

Chief Technical Officers' Meeting

Thursday, 1st March, 2018, @ 10.00am National Transport Commission Boardroom, Level 3, 600 Bourke St, Melbourne

Truck Industry Council Limited

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Item 1: Welcome, Competition and Consumer Act Statement, Introductions, call for Apologies:

Consumer statement: All attendees are reminded of their obligations under the Competition and Consumer Act 2010. There will be no discussion of pricing, stock levels, forward model or product plans, etc at TIC meetings.



Item 2: Minutes of CTO Meeting 9th November 2017 (Sydney)

- Acceptance
- Actions Arising from previous meeting Minutes



2a. HV Combination Brake Advisory:

Recap:

Official Industry Launch at the Brisbane Truck Show on Thursday 25th May 2017. Launch attended by TIC CEO, Tony McMullan and TIC Member Simon Humphries (Isuzu) TIC CTO distributed hard copies of the Advisory to TIC Members at the August 2017 CTO's meeting in Brisbane

TIC and TIC Members now need to decide how they could best use the Advisory to promote safer combination and multi-combination vehicles

Current update:

Subsequent to the November 2018 CTO meeting, Peter Austin, NHVR, advised in by email the following:

- The NHVR has recently been asked for advice about whether it is mandatory to connect the ABS and ESC systems fitted to a trailer
- > Under Section 11 of the Heavy Vehicle (Vehicle Standards) National Regulation, a vehicle is only taken to have equipment fitted if the equipment is in working order



Given that there are compatibility issues within the fleet currently, the NHVR has considered the requirements of the law and determined that where a trailer is fitted with either ABS or ESC and the towing vehicle is capable of connecting these systems, the trailer system must be connected.

To apply this determination:

- ➤ Where a prime mover is fitted with a trailer ABS plug as part of its trailer brake connections, and a trailer that is fitted with ABS is coupled to it, then then ABS plug must be connected. Failure to connect the ABS system would result in the trailer being defective and could result in the issue of a defect notice or infringement.
- ➤ Where a prime mover is not fitted with an ABS (or ESC) plug as part of its trailer brake connection, and a trailer fitted with ABS (or ESC) is coupled to it, as there is no ability to connect the system, it does not need to be connected/functional.

During further internal and legal consultation on this issue, the NHVR identified that the law is not as clear as it should be on this matter. To address this the NHVR will be progressing amendments as part of the 2018 regulation maintenance package to reflect the NHVR's policy position on this matter.



TIC will not be considering how best to use the Advisory to promote safer combination and multi-combination vehicles at today's CTO meeting, held over now to May 2018 CTO meeting



2b. NEVDIS In-Service Truck Registration Data:

Recap:

Raised at the May 2017 CTO meeting that ARTSA had offered VIN specific current inservice truck registration data (for a cost) to some TIC Members. TIC to pursue access to NEVDIS data for TIC Members.

- TIC has had number of meetings with BigData (the NEVDIS's 3rd party data provider)
 with a view to gaining similar access to the data set available as ARTSA
- TIC discussions/negotiations are nearing completion
- TIC current plan was to have access to data by the end of 2017

Current update:

BigData have informed TIC in early 2018 that they have been told by NEVDIS that they cannot access all the data fields that ARTSA can. TIC to meet with BigData to discuss (meeting mid-March 2018). TIC's options include raising the issue of data access with the Department and/or Minister in charge of AustRoads (who controls NEVDIS). TIC to provide an update to TIC CEO's at the March Executive Meeting



2c. ARTSA/Peter Hart "cause of truck fires":

Recap:

Peter Hart (ARTSA) gave a presentation on heavy vehicle truck fires at TLG on 24th May 2017. Peter detailed information from National Truck Insurance (NTI) about the high incidence of "non-impact" truck fires. Following the TLG meeting, both Peter Hart and Rob Perkins approached TIC CTO wishing to address TIC's Technical Forum. TIC Members approved in principal for Peter Hart to deliver his presentation. Peter was invited to, but was unable to attend the November 2017 CTO meeting

<u>Current update:</u>

TIC did not invite Peter Hart to present at today's CTO meeting due to the already full agenda. TIC will look to inviting Peter Hart to the May or August 2018 meetings



2d. OICA "anti-trust" document:

Recap:

OICA is developing an "anti-trust" document that will detail expected behaviour of member companies at its industry meetings

Current update:

The first draft of this document was presented to the OICA Technical Committee at the recent February 2018 meeting. Some changes were recommended and the final version will be presented to the OICA Executive Committee for approval later in 2018. Once approved by OICA, it is TIC's intention to use this document, or a slightly modified version, at TIC meetings to satisfy our obligations under the Competition and Consumer Act 2010 (effectively a new "Consumer Statement")



2e. Takata Air Bag Recall

Recap:

- ➤ Many Light and Heavy Vehicle IPA holders have been requested by DIRD and/or the ACCC to provide additional information regarding the Takata Air Bag recall, including:
 - The type of inflator used in a vehicle's air bag system (DIRD)
 - The likely timeline to implement the Air Bag Recall (ACCC)
- > These two issues are NOT related
- > DIRD is acting on information from NHTSA in the USA who have found there may be safety issues with non-Takata Air Bags. DIRD are investigating the potential number of vehicles that may be affected in Australia
- The ACCC are investigating if legal action should be instigated against vehicle Manufacturers and/or vehicle owners for "tardy" response to this safety recall. The ACCC do truly understand all the issues involved



TIC recommends that TIC Members fully cooperate with both DIRD and the ACCC's requests

Current update:

The "intensity" appears to have dissipated on both the requests for information from DIRD and the ACCC as well as the "expected" timeframe to have the recall actions completed. Both organisations are more aware of the "real" issues associated with this recall (parts supply, contacting owners of 10-15 year old vehicles, owners being willing to respond to the recall, etc). Are TIC members still experiencing any unrealistic requests from either DIRD or the ACCC?

Other Actions Arising:

Will be dealt with during the course of today's meeting



Item 3: SVSEG and TLG Update SVSEG

- ➤ Last SVSEG meeting was held on the 22nd November 2017 in Canberra, TIC was represented by Mark H and Chris L
- ➤ Issues relating to Heavy Vehicle were:
 - Updates to ADR45/01 now published the allowing of White or Yellow(Amber) external cabin lamps. Please note that the Version Number of the ADR was NOT changed (still ../01) because there was no increase in stringency
 - TIC lead an industry (including ARTSA, ATA, HVIA and CVIAA) presentation "Removing Barriers" that highlighted Australia's partial alignment with UN-ECE regulations. The presentation detailed that Australia was not aligning with international dimension (specifically vehicle width) and axle mass regulations. This put Australia out of step with countries that it was obliged to align with under the conditions of the 1958 Agreement. The presentation went on to highlight some of the technical issues this misalignment created when bring internationally developed trucks and truck equipment to Australia and detailed how this inconsistency was hindering/delaying the supply to market of many advanced safety features on trucks.



Finally, the group asked that governments, Federal and State, give due consideration to aligning with international vehicle dimension and axle mass regulations.

The presentation was surprisingly well received, even gaining the support of NSW for Transport! DIRD gave an undertaking to take the presentation and recommendations to AMVCB for consideration.

TIC was informed on the 27th Feb 2018 by DIRD that the presentation (Removing Barriers) has been included in draft Federal National Road Safety Action Plan 2018-2020. Hopefully this will lead to a promising new governmental direction and support. Signoff of the Action Plan is expected in March 2018 by the States.

■ ADR80/04 and Euro 6 for Light Vehicles update detailed that over 90 submissions from stakeholders were received from the 2 RIS's released thus far. DIRD conceded that there were issues with the CO2 regulations (Light Vehicles) that were proposed in the RIS and that some further work was needed. The Fuel Standards RIS would be released before Christmas 2017. There was no planned timeline for the introduction of ADR80/04 and Euro 6. HVIA, raised an issue with the quality of urea and the impact it has on existing and future emission standards. TIC agreed that the quality of urea is an issue, and that



there is no standard set. The Chair asked for further information so that the Department could provide it to the Department of Environment and Energy.

- Repeal of redundant ADR's:
 - ADR42 Exhaust position for heavy vehicles. TIC requested that this be reviewed in line with the review of AS2809 (Dangerous Goods Vehicles) to avoid potential multiple changes to the ADR. Victoria was opposed to LHS directional outlets at pedestrian height
 - ADR84 FUPS to be revised to remove the requirement to comply with Clause 6.4 (smooth surface clause)
 - DIRD's intent is to remove ADR 63 and 64, both are road train specific ADR's. The relevant requirements would be moved to another ADR's. Work is yet to commence
 - ATA (Bob Woodward) asked why NSW requires roadworthiness for new Heavy Vehicles. NSW to follow up with NSW-RMS
 - NSW asked industry groups if the Kobe Steel announcement (that they had been falsifying material specs) would affect any vehicles in Australia, FCAI responded by detailing that it was simply too early to tell at this point in time. Chair ask industry groups to follow up on this issue. Do TIC Members know if their Brands are affected in any way?



- ➤ Next SVSEG meeting is proposed for the 18th or 19th April 2018, in Canberra
- > TIC to update TIC Members at the May 2018 CTO meeting in Canberra



TLG

- ➤ Last TLG meeting was held on the 6th December 2017 in the NHVR's offices in Brisbane, TIC was represented by Mark H and Chris L
- ➤ Issues relating to Heavy Vehicle were:
 - Confirmation that the TIC led "Removing Barriers" presentation had gain majority (but not unanimous) support from AMVCB
 - NHVR raised some in-service regulation issues??
 - No other specific Heavy Vehicle issues were raised that were not covered off in the SVSEG update
- ➤ No date has been proposed for the next TLG meeting, it is unlikely to be held before the May CTO meeting in Canberra
- > TIC to give an update of the likely date at the May 2018 CTO meeting in Canberra



Item 4: NHVR's TWG Meeting

Recap:

- ➤ The NHVR's Inaugural Technical Working Group (TWG) Meeting was held on the 8th November 2016 in Brisbane chaired by Daniel Elkins
- ➤ Next NHVR TWG was tentatively planned for February 2017, however no TWG meetings were held in 2017
- ➤ The TWG sub-committee for Roller Brake Testing (RBT), has been active during 2017 (more in Item 8)
- ➤ Daniel Elkins (the TWG's organiser) left the NHVR in July and was replaced by Greg Fill, with the new title of Director Safety Standards

Current Update:

➤ TIC (Mark H and Chris L) met with Greg Fill and a number of NHVR representatives on 5th December 2017 to introduce TIC and gain an update on various NHVR projects



- > A web meeting of the TWG and NHVR was held on the 16th January 2018 to:
 - Explain the high-level details of the NHVR's plan for a Risk-based Roadworthiness
 Inspection Scheme (more in Item 22 today)
 - Give TWG members an update on the Roller Brake Testing project (more in Item 8 today)
 - Detailed that the NTC's recommendations for States and Territories to approve greater access for PBS vehicles had been approved by the Transport and Infrastructure Council of COAG. (TIC CTO comment, we will wait to see if this actually bears results)
 - General NHVR information update to the TWG
- > No date has been proposed for the next NHVR TWG meeting
- > TIC to give an update at the May 2018 CTO meeting in Canberra



Item 5: Motor Vehicles Standard Act/Road Vehicles Standard ActRecap:

- ➤ TIC CTO met with DIRD on the 3rd August 2017 for an update on the Motor Vehicle Standards Act (MVSA)
- ➤ On the 16th August 2017 Minister Paul Fletcher announced some high level details of changes to the MVSA
- ➤ Minister Fletcher wrote to TIC and a number of other interested parties affected by changes to the MVSA on the 24th October 2017. The letter detailed:
 - The Coalition Party Room had approved the five Bills to be presented to Parliament, and approved the Road Vehicle Standard Rules
 - This will happen before the end of sessions this year (7th December 2017 cut off) Given the current political situation will this happen?
 - The Minister has indicated that there may be a Senate enquiry
 - If introduced into Parliament this year, the Bills and the text of the Rules will be released publicly at the same time
 - Minister Fletcher has indicated that he will take public comment and feedback on these documents up until mid-February 2018



 Major changes will not be possible during this consultation process, however changes of wording to clarify ambiguity or incorrect intent will be considered

Current Update:

- ➤ An Exposure Draft of the RVSA Bills and Rules was released on 13th December 2017
- > This was circulated to TIC Members also on 13th Dec 2017
- > TIC received limited feedback/responses from TIC Members
- ➤ TIC developed a summary of the Exposure Draft documents and circulated that with a list of DIRD RVSA Workshop dates to Members on 24th January 2018
- ➤ Chris L attended the Melbourne (along with some TIC Members) and Canberra workshops
- ➤ DIRD released the Cost Recovery Implementation Statement (CRIS) on 2nd February 2018
- ➤ Mark H attended the Brisbane and Sydney workshops (along with some TIC Members)
- ➤ TIC developed and circulated our Draft Exposure Draft Submission that was circulated to Members on 13th February



➤ TIC's final Exposure Draft Submission, including preliminary comments on the CRIS was submitted to DIRD on 16th February 2018

DIRD RVSA PRESENTATION



TIC's Submission:

- ➤ The Register of Approved Vehicles (RAV):
 - TIC expressed disappointed that the RAV has not been developed to take advantage of existing systems used by the new vehicle automotive industry (NEVDIS upload) and that a new data upload with substantially the same data is required
 - Numerous issues with the RAV data fields were highlighted
 - TIC's truck "Build Date" definition, this was a modified version of the FCAI's Light Vehicle definition:

"The calendar month and the year in which the cabin and chassis, or body shell, and power train sub-assemblies are conjoined and the vehicle is driven or moved from the production line. Alternatively, for a cab/chassis vehicle that is manufactured in stages at more than one location and that remains under the control of the original equipment manufacturer, the calendar month and the year in which the body is fitted to the cab/chassis and the vehicle is driven or moved from the production line."



■ TIC's truck "Variant" definition, this was a modified version of the EU definition (Annex II of EU Directive 46/2007) of Variant:

"Variant means vehicles within a Model that do not differ in the following essential respects:

- Body/cabin style (e.g. single cab, crew cab)
- Power plant number and arrangement of cylinders
- Powered axles (number, position, interconnection)
- Steered axles (number and position)"
 - Definition of "Providing" road vehicles, TIC detailed that VSB6 must remain as a pathway to complete a truck, proposing:

A Chassis/cab truck could be "provided" to market by:

- Type Approval
- SSM
- VSB6*
- * Where the following VSB6 tasks only, could be undertaken:
 - √ Non-ADR-relevant body fitment
 - ✓ Non-ADR-relevant turntable/5th wheel fitment
 - ✓ Mudguard fitment
 - ✓ Body rear light and body side marker light fitment
 - ✓ Wheelbase alteration



- Special Purpose, Plant and Equipment (Non-Compliant) Vehicles (for on-road use): TIC pointed out by way of examples how this Concessional Scheme had been "rorted" in the past and requested that the Department consult with TIC and its Members to ensure that loopholes do not exist that allow the importation of truck based heavy vehicles that have inferior safety and/or environmental standards
- Registered Automotive Workshop (RAW) and Authorised Vehicle Verifier (AVV):
 TIC's detailed that these organisations must be Australian registered organisations,
 otherwise the Australian Government would have no control over their operations
- Concessional Pathway imported vehicles volume cap:
 TIC's detailed that volume caps must remain in place on all Concessional Schemes to ensure that the Australian market could not be flooded with unsuitable vehicles
- SEV's Criteria for Left Hand Drive (LHD) trucks:
 TIC detailed that the LHD Criteria should be capped at 8.0t GVM and not at 12.0t GVM
- Cost Recovery Implementation Statement (CRIS):
 TIC recommended that Type Approval holders should be able to choose either of the 2 proposed cost recovery models by IPA Approval Number



Item 6: HV Braking Strategy Phase 2 - ESC

Recap:

Much work by industry and DIRD over the past 3 years led to a number of draft versions of ADR35/06 and ADR38/05. TIC's input has been significant in the development of ADR35/06

DIRD expected the RIS to be released in September 2017, that did not happen. RIS now due for release before the end of December 2017

Current update:

RIS and latest Draft ADR's released to industry associations on 20th December 2017 (circulated to TIC Members on the 27th Dec 2017) with submissions due by the 2nd February 2018

TIC requested Members feedback by mid-January 2018 (not much received) CTO circulated TIC's Final Draft submission on the 1st Feb 2018 for Member approval Final submission lodged 5th Feb 2018 (DIRD gave an extension to TIC of 1 working day)





<u>Latest developments on the RIS and Final Draft ADR35/06 and 38/05:</u>

TIC (Mark H and Chris L) had a meeting with DIRD on Tuesday 27th Feb 2018 to discuss feedback to the Draft RIS and in particular TIC's submission. The following were the main discussion points:

- 1) ADR35/06 to include rigid test vehicle guidance in-line with TIC's submission
- 2) Implementation timing 1/Nov/2020 for NEW and 1/Jan/2022 ALL models
- 3) Incentives: Final draft RIS will contain nothing definitive, but a direction to the states and territories to support the RIS having a neutral impact. By considering how State and Territory Mass and Dimensional regulations, as well as Heavy Vehicle fees and levies could be used to incentivise the uptake of new trucks that complied with new ADR requirements.
- 4) Updates to draft ADR35/06 expected to be released next week (for TIC use only, at this point in time). They are NOT to be distributed or discussed outside of your organisations. Updates to ADR38/05 also expected next week



- 5) There is strong support (States/ Territories, ATA, NatRoads, HVIA) to adopt Option 6a (ESC on all trucks). OBP (Office of Best Practice) and Net Benefits do not support Opt 6a. DIRD is under pressure to broaden the scope of ADR35/06 to include ESC fitment to Rigid trucks. DIRD have proposed to TIC an "Option 6c+" that would see 2 and 3 axle NC Rigids up to wheelbases of 4.5m fitted with ESC. DIRD's rollover data suggests that this would capture the majority of current Rigid truck rollovers and is expected to have positive Net Benefits in the RIS. Proposed applicability ADR35/06 wording: "Category NC vehicles that are 'prime movers', or that have a wheelbase up to and including 4.5 metres; and all ME vehicles."
- 6) There would be NO ADR35/06 test requirements for these up to 4.5m w/b Rigid trucks, they would ONLY need to meet the ADR Functional Requirements, that is:
 - ➤ Have ESC fitted
 - > Warning lights, etc
 - > Have ECS/ABS connector (but only if supplied to tow a trailer)
- 7) OEM's can use their own "in-house" ESC tests/standards



- 8) TIC requires feedback from Members who have an issue with the extension of ESC fitment to 2 and 3 axle Rigids up to 4.5m w/b, by Friday 9th March 2018
- 9) The lack of an Australian test facility has been acknowledged and DIRD will support the development proposal of the TMR owned Mt Cotton facility (to be discussed below)
- 10) Simulation to be allowed, similar to cars, with a representative poor/worst case physical test required to validate simulation results for each axle configuration
- 11) Test vehicle selection circular (35/0x-2-1) to be updated. DIRD to offer a draft to TIC by the end of March 2018
- 12) DIRD to consider flexibility with regard to J turn radius and speed (to be discussed below)
- 13) DIRD to consider that the test vehicle needs to complete only 4 seconds around the J turn, or 120 deg., whichever is the lessor



Summary of potential ADR J- Turn Test facility - Chris L

Facilities currently being assessed	Owner	Issue				
Mt Cotton Training Centre, Brisbane, Queensland	Dept. of Transport and	- Access to working area at the required speed				
	Main Roads (TMR)					
The Bend,	Peregrine Corporation	- Green fields site				
Tailem Bend, South Australia		- Remoteness to OEMs				
Australian Automotive Research Centre (Anglesea	Linfox	- Current skid pan has a 3-tonne limit. Its				
Proving Ground), Anglesea, Victoria		construction is being reviewed to assess				
		potential for upgrading.				
Wodonga TAFE (Logic Centre),	Wodonga TAFE	- Green fields site. Its development would				
Barnawartha North, Victoria		impact on other facilities at the site. Skid pan				
		estimate of \$3.5m, size not defined.				
DECA,	Wodonga TAFE	- Access to working area at the required speed				
Shepparton, Victoria		- Skid pan needs to be 20 m wider				
Directorate of Prototype and Test Services (DPTS),	Australian Army	- Access to site and security				
Monegeetta, Victoria		- Working area is too small				

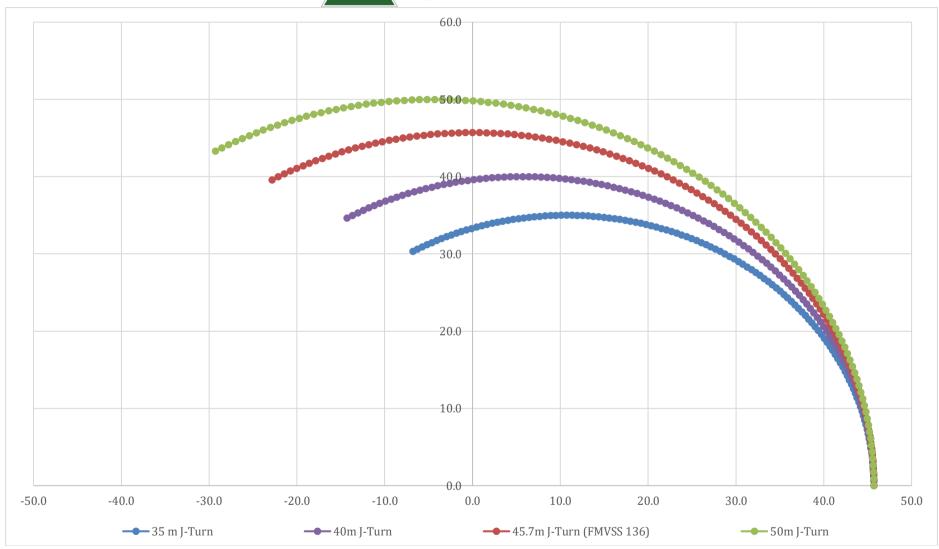
TIC is collating venue demand for both initially and ongoing testing to approach key sites to investigate upgrades as required.



DIRD have provided additional guidance regarding test radius and speeds, while maintaining the lateral acceleration of 0.4g from FMVSS136

0.4g		0.62g				outrigger width	+10% oops					
						width	length	VRmax (km/h)	1.25*VR max (km/h)	V3max (km/h)	V4max (km/h)	angle for 4 secs
J-turn Radius -	VRmax	1.25*VRmax	V3max	V4max	120 Degree Arc	8.2	5		distance travelled			
R - (m)	(km/h)	(km/h)	(km/h)	(km/h)	Length (m)	0.23		distance diavened				
35	42.0	52.5	41.1	39.4	73.3	81.9	62.0	46.7	58.3	45.7	43.8	95.5
36	42.6	53.3	41.7	39.9	75.4	84.0	63.0	47.3	59.2	46.3	44.4	94.2
37	43.2	54.0	42.3	40.5	77.5	86.1	64.0	48.0	60.0	47.0	45.0	92.9
38	43.8	54.7	42.9	41.0	79.6	88.2	65.0	48.6	60.8	47.6	45.6	91.7
39	44.3	55.4	43.4	41.6	81.7	90.3	66.0	49.3	61.6	48.2	46.2	90.5
40	44.9	56.1	44.0	42.1	83.8	92.4	67.0	49.9	62.4	48.9	46.8	89.3
41	45.5	56.8	44.5	42.6	85.9	94.5	68.0	50.5	63.1	49.5	47.4	88.2
42	46.0	57.5	45.1	43.1	88.0	96.6	69.0	51.1	63.9	50.1	47.9	87.2
43	46.6	58.2	45.6	43.7	90.1	98.7	70.0	51.7	64.7	50.7	48.5	86.2
44	47.1	58.9	46.1	44.2	92.2	100.8	71.0	52.3	65.4	51.2	49.1	85.2
45	47.6	59.5	46.6	44.7	94.2	102.9	72.0	52.9	66.2	51.8	49.6	84.2
45.7	48.0	60.0	47.0	45.0	95.7	104.4	72.7	53.3	66.7	52.2	50.0	83.6
46	48.2	60.2	47.2	45.1	96.3	105.0	73.0	53.5	66.9	52.4	50.2	83.3
47	48.7	60.8	47.7	45.6	98.4	107.1	74.0	54.1	67.6	53.0	50.7	82.4
48	49.2	61.5	48.2	46.1	100.5	109.2	75.0	54.7	68.3	53.5	51.2	81.6
49	49.7	62.1	48.7	46.6	102.6	111.3	76.0	55.2	69.0	54.1	51.8	80.7
50	50.2	62.8	49.2	47.1	104.7	113.4	77.0	55.8	69.7	54.6	52.3	79.9
Notes						Notes						
VRmax correspo	onds to 0.40	g lateral accelerat	tion			0.38g for 3sec						
1.25*VRmax corresponds to 0.62g lateral acceleration					0.35g for 4sec							
		g lateral accelerat										
V4max correspo	onds to 0.35	g lateral accelerat	tion									







- 14) PACCAR have raised an issue of a possible oversight regarding Clause 4.2 'Visible Indicator' in ADR35/05 and Administrators Circular 35/05-1-1. The Administrators circular 35/05-1-1 provides the option for a UN R13 approved vehicle to drop the pressure to the trailer when parking the combination. The potential oversite is that a truck approved under UN R13 and is setup to exhaust the trailer air when parking, is not required to include a light fullfilling ADR35/05 clause 4.2.4. If there is a failure in the trailer pneumatic system, there is no requirement for a warning to the driver. This may require a correction to Draft ADR35/06. TIC to investigate with DIRD. TIC Member comments? Next Steps:
- 15) Finalisation of ADR35/06 & 38/05 with Ministerial signoff expected April 2018
- 16) Further work and research to support Option 6a (ESC on all trucks) and AEBS. Targeting end of 2018 for draft RIS and ADR35/07 (AEBS)

<u>Please note:</u> Thomas Belcher (the ADR35 and 38 brake expert) is moving across to the ADR Maintenance Section into Mark Hester's old role. Andrew Dankers (who was acting in this position) will move back to his old role



Item 7: ADR80/04 (Euro VI and Equivalents) and DIRD's Fuel Standards RIS Recap:

- ➤ Unsuitable Australian Petrol fuel standards are likely to lead to the delay of Light Vehicle Euro 6 emission standards. The current Australian Diesel fuel standard is not an issue for Heavy Vehicle ADR80/04
- ➤ Local fuel refineries claim that they will be unable to supply Euro VI suitable Petrol until 2025. This does not meet the governments emission objectives
- ➤ In August 2017, DIRD confirmed to TIC CTO that the Draft Euro VI & ADR80/04 RIS (released 21st December 2016) would allow the staggered introduction of ADR80/04 (Heavy Vehicles) followed sometime later by Euro 6 (Light Vehicles), but NOT the staggered introduction of Euro VI/6 and ADR80/04 for Diesel Light and Heavy Vehicles followed sometime later by Euro 6 for Petrol Light Vehicles. A new RIS would need to be developed for this scenario. And the major health benefits for Light Vehicles (RIS justification) come from Diesel Light Vehicles (there could actually be no viable Cost-to-Benefit case for Petrol Light Vehicle Euro 6)



- ➤ If the introduction of Euro VI/6 and ADR80/04 is split, it will be for Light Vehicles (both Diesel and Petrol) vs Heavy Vehicles (Diesel)
- ➤ DIRD also confirmed to TIC CTO in August 2017 that the decision to split the introduction of Euro VI/6 (Light Vehicles) and ADR80/04 (Heavy Vehicles) is sitting with the Minister (Paul Fletcher)
- A specific Fuel Quality RIS (mainly to cover petrol grades) is under development and was to be released Q3 2017 for public comment, this did not happen

Current update:

- The Fuel Quality RIS was released on the 25th January 2018, with responses due by 8th March 2018
- > TIC will lodge a submission
- ➤ It is unlikely that until the issues surrounding fuel standards are resolved, the final Euro 6 & ADR80/04 RIS will be released



➤ TIC was told by DIRD (unofficially) in late February 2018 that is was very unlikely that ADR80/04 and Euro 6 for Light Vehicles would finalised in 2018. This would lead to introduction dates beyond 2022/23



Item 8: Roller Brake Testing (RBT)

Current status:

- > Test moved to dynamic mass measurement at point of peak force from static
- ➤ HNVR released new procedure 2nd Feb 2018
 - [Media LINK] https://www.nhvr.gov.au/news/2018/02/02/new-roller-brake-testing-procedure-given-green-light
 - [VSG21 LINK] https://www.nhvr.gov.au/files/201801-0762-vsg21-national-rbt-procedure.pdf
 - [Procedure LINK] https://d1hmf1vsaodulo.cloudfront.net/files/201801-0760-national-roller-brake-testing-procedure.pdf
- The NHVR considers that this will be the short/mid-term solution and that Marulan testing/data will be used as the base for the development of a long-term solution. Artificial axle loading (eg UK/NZ) may form part of the future requirements. No time frame has been provided
- > Issue closed



Item 9: NHVR's 50mm Tow Coupling Vehicle Standards Guide (VSG) - update and discussion

Recap:

- ➤ The NHVR has developed the 50mm Tow Coupling Vehicle Standards Guide 16 (VSG), without industry consultation to our knowledge.
- > TIC CTO only found out about the VSG when Mark received an e-mail on the 5th September 2017, the day the VSG was publicly released
- > TIC CTO circulated the VSG to TIC Members on 6th September 2017
- A number of TIC Members contact the TIC CTO questioning the validity of the NHVR's "D-value" de-rating approach, suggesting that it was not correct
- > TIC Members were not, however, able to prove their concerns



Possible Solutions:

- ➤ Revise ADR62/... DIRD will not over-ride a valid Australian Standard. Any ADR revision would reduce stringency, hence a RIS would not be required (that is good), however DIRD would need significant evidence that showed a case for moving away from AS4177 conformance and to what new standard?
- ➤ Revise AS4177. This is the correct action. Evidence would be required that showed the stresses in a 50mm tow coupling were not significantly affected by an increase of GVM above 5,000kg. Even if such evidence existed (and it does not) the AS4177 review would take 2-3 years
- ➤ Get the NHVR to revise VSG-16. Again, evidence would be required that disproved the NHVR's current approach and to what new standard?



Future actions (immediate):

- ➤ TIC CTO strongly advises that TIC Members who sell (or fit) a 50mm towing system for trucks with a GVM above 5,000kg provide suitable advice to their customers, dealers, etc that references VSG-16
- ➤ Drivers/operators should adhere to the towing capacities detailed in VSG-16 for ALL vehicles fitted with a 50mm towing system
- ➤ If greater towing capacity is required than that allowed in VSG-16, vehicle owners should consider upgrading their towing systems with a tow coupling system with a suitable rating. Such modifications MUST be approved by an AVE and suitably "Mod Plated" using VSB6 guidelines



Future actions (TIC/TIC Members):

- ➤ TIC CTO has discussed with the NHVR, the possibility of tests being conducted by a suitable test group, that would validate, or disprove, the NHVR's "D-value" de-rating approach used in VSG-16
- > This would entail:
 - A test schedule developed jointly by TIC, TIC Members and the NHVR
 - Testing by an independent test authority, potentially witnessed by TIC, TIC
 Members and the NHVR
 - Subject to test results, the NHVR's re-evaluation of VSG-16
 - Subject to test results, the NHVR and industry calling on Standards Australia for an immediate review of AS4177
 - Review of AS4177
- TIC to investigate and source testing quotes for light, medium and heavy vehicles options and liaise with HVIA (Paul Caus)



Current Update:

- > TIC is working with Bisitechnics to develop and undertake testing.
- ➤ Timeline (draft) May 2018
- ➤ Initial Test Scope refer to attachment
- Test Units

 1 (or more units) unladen at about 5 tonne GVM and laden at 12+ tonne GVM both towing 3.5 tonne trailer
- > Location Ballarat
- Costing Conduct this testing and prepare a report, indicative budget is \$30k \$35k + GST



BTK18-02-23

Proposed Test Program for TIC "50mm Ball Coupling" Investigation

22ND February 2018

1. Introduction

- 1.1. It has come to attention of the NHVR and state authorities that 50mm ball couplings are being utilised on towing vehicles with a GVM greater than 5.0 tonne (currently restricted by AS 4177.2-2004).
- 1.2. The NHVR has released a Vehicle Standards Guide, VSG-16 advising operators that 50mm ball couplings can be used for towing vehicles greater than 5.0 tonne GVM, so long as the ATM of the trailer is restricted in accordance with the AS 4177.2-2004 D-Value equation (Refer AS 4177.2-2004, Appendix B).

2. Aim

2.1. The Truck Industry Council (TIC) would like to demonstrate that the increased mass (above 5.0 tonne GVM) will not increase the in-service stresses in the 50mm ball coupling and associated components, thus confirming the 20Kn D-Value is suitable for 3.5 tonne ATM regardless of GVM.

3. Method

- 3.1. The following tests are to be carried out on a combination of a rigid truck and pig trailer, weights as follows:
 - 3.1.1. First Test Sequence Truck loaded to 5.0 tonne GVM, Trailer loaded to 3.5 tonne ATM.
 - 3.1.2. Second Test Sequence Truck loaded to >5.0 tonne GVM, Trailer loaded to 3.5 tonne ATM.
 - 3.1.3. Third Test Sequence Truck loaded to >Second Test Sequence, Trailer loaded to 3.5 tonne ATM.
- 3.2. The same truck and trailer must be used in all test sequences, with the weight of the truck being adjusted by the use of test weights.
- 3.3. We propose a test program consisting of 5 different tests:
 - 3.3.1. Test 1 Jerk Test, this test will determine if the increased GVM will have any effect on the longitudinal and vertical ball coupling loads when the combination is subject to impact forces; i.e. running over a pothole or other object on the road.
 - 3.3.2. Test 2 Swerve Test, this test will determine if the increased GVM will have any effect on the transverse ball coupling loads when the combination performs an evasive/aggressive driving manaeuvre.
 - 3.3.3. Test 3 Stop-Start Test, this test will determine if the increased GVM will have any effect on the longitudinal and vertical ball coupling loads when the combination in subject to stop-start driving; i.e. driving in congested traffic.
 - 3.3.4. Test 4 Corrugations Test, this test will determine if the increased GVM will have any effect on any of the ball coupling loads when the combination is subject to driving down a "rough" road.
 - 3.3.5. Test 5 Drop Test, this test will determine if the increased GVM will have any effect on the vertical ball coupling loads when the combination is driven off a ledge; i.e. a gutter or similar.
- 3.4. Each test is to be conducted two (2) times in each sequence to confirm repeatability.





Item 12: National Transport Commission Update: The Load Restraint Guide

Guest Speaker: Melissa O'Brien,

Manager – Productivity, Safety and Environment

Item 13: National Transport Commission Update: The NTC's Heavy Vehicle

Driver Fatigue Management

Guest Speaker: Melissa O'Brien Project

Item 10: National Transport Commission Update: Autonomous Driving Regulations

Guest Speaker: Marcus Burke

Project Director – Compliance & Technology



Item 11: Lunch



Item 14: VSB6 Review, Update and Discussion:

VSB6-V3 was implemented on the 1st September 2017 in all States and Territories (including WA and NT) and has moved from the NTC across to the NHVR for future management and maintenance

a) Tipper Bodies - Chris L

Recap:

Issues with compliance with AS1418.8 "emergency stops" by many Australian manufacturers. Originally brought to the attention of the NHVR by Phil Webb at PACCAR on 2nd September 2017, one month before the implementation date of VSB6-V3. On 5th October 2017 the NHVR announced a 6-month transition period (until 1st March 2018) where tippers do not have to comply with the "emergency stop" requirements of AS1418.8.



Current update:

TIC working group to be formed with all interested TIC members (suggestions below)

Proposed - Full TIC Working Group

Paul Lee - Isuzu, also the TIC rep on the NHVR Working Group
Phil Webb - PACCAR, also the TIC rep on the NHVR Working Group
Chris Loose — TIC, also the TIC rep on the NHVR Working Group
Lawrence Lee - Scania
Romesh Rodrigo - Fuso
Neil Carey - UD
Barry Noble — Hino



b) Tow Trucks – Chris L

Current update:

Draft VSB section was sent to TIC CTO's on 26 February 2018

NHVR have requested feedback within 2 weeks

The specific licenced tow truck requirements have been removed from VSB as they are covered by the State and Territory governments requirements. This removes the need for non-licensed tow/tilt trucks to be burdened with the same requirements and costs as emergency licenced tow/tilt trucks

TIC Member responses by 5th March 2018 (to Chris L)

c) Tilt Trays – Chris L

Current update:

Tilt Tray review to be done in conjunction with tow trucks/tippers



d) Wheels and Tyre – Mark H

Current update:

Draft VSB section was sent to TIC CTO's on 26 February 2018

NHVR have requested feedback within 2 weeks

Primarily looking at fitting Wide Single wheels and tyres in place of dual wheels and tyres on 4x4 trucks. Will also look at Super Single wheel and tyre fitment on trucks and trailers (to replace dual wheel and tyre combinations) and wider wheels and tyres on front axles to increase steer axle capacity

Any interested TIC Members to assist Mark H in this Review Group?

TIC Member responses by 5th March 2018 (to Mark H)

e) ROPS and FOPS - Mark H

Current update:

Draft VSB section was developed by CVIAA in 2017 and attracted some industry criticism at the time, to be reviewed in 2018



Item 15: NHVR's Bull Bar Vehicle Standards Guide (VSG20), Update and Discussion

Recap:

- ➤ Multiple issues of non-compliance to ADR requirements (particularly low beam headlight illumination angles). The NHVR announced a tentative 9-month transition period until 1st June 2018 for ALL manufactures to have compliant bull bar designs. The date is flexible and is based on support/feedback from the bull bar manufacturers.
- In-service bars will be grandfather.
- There is more information in the bulletin on the NHVR website

Current update:

- > TIC replied to NHVR's request for feedback/comment:
 - DRL's are not a mandated requirement
 - Questioned measurement techniques of "apparent surface"



- VSG is aimed at operators rather than OEM's/suppliers/manufacturers
- Does not list ADR photometric testing as a method of complying lighting with a bulbar fitted
- ➤ NHVR has had DIRD confirm the interpretation as documented in the original draft VSG is correct regarding the "apparent surface" and measurement of the geometric requirements
- Interpretation is based on **VSB9 Installation of lights on road vehicles** originally published July 1996. Potentially out of date now due to new light technologies
- > OEM versus DIRD understanding of the apparent surface issue to be further discussed
- ➤ VSG20 is expected to be issued end February 2018 (TIC has asked that the release be held until all issues raised by industry are effectively resolved) with an effectiveness date of 1st March 2019, or 12 months after issue
- > Feedback from NHVR to TIC and industry has been poor thus far



Item 16: TIC Codes of Practice revisions, Update and Discussion

Please be reminded that TIC CoP are legally binding documents for TIC Members

a) Field of View (FoV)

Status:

- Current situation is deemed by the authorities to be unsatisfactory
- TIC's current FoV Code is not proving not to be effective
- Vulnerable Road Users groups want a clearer enforceable standard
- VicRoads is updating their FoV guide for light vehicles. It will also highlight the issue of internal cab visual obstructions

Next Steps:

TIC CTOs to approve previously circulated draft FoV Code



b) Electromagnetic Compatibility (EMC)

Status:

The TIC's EMCs CoP is being updated to reflect multiple recent updates to the European Regulations on which it is based

Work has been undertaken in collaboration with FCAI

Note: TIC members complying with the Code are exempt from having their compliance documentation randomly audited by ACME and all elements labelled, however, ACMA can required TIC members to provide compliance documents in the event a product is suspected of being non-compliant and penalties can be applied

Next Steps:

TIC CTOs to approve previously circulated draft ENC Code Present CoP to ACMA along with FCAI and their code, for final approval.



c) Vehicle Recalls

Status:

- The TIC Vehicle Recalls CoP is under consideration to be updated to reflect the establishment of the NHVR and changes due to the MVSA review/RVSA implementation
- Work would be undertaken in collaboration with FCAI

Next Steps:

Please provide your feedback

Once the RVSA is fully implemented it is anticipated that TIC's Vehicle Recalls CoP will be withdrawn, or reissued as a Guideline (or similar), as vehicle recall requirements will be within the RVSA



Item 17: VIC Roads and NSW RMS Vulnerable Road User (VRU) Groups heavy vehicle safety features and systems (beyond statutory regulations), Update and Discussion

Status:

- Melbourne VRU group is proposing a follow-up meeting to finalise the project
- Cross Yarra Project (CYP) included only 4 items directly from London's CLOCS scheme for truck standards:
 - > Warning signage eg to VRU
 - ➤ Side under-run protection eg UN ECE R73 as far as practically
 - > Blind spot minimisation eg Ft, side and Rr minimised as far as practically
 - > Vehicle manoeuvring warnings eg audible warning on left turning units



Next Steps – Proposal:

- >TIC to develop a practicable stepped approached to lift the minimum vehicle specification standards of vehicles in government contracts
- TIC to look at the development of Technical Guidelines for safety features not covered by ADR's, for example:
 - Side under-run
 - Forward and rearward blind spot mitigation systems



Item 18: QLD-TMR and Industry review of S10 Livestock Loading Scheme Recap:

- The last Technical Reference Group meeting of the S10 Technical Reference Group and TMR was held on 27th July 2017
- ➤ TMR agreed to a maximum steer axle limit of 7.1t (not 7.2t as recommended by the TRG) when fitted with 375mm or greater section width tyres. A maximum 6.5t steer axle limit will apply when the steer axle is fitted with less than 375mm section width tyres
- ➤ A maximum 6x4 GVM of 28.1t was agreed to by TMR
- ➤ No TARE weight or axle mass increases for livestock trailers (over the current S10 scheme) will be allowed
- ➤ The QLD Livestock Association were unhappy with the truck steer axle mass limits (7.1t rather than 7.2t) and tri-axle trailer mass limits (26t on B-Doubles) offered by TMR as a workable compromise. The QLD Livestock Association met with senior TMR officials in September 2017



➤ QLD TMR sent an e-mail to all members of the S10 Technical Reference Group on 25th October 2017 detailing that the S10 review was on hold pending further discussions between TMR and the QLD Livestock Association

Current update:

- ➤ The TRG members received an e-mail in January 2018 detailing that discussions were still continuing between QLD-TMR, the QLD Livestock Association and the QLD Transport Minister in an effort to find a resolution to the outstanding axle mass issues
- The mail suggested that a meeting of the TRG would be held in February 2018 to finalise the changes to the S10 review. That meeting did not happen.......
- > TIC CTO to give an update at the May 2018 CTO's meeting



Item 19: Government and Industry review of AS2809, Dangerous Goods Vehicles, Update and Discussion

Recap:

- > The forum decided that:
 - There were valid reasons presented that a complete review of all parts of AS2809 should be undertaken
 - ME-057 committee should be reconstituted to conduct the review
 - A list of proposed new ME-057 members was developed (including TIC)
 - Standards Australia would invite existing and new members to join the reconstituted ME-057 committee
- ➤ Chris Loose will become TIC's representative on the ME-057 committee and represent TIC Members at future AS2809 meetings
- As the review progresses TIC TO will circulate any relevant information to TIC Members for comment



Current update:

- ➤ 2809.1/.2 2-day workshop held in Melbourne 20/21 February
- ➤ Support for
 - 2 classes of trucks pumping and non-pumping.

Align closer to the Euro ADR Part 9 (≡ to UN ECE R105) requirements.

Reduced heat shielding requirements for non-pumping units

Exhaust outlets not to conflict with ADR but can't discharge into a

zone 1 atmosphere which is 1.5 metre from any connection/coupling point in the tank in any direction when bottom loading or 3m for top loading.

➤ Next meeting proposed for end March or April 2018



Item 20: Australian Department of Environment and Energy's HFC Phase Down Action Plan workshops, and implementation plan - Update

Recap:

- ➤ The Australian government has signed the Montreal Protocol, agreeing to cut hydrofluorocarbon (HFC) emissions by 85% of current consumption by 2036
- This will be achieved by a planned phase down of bulk imports (Australia does not produce HFC's) of HFC (A/C) gasses
- Pre-charged equipment is NOT subject to the regulated phase down
- The Australian government expects that pre-charged equipment will systematically transition to new "ozone friendly" A/C gasses due to planned regulations banning HFC gases in key overseas markets including, Europe, Japan, South Korea and USA
- ➤ The Government's Greenhouse Gas Management Bill finally was approved by Parliament on the 16th October 2017
- ➤ Australia's HFC phase down will commence on 1st January 2018



➤ The Department of Environment called a meeting for the 4th December 2017 to update stakeholders on progress and the planned January 2018 start to the phase down program. TIC CTO will attend

Current update:

At the 4th December Department of Environment meeting we were told:

- > Australia is currently 18 months ahead of its international HFC Phase Down obligations
- > Confirmed that pre-charged equipment is NOT subject to the regulated phase down
- > Detailed that HFC levy charges of less than \$330 per 6 months will be waived
- ➤ Will "review" HFC Phase Down progress for pre-charged equipment and singled out the automotive industry (A/C gasses) as being of "possible concern"
- ➤ If the required phase down is not achieved in a particular sector/industry group mandated HFC reductions would be implemented. Such measures would be introduced only after industry consultation
- > The first "review" will occur at the end of 2018



Item 21: National Heavy Vehicle Regulator's (NHVR) National Harmonisation of HV Regulations Project - Update

Recap:

- The NHVR has a project underway that is reviewing all Heavy Vehicle regulations under their mandate/control (except WA and NT)
- > The NHVR is working towards nationally consistent HV regulations. This will include:
 - GML
 - CML and HML
 - Road Train Notices (including B-Triple and A-B Triples)
- Current specific projects include:
 - Heavy Vehicle axle masses
 - Road Train Notice governing B-Triples and A-B Triples
- TIC explained to the NHVR that it was imperative that operating masses were not reduced (productivity loss) in any jurisdiction due to harmonisation, even if that meant some state specific exemptions



➤ Other current NHVR harmonisation projects do not specifically affect truck design or truck ratings

Current update:

There has been no news from the NHVR regarding the possible revisions to Road Train Notices governing B-Triples and A-B Triples, nor information regarding progress on any other harmonisation project



Item 22: National Heavy Vehicle Regulator's (NHVR) Risk-based Roadworthiness Inspection Framework Project - Update

Recap:

The NHVR plans to use the data gathered to develop metrics for a Risk-based Roadworthiness Inspection Scheme based on:

- State
- Operator
- Vehicle age
- Vehicle application
- Vehicle Brand and Model

Current update:

➤ The NHVR had a web meeting (16th January 2018) with the Technical Working Group (TWG) to explain the high-level details of their plans. In this meeting the NHVR detailed that they were considering publishing truck Brand and Model specific roadworthiness information. The NHVR also stated that they were not



considering publishing such information based on State or Operator due to legal "implications"

- ➤ TIC rejected the concept of publishing truck Brand and Model information. This was backed by a strongly worded submission to the NHVR from TIC (31st January 2018), that amongst other points, questioned the statistical validity of the data gathered by the NHVR, primarily due to the limited sample size of vehicles inspected
- ➤ The NHVR offered to meet with TIC (Mark H and Chris L) to show TIC the data that they had and the system/s they were developing for targeted roadworthiness inspections
- ➤ Despite repeated attempts to organise this meeting (by TIC) the NHVR has not as yet honoured their commitment to meet and discuss this issue and their data
- ➤ TIC does support the concept of targeted roadworthiness inspections based on risk, however TIC does not support the public disclosure of truck Brand or Model data



Item 23: Co-operative ITS and Vehicle Regulations, including DIRD, ACMA, AustRoads IRG and NTC Australian Updates

a. AustRoads C-ITS Industry Advisory Group:

- ➤ Met on the 23rd November 2017
- ➤ Chris Jones is the new AustRoads C-ITS Chair, replacing Stuart Ballingall who has returned to VICRoads (in a senior C-ITS role)
- ➤ DIRD have no immediate plans to add any Connected Vehicle requirements to the ADR, however they are reviewing the development of various UN-ECE regulations that will regulate Autonomous Driving features
- ➤ USA have "parked" there regulation that was to require all new motor vehicles built from the 1st January 2018 to have a C-ITS device that would at least transmit the Basic Safety Message (BSM). The future direct ion of C-ITS regulation in the USA is currently "unknown"
- ➤ The C-ITS World Congress in Montreal in October-November 2017 was very divided with respect to technologies (this was a first). DSRC vs Cellular (5G) was evident for the first time



- ➤ The current problem with the 5G network is that it will not be globally regulated until 2022 and then with different frequency allocations in different countries
- ➤ AustRoads have embarked on an Australian and NZ "road sign recognition project", that has already identified that Australia has serious inconsistences with its road and speed signs

b. National Transport Commission's (NTC): Changing Driving Laws to Support Automated Vehicles – Discussion Paper:

- > TIC lodged a submission on the 26th November 2017
- ➤ TIC did not support the NTC's recommendations for Australia to develop its own Driving Laws to Support Automated Vehicles, but supported the adoption of the Vienna Convention (as Australia is aligning with European C-ITS regulations, it is necessary to align with European Autonomous Driving regulations)



- > TIC did not support the development of Australian laws at this point in time that governed Driving Levels that did not exist at present anywhere in the world
- TIC did not support the development of Australian laws that would allow the Automatic Driving System Entity (ADSE) to be legally responsible for a vehicle's driving actions, rather, until the technology matures, the human driver must retain responsibility for the vehicles actions
- The NTC gave an update of progress on this issue at todays meeting (please refer to Item 10)

c. <u>ACMA's Radio communications Class License for Co-operative Intelligent Transport Systems:</u>

- ➤ ACMA finally registered the ITS Class Licence for Connected Vehicles (of all types) on the 10th January 2018
- ➤ The allocated frequency range is 5.855 MHz to 5.925 MHz
- ➤ Allows systems that comply with the ETSI Standard EN 302 571 to operate



➤ Australia in now aligned with the European ITS regulations for Connected Vehicles

d. DIRD's review of C-ITS and Autonomous Vehicle Cyber Security workshop:

- ➤ The workshop was held on 8th December 2017
- ➤ Thank you to all TIC Members who provide feedback to the DIRD Autonomous Vehicle Cyber Security Survey
- > The workshop was run by the Federal Governments Cyber Security Agency
- Quite varied topics were covered
- ➤ General feeling from the Agency representatives was that "hacking" an individual vehicle was "not good", but it was not a significant security threat
- ➤ Generally the threat of "mass hacking" of vehicles was highly unlikely at present because each OEM used their own electrical architecture and systems and that these could even vary between Models from the same OEM
- ➤ Not much feedback has been received yet
- ➤ Next steps are unknown......



Item 24: Discussion of TIC's Technical Issues List



Item 25: General Business

- > RVCS issues (raised to TIC by HVIA as a trailer issue). Are Members having issue?
- ➤ NB1/NB2 re-rating issues in NSW (raised to TIC by Fuso). Are Members having issue?



Item 26: 2018 CTO Meeting Calendar

CTO Annual Dinner Canberra: Wednesday 2nd May 2018, Canberra (Venue TBC)

Next meeting: Thursday 3rd May 2018

Location: Canberra

Meeting venue: FCAI's Offices - TBC

9th August 2018 CTO Meeting Brisbane (NHVR Offices - TBC)

8th November 2018 CTO Meeting Melbourne (Isuzu's NEW Offices – TBC)



Item 27: Meeting Close