



34C Margate Road, Blockhouse Bay, Auckland 0600

Phone: 09 820 9243

Engineering, Transport and Weld Inspection Consulting Mobile: 0210 2200775

FEEDBACK TO NZTA TECHNICAL BULLETIN 20

TITLED:

MODIFICATIONS TO TRUCK CABS

PROJECT: TB-CCUT-005

Rev.	Date	Description	Name	Company
0	28 Dec 2020	Design Assessment Report	Yousef I. A. (BE, ME, CPEng, HVS, IWI-S)	TranzEC Limited

TABLE OF CONTENTS

1. SCOPE	3
2. INTRODUCTION	3
2.1 ABSTRACT.....	
2.2 COMPLIANCE STANDARD.....	
2.3 RELEVANT REFERENCES	
3. TECHNICAL BULLETIN IS ILLEGAL.....	6
3.1 USE OF "SAFE TOLERANCE" AS A COMPLIANCE METHOD	
3.2 TECHNICAL BULLETIN MANDATES "CONTINUED COMPLIANCE" ILLEGALLY	
3.3 TECHNICAL BULLETIN MANDATES UNECE R29 ILLEGALLY	
3.4 TECHNICAL BULLETIN MANDATES "CRASH WORTHINESS ANALYSIS" ILLEGALLY	
4. TECHNICAL BULLETIN IMPLEMENTS RULE INCORRECTLY	12
5. TECHNICAL BULLETIN TRANSFERS SAFETY RISK TO WAKA KOTAHİ	13
6. TECHNICAL BULLETIN WITH NO RISK OR FEASIBILITY REASONS	14
6.1 RISK TO SAFETY: "CAB-CUT MOTORHOME" VERSUS "BUS (PSV)"	
6.2 RISK TO SAFETY: "CAB-CUT MOTORHOME" VERSUS Other Motorhomes	
6.3 TECHNICAL BULLETIN: IS IT RISK-BASED, POLICY-BASED OR NEITHER?	
7. INCORRECT TECHNICAL BASIS OF TESTS USED IN TECHNICAL BULLETIN	19
8. TECHNICAL BULLETIN DOES NOT REPRESENT REAL-LIFE VEHICLES	21
9. TECHNICAL BULLETIN: IS "CRASH WORTHINESS" A REQUIREMENT?	22
10. TECHNICAL BULLETIN SUGGESTS CRITERIA-LESS METHOD	23
10.1 TB STRAIGHT INTO TESTING WITHOUT DEFINING CRITERIA.....	
10.2 "SAFE TOLERANCE" PLUS CRITERIA-LESS EQUALS BIGGER DISASTER	
10.3 TB IGNORES UNECE R29.01 ENTIRELY	
11. TECHNICAL BULLETIN: PREDETERMINES OUTPUT BEFORE ANALYSIS	25
12. TECHNICAL BULLETIN: CONFUSED AND IMPOSSIBLE	26
13. TECHNICAL BULLETIN: NOT SUITABLE FOR LOCAL INDUSTRY	28
14. CONCLUSIONS	28
15. DISCLAIMER	30

1. SCOPE

The scope of this report is:

- Formulate and present a response to the technical bulletin issued by Waka Kotahi based on consultation provided by third party.
- This report comes in response to the findings presented in:
 - **NZTA Technical Bulletin 20: Modifications to truck cabs.**
(<https://vehicleinspection.nzta.govt.nz/virms/hvsc/tb/modifications-to-trucks-cabs>)
 - **Related reports by third party.**

These reports were prepared for the NZTA by third party according to the technical bulletin.

2. INTRODUCTION

2.1 Abstract

This report is a feedback report to Waka Kotahi. It examines both legal and technical aspects related to **Technical Bulletin 20: Modifications to Truck Cabs**. The report prime focus and conclusion arrived at proving that the technical bulletin, among other conclusions, is **technically incorrect and legally non-compliant**. The technical bulletin was published as a technical and legal bulletin for the industry in relation to **Cab-Cut Type** motorhomes. These are motorhomes with cab cut often integrated to motorhome body as shown in Figure 2.

This report is presented with the following notes:

- This report is presented while the author understands his ethical obligations and his dedication to safety and process in this industry and regulations.
- The report is compiled for the aim of improving *Safety* and *Compliance* in this industry.
- The report concludes categorically that the content included in *Technical Bulletin 20* is **technically incorrect and legally non-compliant**. The technical bulletin introduces massive risks to industry compliance while its negative effects extends to infinite aspects of compliance within local industry.
- The author was and continues to be active in investigating and studying the subject of the report. The author was engaged previously in the same subject of the report and exchanged with Waka Kotahi to improve this process in the past.
- The report does not stop at stating an issue, but rather comes after a solution was proposed to Waka Kotahi earlier. No response was provided to the proposed solution that is, according to

report findings, more compliant and is based on correct legislative basis. This proposed report is available on inquiry.

- This report uses terms including the term *Illegal* to indicate non-compliance with the legal requirements. The terms *Incorrect*, *Irrational* and the likes indicate non-compliance with technical or rational principles. The author apologizes in advance for the use of these terms and declares that these terms are *purely descriptive* of the *Discussed Matter* only.
- The report aims at improving the compliance and safety in the industry and does not indicate or imply that less or no assessment is to be carried out to confirm compliance.
- All efforts were put to be objective and impartial in reporting and presenting the rhetoric in the report. The author is open for criticism and feedback of any included proposition. The author is open to debate and exchange positively to correct what should be deemed incorrect or illegal in the propositions made by the author in this report.
- This report presents an opposite opinion to *Waka Kotahi's* technical bulletin being the subject of the report. The author and Waka Kotahi are urged to accept opposite opinions as a major contributor to progress and innovation in the industry and regulation. This acceptance is a prime feature of democratic and progressive environments that makes New Zealand excel and prosper. The author of the documents appeals for taking these recommendations seriously while accepting opposing opinions. Opposing opinions always provide a *missing* or *unmentioned* alternative that would always enrich and moderate wise decision making.
- Given that the presented opinion is contradictory to Waka Kotahi's consultants, it is expected that Waka Kotahi staff stay cooperative and fair to the author of the report. It is expected also that natural justice right are and will be core exchange principle. Previous experience of the author suggests the opposite of that. The author is thus raising the concern that these opinions could practically be oppressed and thus warns of the potential for the presence of these practices. The author of the document was and continues to be completely ignored and mistreated by Waka Kotahi staff and its involved competing consultants. This was for instance clear in the collection of files in both timing and content in the current non-compliance review and in several other instances previously.
- The author pleads that any technical response to this report presented by Waka Kotahi or its consultants be in a completed report format including author, company, title, credentials and a declaration of competence and compliance to ethical conduct. Previous experience included several reports in draft formats with unknown author being presented as a counter narrative. Only full and responsible reports should be presented in any matter of exchange to assure that the process is fair, transparent, and responsible.
- Several aspects in the report were communicated to Waka Kotahi in numerous occasions. This included reports, technical meetings, emailed exchange, and reports. No response was received to these aspects.

- The report is only attending briefly to aspects due to the expansiveness of the subject. The author is willing to provide further evidence for any specific matter of relation upon request.

2.2 Compliance Standards

The following standards are generally of relation to the aspects examined in this report:

For legal requirements:

- Land Transport Rule: Frontal Impact 2001
- Land Transport Rule: Heavy Vehicles 2004
- Land Transport Rule: Seatbelts and Seatbelt Anchorages 2002
- Land Transport Rule: Vehicle Standards Compliance 2002.
- Land Transport Rule: Passenger Service Vehicles 1999.
- Land Transport Rule: Interior Impact 2001.

For structural analysis:

- AS 3990: Mechanical equipment - Steelwork.
- Materials Science and Engineering An Introduction: William D. Callister, Jr.
- The Science and Engineering of Materials Sixth Edition Donald R. Askeland.
- Science and Design of Engineering Materials 2nd Edition Schaffer.

For welding:

- AS/NZS 1554 family of standards.

2.3 Relevant references

The following references and technical specifications are used in this project:

- Status of United Nations Regulation ECE 29: Vehicles with regards to protection of occupants of the cab of a commercial vehicle (E/ECE/324/REV.1/ADD.28/REV.1/AMEND.2) with date of entry into force of the 11 June 2007.
- Status of United Nations Regulation ECE 29: Vehicles with regards to protection of occupants of the cab of a commercial vehicle (E/ECE/324/REV.1/ADD.28/REV.2) with date of entry into force of the 30th of January 2011 (see section 10. and 10.5 for transitional provisions, vehicle was first registered on the 22 Jan 2011).
- UNECE: Concerning The Common Definitions Of Vehicle Categories, Masses And Dimensions (S.R. 1) (TRANS/WP.29/1045).

- UNECE: Consolidated Resolution on the Construction of Vehicles (R.E.3) (ECE / TRANS / WP.29 / 78 / Rev.3).
- Other engineering sources and references.

2.4 TranzEC's related documents

The following lists documents that TranzEC also produced previously in relation to the matter of this document:

- VIRM 2020-02 Consultation Report (Provided to WK in Feb 2020).
- TranzEC - Cab Cut-Out Assessment Method Proposal (Distributed Nov. 2019).
- Other reports.

3. TECHNICAL BULLETIN IS ILLEGAL

The following subsections examines the base legality (or the lack of it) in the technical bulletin in concern. This examination is based on local rules and requirements.

3.1 Use of “*Safe Tolerance*” as *Compliance Method*

The bulletin states that it is based on land transport rules but grossly misinterpret the meaning of the rules. This is of special concern as this misinterpretation have significant effects on compliance, rule enforcement and industry. The technical bulletin states:

*..... The Land Transport Rule: Vehicle Standards Compliance 2002 requires that a modification to a vehicle and **within safe tolerance of its state when manufactured or last certified as a modified vehicle.***

This is a clear misquotation of rule statement. Besides the subsequent misinterpretation of the “*Safe Tolerance*” statement that was identified as incorrect. The statement is a **durability** and **state-sustenance** statement and cannot be used as a **Compliance statement** as the technical bulletin suggests. To explain further, an explanation of the rule statement and its correct intent is presented in the following examination.

The *Vehicle Standards Compliance Rule 2002* states the following:

7.4 Determining compliance of a vehicle

7.4(1) *A vehicle may be certified for operation in service only if a vehicle inspector or inspecting organisation has identified the vehicle and has determined, on reasonable grounds, that the vehicle:*

(a) is safe to be operated; and

(b) has been designed and constructed using components and materials that are fit for their purpose, and is within safe tolerance of its state when manufactured or modified; and

(c) complies with the applicable requirements; and

(d) has undergone specialist inspection and certification, if required by 7.5, and that the specific aspects of the vehicle have been certified.

The technical bulletin contradicts the rule statements made in 7.4. The proper rule intent and implications are presented here:

Rule statement (a) governs safety of the vehicle.

This is a safety statement related to measurement of safety against certain applicable test, performance, design standard or rational test. This statement is a generic statement of safety. Distinction is made in the rule as safety is one of the most valuable targets of standards worldwide. Safety is measured against general safety requirements as per applicable local rules requirements. This generic and very important statement cannot be used to make a **Controlled tests criteria** but oversees the process of these criteria according to the rule.

Rule statement (b) is purely a durability and fitness statement of the vehicle.

This statement declares that vehicles must be constructed from materials/components fit for purpose. Also, the vehicle should be maintained in their state when manufactured or modified. Since maintaining the vehicle unchanged in time is a rational impossibility due to wear and tear, the rule uses instead the term “*Safe Tolerance*” to describe the close approximation of the state rather than quoting exact same state.

Any vehicle can be subjected to either of these changes:

- **First:** *Wear, tear and time* passing but vehicle is unmodified.
- **Second:** Significant *modification* to structure or components.

The first set of changes can change the safe operation of the vehicle due to the listed three reasons. But the vehicle will stay unmodified in its structure. This allows a trained vehicle inspector to compare its state compared to its previous state as both states are equivalent in structure. The rule test for comparing these states is stated as “*Within Safe Tolerance*”. This test requires equivalence in structure and cannot handle modifications introduced to the aspect examined.

The second change is unequivocally different as the modification of an aspect prevents statement of “*Safe Tolerance*” on its own to be used to confirm compliance. Instead. A new **Compliance Test** shall be carried out to confirm compliance. This “*Safe Tolerance*” statement is incorrectly used in the technical bulletin as a statement of **Compliance** of an aspect or vehicle to a certain standard.

Rule statement (c) is the statement used for compliance.

This statement is of core importance as it controls the proper **Compliance Test** against set **Rule Criteria**. In order to test an aspect for compliance, the system shall have a **Controlled method** of comparing **Aspects** against **Criteria**. This is a prime process that is of special importance to **Modifications** as stated in the **Second Change Type** listed above. This statement completely ignored in the technical bulletin despite its prime importance.

The rational of the rule is; modified vehicles are firstly tested to statement (a) as a general test. Then, the durability items are discussed in item (b) were a vehicle aspect is expected to be within “**Safe Tolerance**”. A modified vehicle or aspect cannot under any code be “**within safe tolerance**” of the **Unmodified vehicle** or **Aspect**. A modified vehicle might be related or share a platform with the original unmodified vehicle, but it is a **distinctly different vehicle with new set of Aspects and often New Set of Requirements**.

The technical bulletin statement of requiring a *modified vehicle* to be within *safe tolerance* of the *unmodified vehicle* is neither rational nor legal. Further, why would the authors of this robust and well-moderated rule make redundant statements in their core requirements by stating compliance twice and under two distinctly different articles? In conclusion, compliance for modifications can only be tested under statement (c) and this will be further proved later.

The use of “**Safe Tolerance**” can only be justified when comparing **Identical Aspect** in two different times or states. The vehicle or vehicle aspect can be after wear, tear and time described as “**Within Safe Tolerance**” of its **Previous State** if the same vehicle aspect is unchanged. For instance, the vehicle chassis is only slightly corroded/rusted, but it is still deemed as within tolerance of its state when manufactured or modified.

Further evidence of the correctness of the proposal comes from the rule that uses the “**Safe Tolerance**” test more often than other rules, the *Vehicle Repair Rule 1998*. The rule states:

2.1 General safety requirements

- 2.1(1) A repair to a vehicle, its structure, systems, components or equipment, must restore the damaged or worn vehicle, structure, system, component or equipment so that they are within safe tolerance of the state of the vehicle, structure, system, component or equipment when manufactured.
- 2.1(2) If the vehicle has been certified as a modified vehicle, the repair must restore the vehicle, structure, system, component or equipment so that the vehicle is within safe tolerance of its state when certified as a modified vehicle.

As per 2.1(1), it is noted that the statement “**Safe Tolerance**” compares unmodified aspect in two times; a **Previous State** and a **Later State**. The aspects between these two states shall be **unmodified since manufacture**. On the other hand, section 2.1(2) is dedicated to deal with certified-modified aspects. Again, the “**Safe Tolerance**” acts in precisely the same manner. That is comparing two states of the aspect **while no modification is carried out between those two states**.

The reason that section 2.1 includes two different statements is clearly to make sure that these two states of *Previous State* and a *Later State* are **Equivalent in Aspect Condition/Structure**. It is beyond clear that comparing a modified vehicle to its state before modification is irrational and illegal as stated in more than one rule.

Further, the Heavy Vehicles Rule 2004 responsibilities stated in section 8 also details the difference in action based on a ***Repair*** compared to a ***Modification***. The difference is represented in the action taken.

For instance, using the “Safe Tolerance” to compare a *Passenger Service Vehicle* to its state when it was a *Truck* (previously) is utterly irrational. This is because they are not the same and fall under different requirements too. The technical bulletin yet suggests using this incorrect comparison of “Safe Tolerance” to conclude ***Compliance***. Which is further addition of mass illegality as the compliance statement can never be formulated based on any criteria. Based on that, ***the proposed use of the Safe Tolerance is both illegal and irrational.***

Figure 1: Comparison of [“Safe Tolerance” or “Comparative Assessment”] and “Compliance Assessment”.



Process: Wear, Tear and time

Use of “Safe Tolerance” is ok due to ***no modification involved***. No certification is usually required unless structural matter is suspected. Usually a task for Vehicle Inspectors.



Process: Wear, Tear and time

Use of “Safe Tolerance” is ok due to ***no modification involved***. No certification is usually required unless structural matter is suspected. Usually a task for Vehicle Inspectors.



Process: Modification.

Use of “Safe Tolerance” or “Comparative Assessment” is ***illegal, incorrect and impossible***. The modification requires “Compliance Assessment” of the modified vehicle to the ***new requirements*** based on its class. This requires Compliance Criteria based on local requirement. This is usually a certifier task as often requires engineering assessment.



3.2 Technical Bulletin Mandates “*Continued Compliance*” Illegally

The technical bulletin coins a new term, namely, the “*Continued Compliance*”. The term in this regard refers to the proposition that if an aspect is compiled to **Certain requirement**, it shall be retained in compliance with the **Same requirement**. This is based as per the author of the technical bulletin on the “*Idea of Continued Compliance*”. This is almost an exact erroneous use of the “*Safe Tolerance*” but in compliance statements.

In practical terms, the statement stipulates that if a vehicle system is complied with an overseas standard. Even if this standard is not a local requirement, it becomes a must for that aspect to continue to comply with the same overseas requirement. This statement produces this erroneous compliance statement:

An aspect that is proven to be compliant with any overseas requirement must continue to comply with the same requirement locally. This is regardless of local requirements for the same aspect.

This statement is clearly illegal and irrational. The statement, instead of making local requirements being a consistent set of rules aiming at the governance of safety and compliance, opens the local market to infinite number of known and unknown overseas requirements that are not even local requirements.

Further, the “*Continued Compliance*” statement is impossible to apply. Imported goods and vehicles might be compliant to infinite number of rules and requirements that are utterly unknown or irrelevant to local market or requirements. Such statement have devastating implications on industry and regulation if followed.

The implementation of such statement is completely irrational, impossible, and illegal. To find such recommendations in a technical bulletin by the Waka Kotahi is disturbing. For instance, importing a bus from china while adopting the “*idea of continued compliance*” makes Chinese rules and standards local requirement. Importing a motorhome from the states will mean that the FMVSS requirements are now local requirements. These statements are purely consistent with the erroneous “*Continued Compliance*” statement included in the technical bulletin.

In response, it is critical to address that in New Zealand, we have a set of consistent rules, standards and codes. These rules derive from our people, heritage, institutions, regulations, environment and industry. It is not reasonable to state that the rules and regulations applying overseas applies in New Zealand nor the opposite. Local legislation shall be followed strictly without transforming **Overseas Requirements** by such statement to become **Local Requirements**.

Further, the technical bulletin suggests the following:

*The [principle] that vehicles remain within safe tolerance of their state of manufacture is known as **continued compliance**.*

This statement is also incorrect interpretation of the rule for reasons including:

- The term suggests that there is a continuous line of compliance between local legislation and other legislations including international rules, that is incorrect. What applied overseas does not apply automatically here. In fact, we do not accept most overseas rules as evidence of local compliance. Of concern, there is nothing called “*Continued Compliance*” regarding UNECE R29 entirely.
- The term suggests that “*Continued Compliance*” is a sole task of **Certifiers** while it is not. It is a primarily a task for **Vehicle Inspectors** to assure the “*Safe Tolerance*” of a vehicle is satisfied between two identical statuses of the same vehicle.
- The statement suggests that “*Continued compliance*” is an assessment tool while it is entirely not. “*Continued Compliance*” equates to “*Comparative Analysis*” and both are not possible to be considered as *compliance criteria*.

Vehicle compliance is not based on ideas, but rather on legislation. The achievement of safety and consistency is implemented through a consistent set of processed and moderated ideas processed into information and complied lastly after a long process into legislation, CoP, and standards. The idea stated is not legislation and thus cannot be adopted or used as argument.

3.3 Technical Bulletin Mandates UNECE R29 Illegally

In continuation of the previous section, the technical bulletin applies the “*Continued Compliance*” or “*Idea of Continued Compliance*” to the vehicle aspect being the cab of the truck. The bulletin makes it mandatory to assess the vehicle cab modification to:

- *Energy Absorption Methods*
- *Use of UNECE R29.03*

The technical bulletin does not state how these methods are local requirements except by basing that on the erroneous “*Idea of Continued Compliance*”. The “*Energy Absorption Methods*” are part of the UNECE R29 practical tests. The technical bulletin is further incorrect in adopting UNECE standard that is not applicable to motorhomes **Special Purpose Vehicles** under the UNECE regulations itself. In other words, the “*Continued Compliance*” proposed by the technical bulletin mandates locally what is not a requirement in the UNECE regulation in the European Economic Area (EEA).

In practical terms, the technical bulletin mandates a compliance that is not even required by the overseas market for the vehicles in consideration. For instance, the subject motorhomes are not required to comply with UNECE R29 in the **European Economic Area (EEA)** but the technical bulletin suggests that the “*Continued Compliance*” means to apply UNECE R29 locally. So, the “*Continued Compliance*” is not even followed in the technical bulletin according to its own erroneous scheme!

3.4 Technical Bulletin Mandates “Crash Worthiness Analysis” Illegally

A further illegal application of the erroneous “*continued compliance*” comes in the technical bulletin presentation of what is referred to in the technical bulletin as “*crash worthiness analysis*”. The crash worthiness analysis is a broader form of assessment usually done in physical tests to legislated or industry criteria including loading, conditions, criteria, reporting and certification aspects. “*Crash Worthiness*” has no relation to the “*carried tests*” on bare cabs in any shape or form. To reduce “*Crash Worthiness*” to the “*proposed method*” and the “*bare-cab damage*” test is irrational. “*Crash Worthiness*” is a *controlled method* carried out to “*set criteria*” for **Complete vehicle**, not some arbitrary tests with **No-method** and **No-criteria** on **Bare cabs** that does not represent the real-life vehicle.

The proposition of implementing such method is also illegal to mandate. **Such method of guess-analysis is not a local requirement nor that it has any local control scheme**. Further, the technical bulletin does not adopt or present any “*own scheme*” for such analysis. With that, the proposed “Crash Worthiness Analysis” is *uncontrolled, undefined, and non-requirement*.

4. TECHNICAL BULLETIN IMPLEMENTS RULE INCORRECTLY

The technical bulletin states:

Safe tolerance is a defined term and means the tolerance within which the safe performance of the vehicle, its structure, systems, components or equipment is not compromised, having regard to any manufacturer’s operating limits.

This statement states that the “*Safe Tolerance*” is a defined term which is correct. Yet, the technical bulletin continues to misinterpret the definition of this statement in an inaccurate and misleading manner:

- The term “*Safe Tolerance*” does not equate to “*Safe Performance*” on its own. The term “*safe tolerance*” is measured in terms of “*Variance from original State*”. While the term “*Safe Performance*” as presented is measured in terms of “*Compliance to Safety Criteria*”.
- The Safe Performance is measured using **Compliance Statement** in the *Vehicle Standards Compliance Rule*, section 7.4 (c). This involves the comparison of the performance, structure, or other aspects against set of criteria.
- The use of the “*Safe Tolerance*” on its own is relative and thus does not test compliance of an aspect to any rule or legislation. A vehicle system could be within “*Safe Tolerance*” but “*Not Compliant*”. Assessment of systems to “*Safe Tolerance*” as suggested by the technical bulletin would simply conclude that “*Vehicle in Safe Tolerance*” equates to “*Vehicle is Compliant*”. This is of great importance as “*Safe Tolerance*” is relative and does not include in any shape measurement to legal modification criteria. While “*Compliance*” is a measurement to “*Rule Criteria*” for *modified* and *unmodified* aspects.

- The suggestion of the technical bulletin to certify modification of a vehicle to “*Safe Tolerance*” is further illegal. This is because the technical bulletin requests modification-certification to a vehicle to be done to a statement that assumes “*Structural Equivalence*” between the *unmodified* and *modified* states. Another irrationality is added as the “*Safe Tolerance*” statement cannot imply measurement of an *Aspect* to **Rule criteria**.
- Based on that, any **Modification** certification carried out to “*Safe Tolerance*” statement is blatantly illegal. Any certificate shall state that an *Aspect* is tested against **Rule criteria**. The “*safe tolerance*” or “*comparative analysis*” cannot make such compliance statement.
- To explain further, assuming that a vehicle is certified to the “*safe tolerance*” statement. The resultant statement of compliance will read as follows:

This is to certify that the vehicle system X is certified as being similar in performance to vehicle system X before modifications were carried out.

This is compared to the proper statement that should be:

This is to certify that the vehicle system x was assessed for compliance with the requirement(s) set in Rule xx, section xx.xx. The assessed aspect on the modified vehicle was found compliant with stated requirement(s).

Based on the above, **it is not legal to produce modification certificates using the “*Safe Tolerance*” or “*Comparative Analysis*” method suggested by the technical bulletin or any report presented to Waka Kotahi to that effect.** The first statement could yield that a system that is not compliant will be certified after it is modified as being **Compliant** because the technical statement equates between “*Safe Tolerance*” and **Compliance**.

5. TECHNICAL BULLETIN TRANSFERS SAFETY RISK TO WAKA KOTAHI

The technical bulletin transfer risk and liability to Waka Kotahi for the following reasons:

- The assessment method and engineering approach are sole responsibilities of the certification engineer. The proposal of such method might introduce liabilities to Waka Kotahi due to the incorrect and extrajudicial nature of the technical bulletin. The responsibilities of the certifiers are listed in the Heavy Vehicle Rule 2004. The responsibilities of the agency do not overlap with the duties of the certifiers.
- Given that the technical bulletin as stated above is in breach of local legislation, these liabilities of producing illegal certificates using the comparative analysis might be transferred to the agency.
- The narrow and eliminative nature of the technical bulletin introduces open-ended risks and liabilities to the agency. The technical bulletin is presented as the only acceptable method of

engineering analysis of such aspect. This results in the contrary or varying engineering methodologies being eliminated from the industry despite being correct or safer.

- The narrowing of engineering methods to one view is a safety risk to the industry on its own. This eliminates the industry's ability to vary, innovate, create and have initiatives. This is especially concerning when the technical bulletin is entirely incorrect both legally and technically.
- The use of wrong and dangerous principles in the technical bulletin especially terms as "*Continued Compliance*", "*Idea of Continued Compliance*", "*Comparative Analysis*", "*Safe Tolerance Analysis*" presents a special and real risk to safety and compliance due to introduction of misleading literature and reference. The extension of these ideas into the industry introduces infinite incorrect interpretations that might lead to safety issues. This might also introduce risk to several satellite industries as the technical bulletin is a bulletin produced by a crown agency.

Based on these points, it is crucial that this form of risk introduction to the Waka Kotahi as a regulator is avoided.

6. TECHNICAL BULLETIN WITH NO RISK OR FEASIBILITY REASONS

Generally, technical bulletins are authored and published in response to few policy actions, these generally include:

- Facilitate rule implementation by presentation of derived policies for explanation and added clarity of rule purpose and intents. **This is triggered by policy requirements.**
- Facilitate rule implementation in cases of higher risks to safety and compliance. **This is generally triggered by elevated risks.**

Previous sections examined whether this technical bulletin is legal or not. Based on that, the first purpose of the publishing of a technical bulletin, being policy, is already examined. The technical bulletin was found illegal, incorrect and does not explain the rule. The technical bulletin instead sabotages the rule and spreads several incorrect ideas of the rule content and intent to Waka Kotahi, industry and public.

The second possibility is examined now. This is testing whether the technical bulletin is directed at facilitation of rule statements implementation in response to increased risk in vehicle aspects related to the certification tasks as per the rules.

To start with this task, the source of the technical bulletin is examined for its integrity, formality, and correctness. The bulletin is based on third party report with the following features:

- The consultation was presented in a draft report.

- The consultation was presented in a report with no author, company, administrative details or identifiers.
- The report content is based on illegal grounds as explained earlier.
- The report content is technically incorrect.

Figure 2: Illustration of related vehicle types.



Typical bus or Passenger Service Vehicle (PSV)



Typical Cab-Cut Horse truck or Motorhome.



Typical Composite (Fiberglass) Full-bodied motorhome.

With the source of the technical bulletin examined, it is rational to conclude that the basis for the technical bulletin is questionable. Here, the feasibility and necessity of this technical bulletin is examined. These are examined to answer the question: Is this technical bulletin required or a priority due to increased risk? the technical bulletin necessity and feasibility is examined in the following sections.

6.1 Risk to Safety: “Cab-Cut Motorhome” Versus “Bus (PSV)”

The technical bulletin is directed to very low volume motorhomes. It is generally expected that spending on tests, research and technical contracts shall be directed at aspects of high risk to public safety, efficiency and compliance. If the main aspect of concern for the technical bulletin is **Occupant Safety**, then, this aspect is a common concern across wide variety of heavy vehicles in New Zealand fleet. This would include:

- Motorhomes with cab cutouts (subject of TB) (High Protection, Truck Cab)
- Heavy Passenger Service Vehicles (PSV).
- Motorhomes with steel cab and integrated composite bodies.
- Motorhomes with composite cab and composite bodies.
- Heavy and light vehicles with convertible roofs, no roofs and no pillars. (Low Protection)

This list is compiled approximately in descending order in terms of extent of provided occupant protection and relative safety. For instance, it is expected that motorhomes with cab cuts have highest safety while vehicles with convertible or no pillars to provide the least occupant protection. Motorhomes with light composite bodies are expected to have lower occupant protection than

public transport vehicles (PSV). PSVs have no rear wall or crossmembers behind the driver and they have also much smaller pillars compared to motorhomes with cab cuts and thus PSV provide much lower protection.

Similar list is compiled for the same categories but rather ordered in ascending order in terms of the number of passengers. The list would look like the following:

- Motorhomes with cab cutouts (subject of TB) (2-3 Pass.).
- Motorhomes with steel cab and integrated composite bodies (2-6 Pass.).
- Motorhomes with composite cab and composite bodies (2-6 Pass.).
- Heavy and light vehicles with convertible roofs, no roofs and no pillars (4-5 Pass.).
- Heavy Passenger Service Vehicles (9-50 Pass.).

Similar list is compiled for the same categories but rather ordered in ascending order in terms of duty cycle or simply average hours on the road yearly. The list would look like the following:

- Motorhomes with cab cutouts (subject of TB) (Lowest, Horse Trucks).
- Motorhomes with steel cab and integrated composite bodies (Very Low).
- Motorhomes with composite cab and composite bodies (Very Low).
- Heavy and light vehicles with convertible roofs, no roofs and no pillars (High).
- Heavy Passenger Service Vehicles (Highest).

Similar list is compiled for the same categories but rather ordered in ascending order in terms of fleet size (On-road vehicles). The list would look like the following:

- Motorhomes with cab cutouts (subject of TB) (Lowest, Horse Trucks).
- Motorhomes with steel cab and integrated composite bodies (Low).
- Motorhomes with composite cab and composite bodies (Low).
- Heavy and light vehicles with convertible roofs, no roofs and no pillars (Low).
- Heavy Passenger Service Vehicles (Highest).

Other lists could be compiled, and a standard risk assessment analysis could be carried out and presented in this report to investigate the risk to public safety profile for *cab-cut truck motorhomes* being the subject of this technical bulletin. It is rather easily concluded that any critical risk analysis would categorically conclude that least risks are encountered in the case of *cab-cut motorhome-trucks* being the subject of this technical bulletin.

Further to the above, more comparison is made between the risk involved in PSVs versus risks related to the subject of this technical bulletin. It is expected according to the proposition of this

section that the effort, resources, and expense to Waka Kotahi shall be placed on higher risk aspects. Based on that, the technical bulletin shall be directed to the PSVs and not the subject of this technical bulletin. The technical bulletin should be directed to the PSV rollover strength of buses and vans carrying large number of passengers where risk is outstandingly higher due to:

- PSVs have significantly higher passenger loads (ratio: 6500 to 200 kg).
- PSVs carry significantly higher number of passengers (ratio: 50 to 3).
- PSVs have significantly lower protection as no back wall behind driver exists.
- PSVs have relatively much less strength compared to the subject of technical bulletin.
- PSVs have incomparably higher fleet count compared to subject of technical bulletin.
- PSV have incomparably higher duty cycle compared to the subject of the technical bulletin. (around 12 hours daily to few times yearly).
- The subject of the technical bulletin according to statistical evidence related to cause of harm have zero or almost zero compared to the much higher risk in PSVs including recent fatality.

Based on the above, the PSV aspects and their compliance produce incomparably higher risk to public safety. This conclusion is based on several metrics and not according to simple reductive statement or intent. Yet, the technical bulletin concentrates on the far lower risks involved with the subject of the technical bulletin while ignoring the much higher risks of all other listed categories especially public transport vehicles.

6.2 RISK TO SAFETY: “*CAB-CUT MOTORHOME*” VERSUS Other Motorhomes

In this section, further examination is presented to investigate the risk of *Cab-Cut Motorhomes* compared to *Other Motorhomes*. If Waka Kotahi according to the proposition of this section is only interested in motorhome related risks despite the evidence that PSVs occupant protection is incomparably more important. Then the following examination is of relevance:

- No evidence is presented by the technical bulletin or anywhere in literature suggests that *Cab-Cut Motorhomes* have higher risk compared to other motorhomes.
- The evidence suggest that the vehicles subject of the technical bulletin are considerably safer than other types of motorhomes. These vehicles have cabs designed in compliance with much higher load impact criteria including higher impact loads to cab rear wall.
- The *Cab-Cut Motorhomes* are generally fabricated to UNECE R29 while Other Motorhomes have no compliance to standards to same criterion. This has resulted in *Cab-Cut Motorhomes* being incomparably safer and stronger.
- Further, the *Cab-Cut Motorhomes* provide much higher protection compared to converted bus motorhomes and composite body motorhomes.

- The evidence also suggests that *Cab-Cut Motorhomes* are categorically safer than the passenger service vehicles certified in compliance with the Passenger Service Rule. The evidently much stronger cabs and their pillars are protecting much lower number of occupants.
- *Cab-Cut Motorhomes* are not remotely comparable to composite-bodied, often fiberglass bodied motorhomes. Large number of motorhomes have fiberglass-composite pillars including A, B and C pillars.

Based on the above, the *Cab-Cut Motorhomes* are selected to be the subject of the technical bulletin **despite having the safest aspects among all other motorhomes.**

6.3 TECHNICAL BULLETIN: IS IT “*RISK-BASED*”, “*POLICY-BASED*” OR NEITHER?

The presented examinations show clearly that the task of including the *Cab-Cut Motorhomes* in the technical bulletin is not compliant with the second proposition, being involving higher risk. The in-depth examination showed that *Cab-Cut Motorhomes* were selected to be subjected to this technical bulletin despite being:

- *Lowest* in fleet size.
- *Strongest* in cab structure.
- *Lowest* in number of passengers.
- *Lowest* in duty cycle.
- *Lowest* in other risk aspects.

Based on these examinations, the technical bulletin is categorically proven to be commenced and authored for reasons beyond the two items presented in the beginning of this section (being *Policy* or *Risk*). The reason of the publication of the technical bulletin is beyond the context of the examination presented. In conclusion:

- The technical bulletin is not a response to risks or policy requirements.
- The technical bulletin is not of reasonable, important, or critical importance to the regulatory or certification responsibilities of Waka Kotahi.
- The resources dedicated to the production and publishing of this technical bulletin are not compensated by any value to the industry.
- This is added to the fact that it is illegal and incorrect technically.

7. INCORRECT TECHNICAL BASIS OF TESTS USED IN TECHNICAL BULLETIN

The technical bulletin is based on a set of destructive tests carried out by a third party. The technical bulletin indicated that the test was contracted by the Waka Kotahi. This section examines the technical correctness and consistency of these tests. By this examination, the critical relationship between the tests and the technical bulletin is investigated for its relationship to understanding the resulting recommendations in the technical bulletin.

The expected *Consistent* and *Scientifically objective* test in the engineering filed of relevance to practical testing shall have *Strict scientific scheme* to be followed for its results to be denoted as *objective, correct, and pragmatically useful*. In this regard, it is expected that a set of practical tests shall possess following criteria to be correct and compliant:

- **Loading Criteria**

This represents the existence of a controlling criteria for loading including load magnitude, direction, position, rate of application, impact/dynamic properties, boundary conditions and other loading aspects.

- **Testing Standard**

This represents the existence of a set method of testing of a structure according to an industry, controlled or standard method.

- **Test Purpose**

The test shall have a purpose that is set in-line with the targets that it is designed to serve. **Test are usually carried out when the outcome is not trivial, clear or easily predictable.**

- **Structural Similitude**

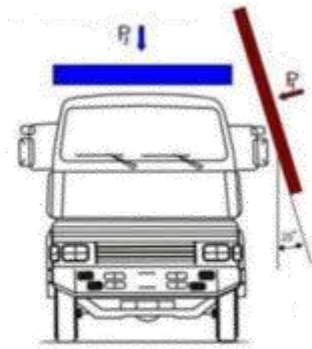
Tests shall have *high similitude to real-life structure* to serve any useful task or present any usable results. Tests are not usually designed and funded to test abstract, useless or trivial aspects of things.

The test included in the technical bulletin will be examined firstly to these universal expectations of scientific methods.

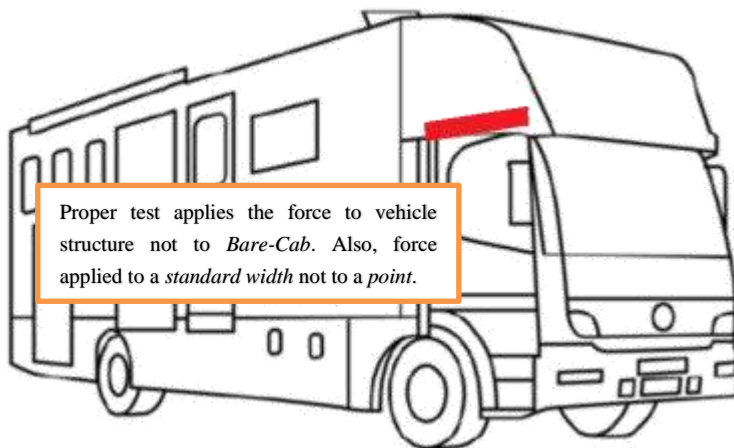
Firstly, the tests results are trivially predictable by any industry junior. It is trivial to conclude that removing internal panels will affect the strength of the cab. To run a test to such great financial cost to prove this trivially predictable result defies the purpose statement. Based on the above, the **test does not have a real technical purpose due to its trivial predictability.**

Secondly, the load schema is entirely incorrect for several reasons that are beyond the investigation of this report. Just to state few for the purpose of the current examination:

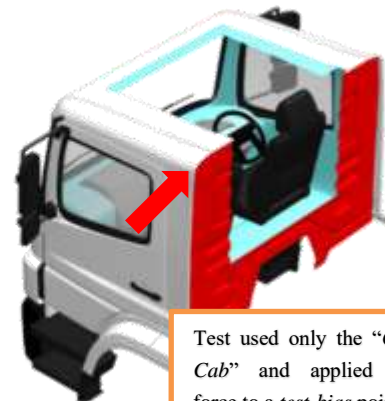
- The test is supposed to be an impact test, yet a quasi-static method is used.
- The test is expected to be run at high shear rates while the test is done at static rates.
- The test is supposed to be applied as a *former-load*, instead it was done as *point load*.
- The incorrect point load is applied at *test-bias* point being the rear corner. Further, the position of the applied force is not in-line with any known test criterion of occupant safety.



UNECE R29 Side Test shall be done to whole vehicle. Implements a former spreading the impact over the whole upper structure



Proper test applies the force to vehicle structure not to *Bare-Cab*. Also, force applied to a *standard width* not to a *point*.



Test used only the “*Cut-Cab*” and applied the force to a *test-bias* point

Figure 3: Comparison between the technical bulletin test and standard test. The figure shows the lack of connection or similitude between the test carried out on “*Bare-Cabs*” compared to *Actual-Structure*. Also, the force application represents an incorrect test-bias application. Further, The test condition as shown above shows that the test does not apply force to cab directly, rendering the tests unrealistic and lacks any connection to both structure and expected loading.

Thirdly, the testing reported is not carried out to any known testing standard in strict or loose adherence. It is not reasonable to design “*own-method*” to conclude the trivial conclusions that are predetermined already. Scientific objectivity requires that ***controlled forces* are applied to**

controlled structures in a controlled manner and results are reported in a controlled manner.
The test is completely uncontrolled with infinite degree of freedom.

Fourthly, and most notable defect in these tests is the categorical lack of similitude, connection or relevance between the “*Tested cabs*” and the *Real-life vehicles* especially the subject vehicles of this technical bulletin. It is not expected in any rational examination that these tests can be used to attribute merits or demerits to actual vehicles. It is expected that a hint of similarity must be declared and reported to suggest any relevance. This test is analogous to testing the water content in an apple to conclude the density of planet mars. The tested cabs have zero relevance to real-life vehicles.

8. TECHNICAL BULLETIN DOES NOT REPRESENT REAL-LIFE VEHICLES

Real-life vehicles related to the subject of the technical bulletin are integrated, strengthened, framed, built with body extension and have distinct collective structural properties that cannot be compared to the “*Test Cabs*”. Further, these *Real-life Vehicles* have few other characteristics including:

- The location of impact in case of side impact force is directly to the body and not the narrower/lower cab as shown in Figure 3. ***This further renders these tests entirely purposeless*** as no impact is encountered at the used (and incorrect) load application point completely. The test loads are applied to the incorrect structure entirely.
- The added flexural strength, impact and energy absorption characteristics by the body, integrated sections, body frontal pillars, composite sections and other structural members significantly overweighs the removed cab thin panels (0.5-1.26mm). ***Yet, these tests entirely exclude the effects of these effects and contributions.***

It is incomprehensible to ignore the added strength to these vehicles by additional structures and body. To further examine this point; it is submitted that the reduction of:

- *Complete vehicle setup including added frames, steel sections, plates, fiberglass and composite structures, body integrated parts and body.*

To be assessed as

- *Bare cab with removed sections.*

Is utterly incorrect, misleading and wasteful. It is left to reader to state if he/she ever saw a vehicle being driven on road with bare cut cab as tested by the author of these tests. Any road user

can easily identify that the presented cabs in the test do not have any relevance to the actual vehicles with minimal intellectual effort.

Based on the above examinations, **the tests carried out on their own merits are not representative of any conclusions that could be taken seriously.** The target and conclusions made on the report own structure are incorrect, trivially concluded and misleading. The report purpose cannot be understood or used based on the report itself. It is only possible to understand the report by understanding the context of the events that surrounded the production of such defective report and tests.

9. TECHNICAL BULLETIN: IS “*CRASH WORTHINESS*” A REQUIREMENT?

The design methodologies section in the technical bulletin states that the design method shall employ “*Energy absorption method*” as basis of the analysis. This statement is evidently improper and uncontrolled. To state this claim, the energy absorption method shall have critical articles that the lack of any renders the method defective and useless, these include:

- Loading criteria.
- Structure shape and definition.
- Energy absorption criteria.
- Deflection and limited volume criteria.

The method is presented without the slightest attention to any of these pillars. It is pointless to state that a method could be applied without criteria for loading magnitude, direction, application, loading rate, deflection rate, and limited volume characteristics. The proposed method does not attend to any of these criteria as can be concluded from the above.

The technical bulletin goes to great length in presenting the side test of the cab without recognizing most basic fact. That is, ***standard test side forces on real-life vehicle will be almost entirely directed to the frontal portion of the body but not the cab as done in these tests.***

This is besides that the force applied in the test is applied at one point in the rear of the cab in striking departure from what it is supposed to be, ***former-spread*** on the cab upper cant rail. This aims at achieving greater damage to the cab rear end as presented in the report while the proper side force shall be applied to a flat former representing a solid surface during side impact (representing ground/object protrusion). ***departures of this significance nullify the test completely and support test-bias case.*** The images included in the technical bulletin shows only the rear end of the cab for the purpose of covering the rear wall deflection but does not show the real general effects on the cabs.

The technical bulletin stated that research stated that the abstraction called “*Relatively Minor*” changes to truck cabs can reduce the abstraction called “*Structural Integrity*”. The statement is hugely misleading. Only “*Significant Changes*” to “*Cab and Integral Structural Members*” can affect the structural characteristics according to “established criteria”. There is a world of difference between the two statements.

10. TECHNICAL BULLETIN SUGGESTS CRITERIA-LESS METHOD

This section examines the criteria, or the lack of criteria suggested by the technical bulletin. The following sections presents this examination.

10.1 TB straight into testing without defining criteria

The technical bulletin goes directly into testing of cabs without stating to what criteria the test is carried out to. No international, local or even self-erected criteria was set for the test to be carried out to. The test instead was done purely only on the incorrect “*Comparative Analysis*” as concluded earlier. No real conclusions could be made on such tests besides the trivial conclusion of “*There is a difference*”.

Further, instead of determining what is structural and according to a rule, the bulletin goes directly into categorization of “*extent of modifications*”. It is expected that the core structure shall be defined before such categorization is presented. To ignore what is *Structural* and what is *Not Structural* is a major flaw in these tests among other issues.

On the other hand, the technical bulletin entirely ignores the categorization or the slightest consideration of the “*Extent of Strengthening*”. If a categorization scheme is involved with “*traffic light*” established, then why ignore the strengthening and *Real-life Vehicle* structure? To be objective, both subtractions and additions to the structure shall be considered.

10.2 “Safe Tolerance” plus Criteria-less equals Bigger Disaster

The abstractions in the TB do not finish with the lack of presence of *Test Criteria* or *Assessment Criteria*. Another abstraction was added to this unknown mixture of abstractions being the assessment using the incorrect “*Safe Tolerance*” or “*Comparative analysis*” method. The mixture of these abstractions cannot be called a method as the degree of freedom of the solution approaches infinity for any engineering analysis. It is literally impossible to produce a consistent solution for a single problem using these abstractions. For instance, engineers know that it is desirable for *Partial differential Equation (PDE)* to have *Existing and Unique* solution to have practical usefulness. Similarly, the presented analysis produces *Non-Existent* and *Nonunique results* that renders such method impossible to be used. It is *Non-Existing* as the solution is not possible and it is *Non-Unique* as infinite incorrect solutions can meet the proposed method.

For instance, and for explaining this matter, let us assume that an experiment was set to test the changes on a concrete structure after few pillars are removed. In the test, someone informs the engineer that no “*Standard Criteria*” will be provided for the structure in both **modified** and **unmodified** conditions. Further, he ordered the engineer to compare the **modified** to the **unmodified** structures based on “*Safe Tolerance*”. We expect that the engineer will not be able to conclude anything as he has no **Criteria** and no **Method** either. The engineer might try this paradox but will never be able to obtain any **Consistent** or **Unique** findings. This is precisely what is required to be done by the published technical bulletin.

A further example is presented in general non-technical terms; Lets examine the general **Compliant Fishing Practice** in New Zealand. We have two options of enforcing the compliance. The **first option** is to simply give the fisherman “**Ruler and basic knowledge**” and “**fishing rules**”. The “*ruler and count/type of fish*” represents the **Method**, and the “*fishing rules*” represents the **Criteria**. With this, the fisherman will be applying the method easily, and compare that to the criteria. By the end of the day, the fisherman can say this statement:

whakarongo mai: ... The catch of this day was examined against the criteria of the fishing rule and was found compliant with its requirements Ka pai

With that concluded, the **second option** is examined. The fisherman will now be sent to the sea for fishing without “**Ruler and basic knowledge**”, without ability to distinguish fish types, and without ability to count caught fish. The fisherman will have no **Method** to follow. Further, he will be given no fishing rules, i.e., no **Criteria**. Then he is asked to fish in a compliant manner. Surely, the fisherman with no **Method** or **Criteria** will be unable to make any conclusions. At the end of the fishing day, no statement could be made by the fisherman either as he does not have a **method** or **criteria**.

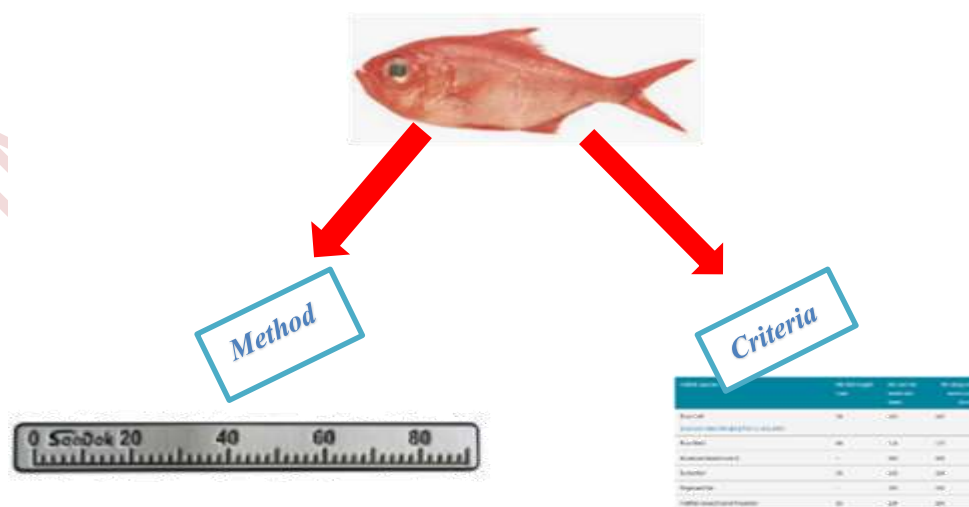


Figure 4: Simplified example of how **Method** and **Criteria** of fishing rules work. The **Method** includes concluding fish type, length and count. The **Criteria** limits the Size, type and count of fishing bag. The lack of the **Method** or **Criteria** renders any compliance assessment **null and impossible**.

The presented method by the technical bulletin mimics sending the fisherman to the sea with **No Method** and **No Criteria**. Yet, the technical bulletin expects that a statement of compliance shall be made after this defective and impossible approach is used. The technical bulletin does not have one major issue but rather **double-issue** in this regards.

10.3 TB ignores UNECE R29.01 entirely

The complete exclusion of the most applicable, usable and consistent set of criteria included in UNECE R29.01 in the technical bulletin is irrational. This UNECE standard, though not required for compliance in NZ, sets the basis for the calculation-based assessment for this PSV-Like aspect similar to PSV rule requirement. The technical bulletin states:

*There are no appropriate methods available for hand calculation when an **integrated** approach is taken, with the exception of modifications to PSVs which must comply with the PSV rule.*

This statement is incorrect according to the applicable UNECE R29 standard set. The TB ignores statements within the not-required UNECE standard. The UNECE R29 allows **Analytical Solution** to be implemented in comparable way to local PSV legislation. The statement is conflicted as it says, if the vehicle is a **Low-Risk Motorhome**, use this **Impossible Approach** while if It is a **High-risk PSV**, you can use the **Analytical Solution** according to the PSV rule. This is while this impossible and inconsistent solution is simply a fabricated-solution and is incorrect in its entirety.

The statement of the technical bulletin is further contradicted when the approach is not in fact “**Integrated**” in any sense as stated in the technical bulletin. The technical bulletin does not take an integrated approach in assessing the **whole setup** of the vehicle but rather is interested in **bare cabs** only.

11. TECHNICAL BULLETIN: PREDETERMINES OUTPUT BEFORE ANALYSIS

The technical bulletin explains adding reinforcements without considering existing base structure. The issued technical bulletin goes directly into assessing the types of reinforcements to the cab without assessing the base structure for compliance. This is done yet before any criterion for compliance is even discussed or presented. The proper method to present a solution is:

- **Determine criteria** of assessment.
- **Analyze existing structure**. If compliant, then no modifications are required. If not, then additional strength is required to satisfy the criteria established.

Based on this, it is expected that modifications are likely to be an option only if required. The main question here is; **what component in the truck represents the base structure for occupant protection?**

Surely, it is the side pillars including **A, B and C pillars**. The base assessment is logically for the existing side pillars. If these side pillars are adequate, then no modification is required.

Further, how can this assumed added strength contribute without the use of the strength provided by the base structure including the pillars? It is impossible and irrational to suggest installing reinforcement with complete disregard to existing pillars like if they do not exist! The technical bulletin assumes adding “Helpers” to the Existing Pillars while entirely excluding the Existing Pillars from analysis.

12. TECHNICAL BULLETIN: CONFUSED AND IMPOSSIBLE

The bulletin states:

In all instances a vehicle modifier should involve a heavy vehicle specialist certifier in a modification project from the beginning of the project.

This statement is of unknown technical, practical or legal basis. Several second and third stage modifiers commence and finish work before the vehicles land in New Zealand. A more important aspect than the stated is to state “**what is structural and what is not**” and “**what is legal requirement and what is not**”. If the structural component is changed, then modification might be required afterward. The “**Attend from first day**” is simply an operational matter that falls under the legislation and not a legislation itself.

It is more prudent to attend to real legislative matters than relative operational matters subject to the original direction of the job being **Assessment, Modification, Repair or Other**. Of great relevance, the PSV rule mandates an assessment of protection provided by the PSV pillars in terms of its ability to **meet the criteria** without attending the manufacture of the cab of the PSV. No certifier is requested to fly to Germany to monitor the manufacture of cab components to confirm its compliance especially if what matters are the intact pillars and not the filler plates or rear wall. Same applies to brake systems and circuits, framed tipping bins, existing body setups, existing crane setups and many other aspects.

The bulletin also states:

In summary, there are two primary responsibilities of a specialist certifier in respect of cab cut-outs;

- *Inspection of the modifications to ensure they were designed and constructed using components and materials that are fit for their purpose.*

*(It is highly recommended that the specialist certifier be provided access to the in-progress vehicle, or other verifiable means of documentation. Otherwise, the trim may be damaged during the course of this **mandatory inspection**.)*

- *Demonstration that, after modifications, the safety of the occupants has not been compromised, having regard to the level of safety the occupants had in the as-manufactured, unmodified cab.*

These statements are incorrect for the following reasons:

- The core controlling document of the process is not this incomplete and inconsistent statement but rather the content of the prime rule, *Vehicle Standards Compliance 2002*. Of specific importance is section 7.4 of this rule.
- The statement ignores the most important task, which is confirming compliance (7.4(c) of *same rule*). The prime task for certifiers is ignored while remaining statements are qualitative statements that does not necessarily require engineering qualification. This is correct of all except for the most demanding task of confirming **Compliance**.
- The statement instead concentrates on operational aspects as stating “**mandatory inspection**” instead of **Mandatory Compliance Test**.
- The statement further uses the “*Safe Tolerance*” statement as if it is a **Compliance Statement** illegally. Certification to “*Safe Tolerance*” is meaningless on its own. No certification can be issued to say that the vehicle is similar to “*what it was*”. For instance, certification of a bus to “*What it was*” does not make it compliant to the PSV rule. Also, complying an American truck cab with no ECE R29 compliance to “*What it was*” does not mean that it is compliant with anything.

Lastly, and most importantly, any serious trial to comply the **Modified aspect** to the **Unmodified aspect** of a vehicle cannot technically be executed or completed successfully. For instance, one could try to adjust *Impact strength* to be “*Close*” to the one of the *Unmodified state*, but this will not conclude that other impact properties are “*Close*”. Another trial could aim to adjust a property among many *Sectional properties* to be “*Close*” to the one of the “*Unmodified state*”, but this will not conclude that other flexural properties are “*Close*”. A third trial could aim to adjust a single buckling property among many *Buckling properties* to be “*Close*” to the one of the “*Unmodified state*”, but this will not conclude that other “*Elastic failure properties*” are “*Close*”. These proposed “cat and mice trials” are limitless and are of little substance in all cases as the principle is incorrect.

Further, the proposed method of “*Comparative Attempts*” is awfully *reductive* as it apparently assumes that the comparison is between **two-numbers** or **easily-quantified** measures of the Aspect assessed. This is while the aspect assessed possess large number of conflicting features and quantities that cannot be compared easily. For instance, the comparison is not between **Sectional Area** between two sections or the **Fluid flow rate** in a pipe. The comparison is rather between many sophisticated measures with several features including *sectional properties, flexural properties, plastic failure properties, elastic failure properties, impact properties, and others*. Each one of these have several sub-quantities that would be

required to be “Within an abstract tolerance” of the “Unmodified state” according to the proposed method are impossible to become “Within this abstract tolerance”.

In the end, the trials will circle in a closed paradoxical circle and yield no results as the case is purely impossible to accomplish. It is **axiomatic** that comparing for a match between two different states or “Identities” is impossible both *philosophically* and *practically*. The reader is encouraged to read the most axiomatic “**Law of Identity**” and reflect on this law and its implications on the governing rules and then this case afterwards. The law states that *each thing is identical with itself*. Any trial to make two different identities to become one identity is flawed and impossible. For instance, to make a certain vehicle’s “**protection characteristics**” be *identical* or *similar to* those of a different vehicle is **impossible**. Similarly, to make a certain “**cab-cut motorhome**” protection characteristic be *identical* or *similar* to those of a **Truck** is also **impossible**.

13. TECHNICAL BULLETIN: NOT SUITABLE FOR LOCAL INDUSTRY

The technical bulletin is presumably designed for local industry. The technical bulletin is concluded as before to be incorrect and irrational. This technical bulletin, instead of promoting, prevented heavy vehicle certifiers in New Zealand from doing the task as it is impossible and irrational. Heavy vehicle engineers refused to carry out these certifications because of this technical bulletin. This is another metric in assessing the harm caused to the industry by this bulletin. Further, any application of such “Comparative Method” is clearly not compliant if followed by any certifier.

The technical bulletin was made for local industry while local industry is based on **one-off modification**. This is comparable to modifications done in the UNECE regulations for **Special Purpose Vehicles** not required for compliance with UNECE R29 entirely. Local legislation does not have any local requirements for such modifications as well. The presentation of such requirement into the local market is completely not according to any rule and is not possible or feasible either. The introduction of such recommendations to the industry is damaging to the industry.

14. CONCLUSIONS

Based on the above examinations and discussions, the following brief conclusions could be made:

- The technical bulletin covers *Cab-Cut Motorhomes; Method of Analysis and Criteria of Compliance*.
- The legal basis for the technical bulletin were examined in detail. In conclusion, it was concluded that the legal basis of the technical bulletin is incorrect. The bulletin misquotes, misinterpret, and incorrectly implement rule statements. The TB

contradicts basic rule intent and rationality. The TB mishandles basic terms including *Safe Tolerance*, *Modified*, *Unmodified*, *Compliance*, *Repair*, *Modification*, and others.

- The technical bulletin grossly misinterprets the difference between *Safe Tolerance* and *Compliance Assessments* for *Modified* and *Unmodified* vehicles. The examination included local rules and concluded that the TB presents distorted and confusing scheme contrary to unequivocal rule intent.
- The technical bulletin coined new term, “*Continued Compliance*”, on illegal basis. The consequences are severely problematic and compounding in many aspects. This principle made *overseas requirements and non-requirements* become *local requirements* in striking departure from countless local legislations.
- The technical bulletin suggested the use of “*Crash Worthiness*” outside any local legislation. Yet, the TB did not provide any controlled method of such “*Crash Worthiness Assessment*” on *conventional* or even *alternative* basis.
- The technical bulletin suggested several illegal and flawed principles in this context including “*Safe Tolerance Compliance Method*”, “*Continued Compliance*” and “*Energy Absorption Method*”.
- The technical bulletin transfers risk and liability to Waka Kotahi through firstly *dictating incorrect legal requirements*. Secondly, the introduction of *incorrect requirements* coupled with *incorrect method* of analysis. Thirdly, the *narrowing of industry’s ability* to innovate and be progressive. Fourthly, *coining of few dangerous terms* that might introduce further damage to *compliance* and *industry*.
- The *purpose* and *function* of the technical bulletin was examined. Firstly, it was concluded that the TB is not a response to *policy implementation* due to its *serious technical and legal departures*. Secondly, the TB was *found not to be compliant with elevated risk proposition* of the vehicles in concern due to contradictory evidence.
- An examination of the technical basis of the presented “*Cab-Cut Tests*” was presented. The tests were *concluded as lacking any scientific value*. Firstly, results were *trivially predictable*. Secondly, *no conventional or self-erected criteria* was used. Thirdly, *No Similitude* or link between the Tested and Real-Thing is present. Fourthly, the *real-life conditions* are distinctly different from the used assumptions. Further, *Significant Test-Bias* was identified among several other defects.
- The designed and Waka Kotahi funded destructive test was categorically found to lack any *technical significance*, *similitude to real vehicles* or any *practical use* apart from confirming trivial and predictable outcomes. The tests included in the technical bulletin are of irrelevance to local legislation and are of little or no technical value to the industry or on-road vehicles safety. The tests are also incorrect according to their own scheme.

- An examination of the proposed *Method* and *Criteria* was thoroughly presented. In conclusion, the proposed method in the technical bulletin presents *No-Method* combined with *No-Criteria* in a striking contradiction with legal and engineering technical conventions.
- The technical bulletin was examined in its method and found to be *predeterminate* in its *Method of strengthening vehicles without following basic engineering logic firstly*. It is concluded that a method should be performed to investigate whether Modification is required or not.
- Thorough examination of several statements and propositions in the technical bulletin concluded that the *technical and legal content of the TB is incorrect and misleading*. In conclusion, the presented method is *illegal, inconsistent, criteria-less, uncontrolled, irrational, impossible, predetermined* and of *zero-pragmatic value*.
- Based on the above, it is predicted that any *Certificate* or *Record of Determination* issued according to the proposed method of “*Safe Tolerance*” or “*Comparative Analysis*” is *non-compliant* and *does not support the issue of certificate of compliance*.

Based on the above report and its conclusions, it is requested that this technical bulletin is withdrawn to avoid legal and technical issues from being introduced to regulatory department and industry in general.

15. DISCLAIMER

This feedback is presented to the agency on no transfer of liabilities basis. No risk is to be transferred to TranzEC from exchange of technical and legal content in this document. The document presents the professional opinion in the published technical bulletin and its perceived effects on industry and compliance in general. It is the sole function of Waka Kotahi to undertake steps to ensure that the published technical bulletin complies with legal requirements and technical integrity measures. This document is presented for review and consideration by Waka Kotahi for its propositions and recommendations being included and considered in future assessment of this technical bulletin. This feedback is another professional opinion of the content of the technical bulletin provided to Waka Kotahi on non-contractual basis for the purpose of presenting critique, rhetoric, technical and legal views of the author in context of the subject of the report.