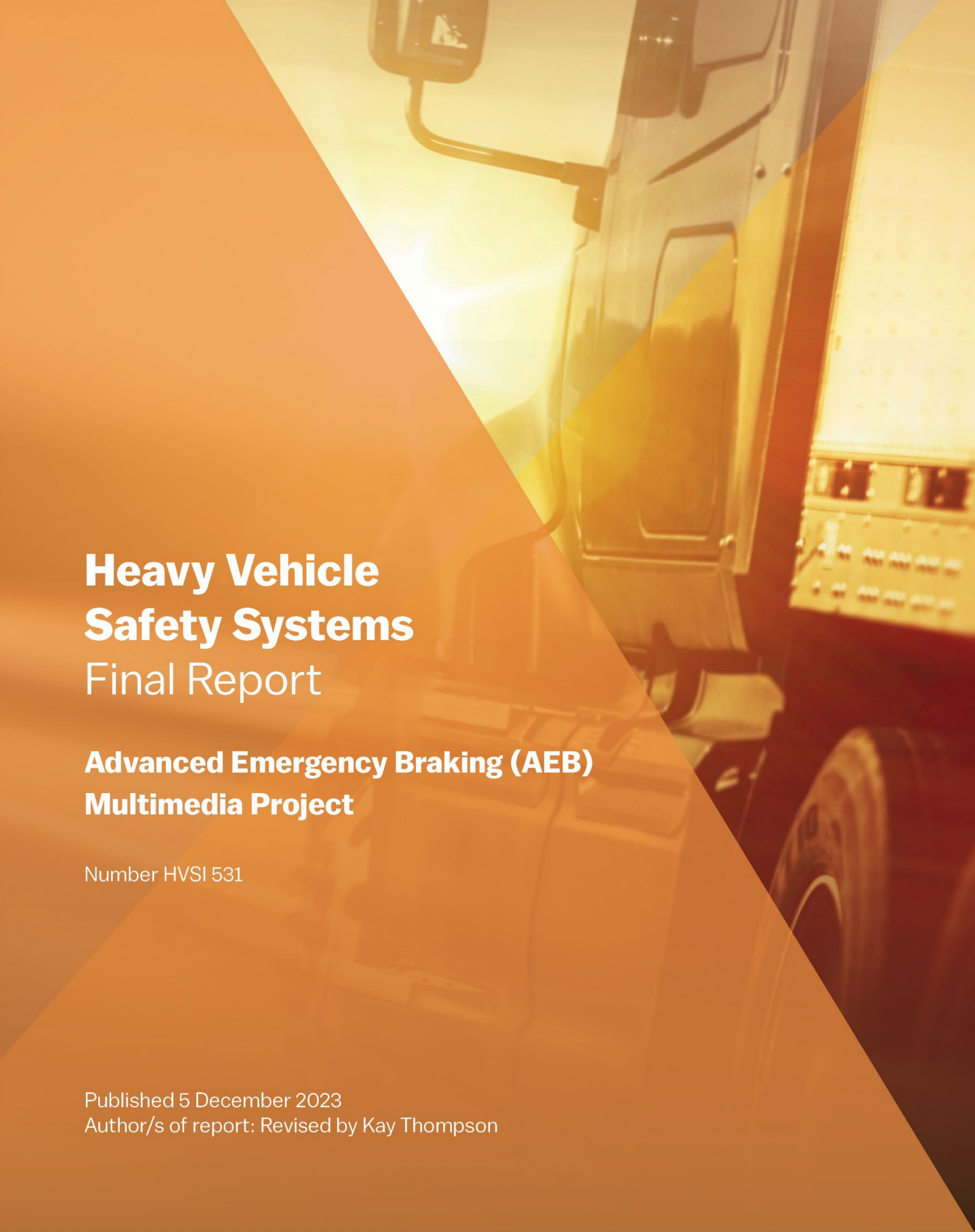


Heavy Vehicle Safety Systems
Final Report

Advanced Emergency Braking (AEB) Multimedia Project

Number HVSI 531

Published 5 December 2023
Author/s of report: Revised by Kay Thompson

TIC TRUCK INDUSTRY COUNCIL SAFER GREENER ESSENTIAL
WODONGATAFE
DRIVER EDUCATION CENTRE OF AUSTRALIA DECA

Contents

Acknowledgements

We would like to acknowledge the funding from the Australian Government through the Heavy Vehicle Safety Initiative (HVSI) administered by the National Heavy Vehicle Regulator (NHVR) which has enabled this project. The project will ensure greater safety on Australian roads through early adoption of Anti-lock Braking Systems (ABS), Advanced Emergency Braking (AEB) and Electronic Stability Control (ESC) systems in heavy vehicle fleets.

Further, we acknowledge the contribution of partner heavy vehicle companies in allowing us to utilise their technologies and vehicles in the multimedia testing scenarios. These include:

Trucks from:

- Freightliner
- Mercedes Benz
- Kenworth & Mack

Crash Test Car:

- Freightliner
- Mercedes Benz

Rollover testing trailer:

- Knorr Bremse

Executive Summary

Wodonga Institute of TAFE was funded by the Australian Government through the HVSI, administered by the NHVR funded in 2021 to develop multi-media resources to educate heavy vehicle (HV) drivers and operators regarding the benefits and the limitations of Electronic Stability Control (ESC), Antilock Braking Systems (ABS) and Advanced Emergency Braking (AEB) safety technologies.

Wodonga TAFE worked in close collaboration with the Truck Industry Council (TIC) who provided the technical and industry knowledge of the project information that was to form the basis of the multi-media resources.

The project identified that many heavy vehicles in the industry do not have ABS, AEB, ESC or active cruise control installed yet these systems have been proven to reduce heavy vehicle incidents if used in the correct manner as a driver assistance tool.

In 2021, there were 163 people killed in crashes involving heavy vehicles in Australia. This is 15.4% of the total road deaths. The Department of Infrastructure, Regional Development and Cities' National Heavy Vehicle Braking Strategy Phase II – Improving the Stability and Control of Heavy Vehicles report[1] estimates that just under half of the fatal crashes involved braking or swerving and eight percent of all crashes in 1990 that involved articulated trucks would have been avoided if the trucks had ABS fitted. A further two percent of the crashes would have been reduced to 'injury crashes' only rather than fatalities. For rigid vehicles the figures were five percent and eight percent respectively. Further commissioned work in 2003 resulted in assumptions that the use of ABS on all parts of a heavy vehicle articulated truck would potentially reduce crash cost exposure by 6.1 percent. As electronic stability control is relatively new in Australia, research undertaken in America indicates that ESC is 25-32% effective in reducing rollovers and loss of control crashes.

Combining all of these safety features in a vehicle will only further ensure that HV accidents are reduced in total, or the impact of the accidents are minimised. This reduction not only benefits the HV industry, those families so greatly affected when a loved one is involved; but also, the Australian economy, as the impact of road crashes on individuals is estimated to cost $35 billion per annum[2].

Despite Advanced Driver Assistance Systems (ADS) being great tools to assist drivers in times of fatigue and distraction, this project was also to highlight to HV drivers that ADS was not to be relied on constantly. Driving to the conditions is always the optimum goal. The project highlighted both the benefits, to encourage the early adoption of these technologies, and awareness of the limitations of these systems to drive down the number of incidents of heavy vehicle accidents.

Highlighting the benefits of ADS, assists truck drivers to understand the importance of updating their trucks to be fitted with the additional safety features or through purchase of a later model vehicle. Australia's truck fleet is on average 14.9 years old, which exceeds the average in developed nations and according to the latest ABS Australian Motor Vehicle Census in 2017, 26% of Australia's trucks were first registered in 1996 or earlier. Most of these do not meet any exhaust emission standards so encouraging the uptake of newer vehicles not only would improve safety levels but also assist in improving air quality through reduced carbon dioxide emissions.

[1] Regulation Impact Statement – National Heavy Vehicle Braking Strategy Phase II – Improving the Stability and Control of Heavy Vehicles, Department of Infrastructure, Regional Development and Cities, April 2018

[2] **Road Trauma Involving Heavy Vehicles—Annual Summaries, Department of Infrastructure, Transport, Regional Development, Communications and the Arts, 18 January 2023**

The HVSI funding enabled the creation of multi-media resources to convey to HV drivers the importance of driving to the present road conditions, the implications of not doing so and the benefits of early uptake of these new technologies along with the importance of correctly fitted ADS to ensure their workplace safety.

Project success

Effectiveness

Wodonga TAFE in collaboration with the Truck Industry Council (TIC) created a resource package to educate both transport operators and heavy vehicle drivers of the benefits of voluntary early adoption and the limitations of Advanced Emergency Braking (AEB), Antilock Braking Systems (ABS) and Electronic Stability Control (ESC); the Australian Design Rules (ADRs) requirements, system design/function and background issues and information.

Much of the filming was completed at Wodonga TAFE's Transport and Logistics, Driver Education Centre of Australia (DECA) site utilising the services of an external media company. Trucks were donated for use by TIC members as well as vehicles provided by DECA, Wodonga TAFE's Driver Education Centre of Australia. Voice overs were completed by the external media company and a Wodonga TAFE staff member.

Nine videos were completed demonstrating various ABS, Stability Control and AEB scenarios of:

- Cornering, entering and exiting bends
- Driving on a different line and coming upon a stationary vehicle
- Obstacles and stationary vehicles
- Vehicles parked at the roadside
- Other vehicles – car changing lane
- Vehicles turning off
- Winding stretches of road.
- Anti-lock Braking Systems

Other additional videos were sourced from TIC members to be included in the resources:

- Anti-lock Braking Systems
- Roll over systems
- Stability control in action
- Demonstrations of trucks with and without WABCO ESC
- Driving with Bendix ESP – explanation of ABS
- Mercedes Benz New Actors – Active Brake Assist AEB
- Kenworth Safety – Adaptive Cruise, Autonomous Braking, Lane Checking
- Driving with Bendix Wingman Driver Assistance Systems

The project resulted in an accessible, but well-detailed, resource regarding ESC, AEB and elements of ABS and active cruise control.

Added benefits of the project were that the filming segments were aided Transport teacher development in emergency braking. Relationships were established between many truck manufacturers and Wodonga TAFE's Educational Leader, Logic Campus. These are valuable relationships for both the manufacturers and teachers as the resources assist teachers to remain current with industry trends and heavy vehicle operations.

The resources will continue to be used to ensure knowledge by transport teachers in the latest technology and the resources will be used within Wodonga TAFE's HV driver training programs to ensure that the latest drivers are aware of both the benefits and limitations of ADS.

The new TIC Technical Officer presented as part of a panel at the Technical Maintenance Australian Trucking Association (ATA) conference in October 2023. The ATA conference had a feature on emergency braking systems, so it was an ideal time to present. The resources were shared and people were advised of the location to access them.

No feedback has been received anecdotally or formally as yet from the material that was distributed and it is too early after the completion of the project to be able to measure the uptake of newer vehicles or the fitting of AEB, ABS and ESC technologies. This will take several years to be able to quantify.

Project evaluation

Wodonga TAFE in collaboration with the Truck Industry Council met our objectives of:

- Establishing a project control group consisting of personnel including the National Manager, Senior Management, Transport &Logistics department and a TIC Technical Officer.
- Content was created after research was conducted by the TIC Technical Officer in consultation with brake suppliers and truck manufacturers to develop multi-media resources for driving training.
- A range of braking scenarios filmed for inclusion in the website resource package.
-
- The multimedia resources were distributed nationally via:
  - Truck and trade magazines ie Big Rigs - Highlighting the benefits of AEB and stability control (bigrigs.com.au)
  - Online Truck Radio
  - Social media
  - YouTube
  - Google SEM

The initial objective was to have a resource publicly available and disseminated throughout the heavy vehicle industry that educates workforce and transport managers. Wodonga Institute of TAFE believes we have met this outcome and objective. The secondary, but overarching, objective was to increase adoption of AEB and ESC. This objective is unable to be substantiated at this point.

The videos on the YouTube site have received a total of 1161 views. Advertising and promotions have been successful, with over 4300 unique visitors to the main page, and a further 6000+ views overall.

Project Management Evaluation

The project was managed through regular project control group meetings. These meetings included The Technical Officer of the Truck Industry Council, a Wodonga TAFE senior management representative, Marketing Manager, Educational Leader Logic Campus and the Project Manager.

Unfortunately, due to changes in staff, there were three project managers involved in the project and although handovers were provided and minutes available it did make continuity of the project and reporting difficult at times.

Regular formal meetings were held virtually to ensure that the overall project progressed as required and met timeframes as and where possible despite the impacts of Covid-19.

Content Development meetings were also held where the draft content was reviewed by TIC members who provided valuable input and improvements to the text as well as ensuring the content was correct.

There was also a working group who meet weekly to ensure progress of the content development and filming sessions and editing of the footage to provide a high-quality finished resource.

Risk Management

Risks identified through the project were:

- The delay in the release of the ADR was a constant risk as the material written needed to be in alignment with the ADR requirements. Work was completed without this knowledge and reviewed for alignment when the ADR was released.

- Availability of the track to complete filming segments as it is used for educational purposes. The filming sessions were organised early to avoid scheduled classes.

- Reliance on and availability of the TIC Technical Officer was a risk as they were the subject matter expert and sometimes other work took priority. The project was driven by TIC so it was a priority to try to allow dedicated time to the project.

- The project ran through the Covid-19 pandemic period so there was a risk of staff succumbing to the illness and possibly not being able to contribute as required or travel movements being restricted so that the filming aspect of the project could not be completed. Border closures were a risk as TIC is based in the Australian Capital Territory. Restrictions did impact the project schedule slightly; however, opportunities were taken when possible so that the project was able to progress. Availability of the latest trucks was also an issue as they were an essential service and were in demand during the project time.

- There was a risk of excluding some ADS products from the draft content. Most owner handbooks were perused and marked up to ensure that the content covered all manufacturers.

- The external media company and Wodonga TAFE's Marketing team were short staffed due to the increase in online materials used during the Covid-19 period. These shortages did impact timelines however, the teams were able to prioritise this project over other tasks to achieve the agreed variation deadlines.

Risks were managed through the regular communications at online meetings and email to ensure that issues were addressed so that the project could meet the contractual obligations.

Stakeholder Management

Wodonga Institute of TAFE worked in close collaboration with the Truck Industry Council (TIC) for subject matter expertise for the creation of the resource content. A Memorandum of Understanding was drawn up between the TIC and Wodonga TAFE to ensure the partnership was aware of obligations and succeeded in meeting project outcomes.

Wodonga TAFE's Educational Leader Logic Campus, of our Transport & Logistics arm, organised Transport teachers to be involved in the driving scenarios to gain additional learning experience and to assist in the driving scenarios; and was instrumental in working with the media company to determine the best footage to convey the information required.

TIC members provided input into the draft content of the resource package as well as the provision of vehicles for use in the filming segments and existing manufacturer videos that provided supplemental information.

Project Communications

The Public Awareness strategy included:

- the launch of the website section on the Wodonga TAFE website as of June 2023
- Media/industry release – August 2023, sent to Wodonga TAFE industry and media contacts, and TIC for distribution. Copy of Media Release
- Advertising through Big Rigs – Australia's No. 1 trucking publication and media source – June 2023 to August 2023, inclusive of the below:

  Print: Paper has 22,500 circulation each fortnight Australia wide.
  4 x Full pages
  2 x Editorials - paper, online, in Enews and on socials

  Online:
  Leader Board on www.bigrigs.com.au
  Enews Banner advert for 2 months
  Solus EDM x 2
  Side Skins on www.bigrigs.com.au

  Australian Truck Radio:
  Australian Truck Radio 5 ads per day
  Interview on radio – conducted with Jason Atteridge, Educational Leader, Wodonga TAFE

  July Big Rigs Advertising Report
  August Big Rigs Advertising Report

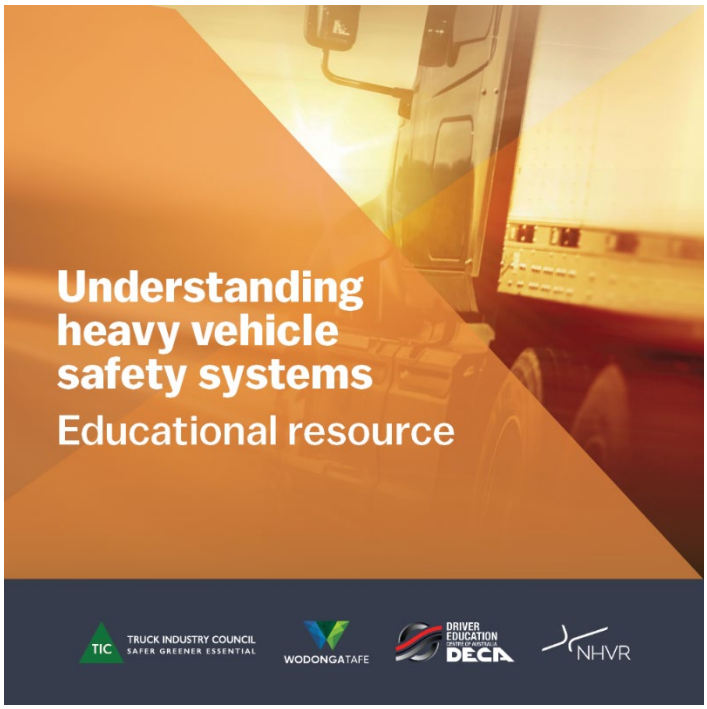
- Advertising through Search Engine Marketing, LinkedIn and Facebook – July-August 2023
- Branded USBs distributed via Wodonga TAFE and DECA network – promoting the project and linking to its resources.

The Industry strategy included:

- Website promotions through Wodonga TAFE, TIC and NHVR – June 2023 onwards
- Written communication out to TIC and NHVR of a content toolkit. This provided a download kit to allow easy promotion of the resources through their networks.
- Promotion at the Technical Maintenance Australian Trucking Association conference – October 16-18, 2023

Promotional material examples are below:

Social/media tile



Promotional poster

Flyer handout

A multimedia Heavy Vehicle Safety Systems informational resource has been developed to guide and educate transport managers and operators about the benefits of voluntary early adoption and the limitations of Electronic Stability Control (ESC) and Advanced Emergency Braking safety technologies.

The resource includes all you need to know about these technologies, and has video demonstrations throughout. It's always important to understand that these technologies are supportive only, and the vehicle operator should always be aware of their limitations.

Learn more via https://bit.ly/HVSS_Info or the QR code below.

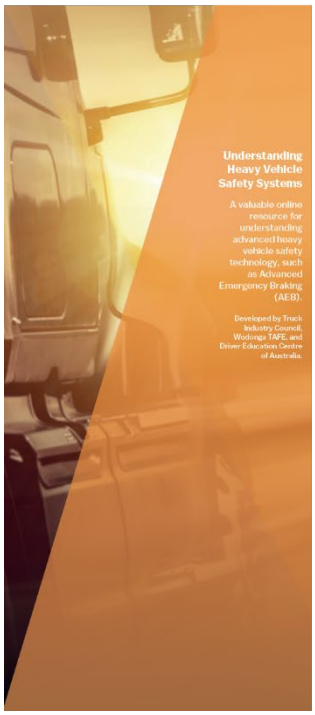
TIC TRUCK INDUSTRY COUNCIL SAFER GREENER ESSENTIAL

WODONGATAFE

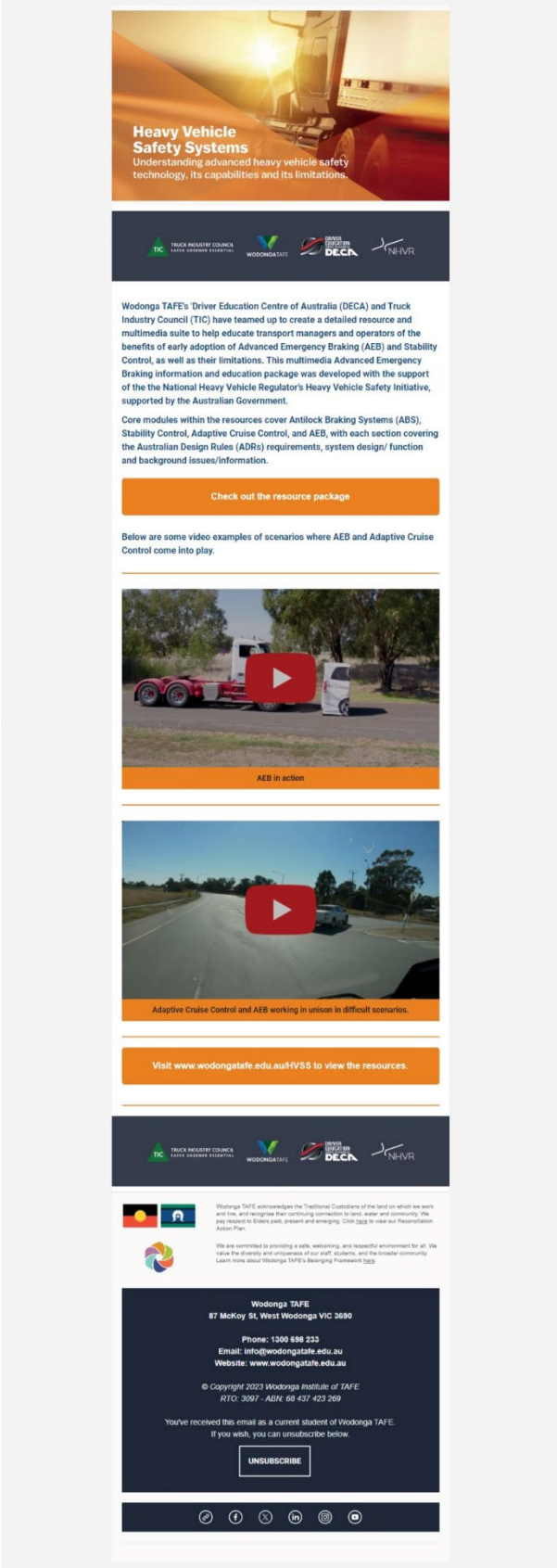
DRIVER EDUCATION CENTRE OF AUSTRALIA DECA

NHVR

Webskin (background for Big Rigs website)



EDM Newsletter (Sent via Big Rigs to all subscribers)



Issues

Truck availability was an issue as trucks were considered essential services during Covid-19 and thus it was difficult to access suitable new vehicles which had all the features available to film.

Time also became a critical factor with filming delays and staff shortages due to Covid-19 impacts and resulted in a request to vary the milestones of the project. This included an extended final report due date to ensure we captured advertising and website/resource analytics.

Deliverables

Resources that were produced included:

- Training and education packages
- Industry guides

Resources have been housed on Wodonga TAFE's website and links to this site have been provided in advertising and promotional materials.

The final resources consisted of:

1. An overview – Understanding Heavy Vehicle Safety Systems
2. Disclaimers and Warnings
    a) General Safety Warning
    b) Driver Behaviours
    c) Integration of ADASs
    d) Chain of Responsibility
    e) Tampering with Safety Systems
3. Glossary of Terms
4. Antilock Braking Systems
    a) Overview of ABS
    b) How does ABS work?
    c) ABS is inexpensive to retrofit.
    d) Australian Design Rules (ADR)
    e) System modifications
    f) Chain of Responsibility and Issues
5. Stability Control
    a) Introduction
    b) Function
    c) Truck and trailer connectivity
    d) Australian Design Rules (ADR)
    e) Further information and Issues
    f) System Modifications
6. Advanced Emergency Braking
    a) General Information
    b) What is Advanced Emergency Braking?
    c) Manufacturer AEB Demonstration Videos
    d) AEB situations that require special attention (created videos sit here)

Project Transition and Implementation

The resource materials will still be promoted through networks and organic marketing. No further paid advertising will occur.

The content will be reviewed every 12 months to ensure its currency so that it can continued to be used as classroom resources and teacher development. TIC and NHVR will be utilised to check currency of the resources. There is potential for inclusion of further information regarding the latest safety systems as they become available, i.e., blind spot monitoring. Additionally, other projects focusing on heavy vehicle safety and their systems may be considered.

Lessons Learned and Best Practices

The involvement from the project team and management in regular project control meetings worked well and ensured that the project had successful outcomes. However, the workload and time pressures on Managers and leaders within Wodonga TAFE for heavy vehicle expertise and multi-media/website design proved difficult at times.

The external media company gave great advice to ensure the best final product was available to help HV drivers to understand the benefits and limitations of ADS. On the negative side, the company were not always resourced to get tasks filmed or edited on time. Wodonga TAFE persevered with the company to support local procurement and to continue our established working relationship.

The relationships established through the interaction with TIC provided donated vehicles for use in the filming of the scenarios rather than having to rely on the Wodonga TAFE teaching HV fleet which is limited.

Using the Wodonga TAFE and DECA Shepparton campuses for the majority of filming worked well and allowed greater visibility of the project by Transport teachers.

The final website resources are accessible and easy to navigate. The final design makes it easy for HV operators and drivers to easily gain the information as required.

The final videos produced are highly professional and publicly available on the Wodonga TAFE website and through YouTube allowing the greatest exposure possible.

Advertising and promotions have been successful, with over 1000 unique visitors to the main page of the Understanding Heavy Vehicle Safety Systems section of the Wodonga TAFE website and a further 6000 viewing the content within. Additionally, these resources are referenced by the teachers in our HV driving courses.

Future considerations

If another project was to be considered, a fixed term role specifically as the subject matter expert would be included in the budget, rather than relying on existing staff members to add additional projects to their already busy schedules and commitments.

Potentially, the use of a larger media company that focused on educational video may have assisted the project to a smoother completion. However, this expertise would have been reflected in the budget costings.

Additional time for analytics and reporting of the resource advertising campaigns, would have given greater results. The month allocated gave a good indication of the early uptake.

Post Project Recommendations

If revisiting the project, simplified wording may have been helpful in the content, but the main readers and viewers of these resources would no doubt have the HV technical knowledge.

As new technologies become available, it would be good to update the resources, so they continue to be a valuable resource for HV operators, drivers, Transport teachers and students (prospective HV drivers). An annual review will be held to ensure the content is still current and to include new technologies. Further funding may be sought to expand the breadth of the HV safety systems website section. This could possibly be achieved by again working with TIC who may have allocated funding for the education of their members or looking for suitable grants to fund these updated inclusions.

Appendix 1: References and Related Documents

Resource content:
Heavy Vehicle Safety Systems (wodongatafe.edu.au)

Advertising and promotional materials distributed to NHVR and TIC:
Understanding Heavy Vehicle Safety Systems

YouTube playlist of video content:
https://www.youtube.com/playlist?list=PLM9p1qx1I1-G9PZajUVmJft1KhJd3hXfD

Appendix 2: Financial Acquittal

As per previous submission at the time of the original final report.