DISCUSSION PAPER

Review of the Load Restraint Guide

JUNE 2025

1 INTRODUCTION

The *Load Restraint Guide* (LRG) is an important resource used across the heavy vehicle industry to support safe and compliant loading and load restraint practices. Its purpose is to provide guidance on good and best practice load restraint for securing different load types on heavy vehicles for transport.

The National Heavy Vehicle Regulator (NHVR) is commencing a review of the LRG to ensure it continues to meet the needs of industry and reflects current loading technologies, equipment and practices. This review builds on feedback received during the development of the 2018 third edition of the LRG authored by the National Transport Commission (NTC), as well as insights gathered through industry engagement, training activities and public enquiries to the NHVR. It will also consider advancements in load restraint equipment and vehicle design since the last edition.

The aim is to improve how the guide supports safe loading outcomes, compliance with loading requirements and to promote a safe, productive and efficient heavy vehicle industry.

2 PURPOSE

The purpose of this discussion paper is to seek feedback from stakeholders to help shape the next edition of the *Load Restraint Guide*.

This consultation focuses on improving how loading requirements and performance standards are explained and applied in the guide. It also seeks views on the structure, layout and overall usability of the guide for different audiences, including drivers, loaders and operators.

Feedback will help the NHVR ensure the next edition of the LRG is clearer, more practical and easier to use. This will ensure the guide remains a relevant and trusted reference for industry.

3 CONSULTATION

We welcome feedback from anyone with an interest in the safe loading of heavy vehicles, including operators, loaders, manufacturers, engineers, state and territory road authorities and industry associations.

We're particularly interested in views on:

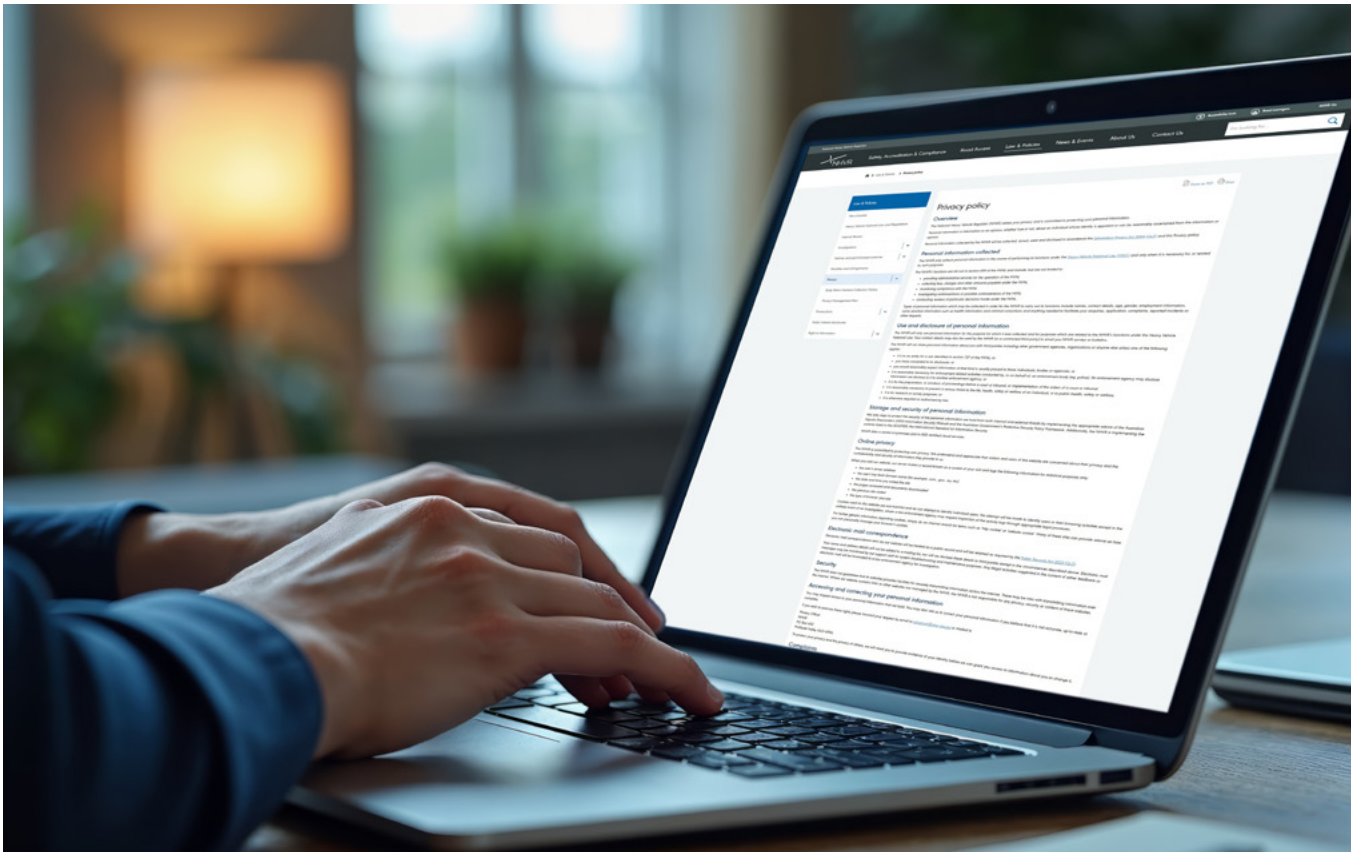
- How loading requirements are explained in the guide
- How performance standards are used and referenced
- Ways to improve the structure, layout and readability of the guide
- How the guide can better promote consistency between jurisdictions
- Any topics that need additional information, clarification or explanations.

As a suggestion, the NHVR provides the following questions to guide the review of the key matters and help formulate responses:

1. **Do you support the NHVR's proposed approach to implementation?**
2. **Can you identify any issues or risks that the proposed approach will have?**
3. **Do you have an alternate approach to implementation?**

There are additional questions included in Section 7.

We encourage you to share your practical experiences and suggestions to help ensure the guide is clear, consistent and useful for all who rely on it.



4 LODGING A SUBMISSION

Submissions must be received by the NHVR by **12 September 2025**.

You can provide feedback by:

- Completing the **Feedback Form**, or
- Emailing your submission to **nhvr.regulatorystandards@nhvr.gov.au**

There is no required format. You can respond to selected questions, provide general comments or submit detailed input. If your submission includes attachments or is longer than three pages, we encourage you to include a short summary of your key points.

Publication of submissions

Unless clearly marked as 'IN CONFIDENCE' or 'CONFIDENTIAL', submissions received may be published on the NHVR website.

The NHVR will consider all submissions, whether published or not.

The NHVR reserves the right to edit or redact part or all of a submission, or withhold a submission from publication on any grounds, including, but not limited to, offensive language, potentially defamatory material or copyright infringing material.

The NHVR privacy policy, including information about access to and correction of your personal information, is available at **https://www.nhvr.gov.au/law-policies/privacy**.

> **Note:** Submissions to this discussion paper are limited to the in-scope proposal covered in this paper. Any comments or submissions relating to additional changes will be held for future reviews.

Further information

If you require further information on making a submission, please contact **nhvr.regulatorystandards@nhvr.gov.au**.

5 SCOPE

5.1 In-scope

The following are considered in-scope for the discussion paper:

- Improvements to structure, navigation and usability of the guide (including a shift to a modular (step-by-step) format)
- Clarification of legal obligations and performance standards
- Improved guidance on the application of loading requirements
- Review and update of case studies and guidance content for clarity and relevance
- Consideration of new or updated load restraint equipment if recognised and requested by industry.

5.2 Out of scope

The following are considered out of scope for the discussion paper:

- Changes to existing loading performance standards
- Legislative or regulatory amendments under the HVNL
- Redesign of enforcement practices or legal frameworks across jurisdictions
- Testing or certification of new load restraint systems or devices (however, testing may be considered if there is sufficient industry interest)
- Jurisdiction specific guidance or practices outside the scope of national consistency.

6 KEY MATTERS FOR CONSIDERATION

6.1 Format and structure

The format, structure, content and style of the LRG has evolved through multiple editions. The current 2018 version (third edition) is available as a PDF file from the NHVR website or as an A5 or A4 hard copy through a third-party provider.

The third edition introduced a significant reordering of information to improve usability and navigation. This included the development of self-contained sections with cross-references to relevant topics, allowing users to more easily locate and apply guidance as needed. The third edition also introduced 12 case studies designed to help users better understand load restraint principles and how to apply them in practical scenarios.

NHVR Position: Separation of modules

Reformat the LRG into a modular, step-by-step format. This approach would:

- Improve user access to relevant sections.
- Provide flexibility in how the guide is used and accessed (printed in full or select sections, viewed online through various devices etc.)
- Allow for a more agile approach for future updates to individual modules without the need to revise the entire document.

This hybrid modular approach offers a more agile and user-friendly structure, allowing the ability for individual sections/modules to be updated or removed without impacting the whole document.

It also provides flexibility in how the guide is used and accessed. The revised version will continue to be available in A4 or A5 hardcopy booklets that can be purchased from the NHVR website, or it can be manually printed in full or in selected sections, or viewed online through mobile devices, tablets or desktop computers. Between January and December 2024, 6,500 physical copies were purchased through our third-party provider, demonstrating a clear industry demand for a physical version of the guide.

The updated guide will also apply consistent use of images from the NHVR's image library, supporting a streamlined and professional visual approach across the guide and all related materials.

6.2 Performance Standards

6.2.1 Restraint in the forward direction

The *Review of Performance Standards* report undertaken by RMIT University for the NTC in 2016 assessed that the existing load restraint performance standards were sufficient. After conducting a review of the RMIT report, the NHVR is not proposing any changes to the current loading performance standards at this time.

This item is to be kept on the NHVR's forward work program for periodic review, particularly in response to evolving tyre and braking system technologies, noting that any change would require a regulatory impact statement and legislative amendments.

NHVR Position: No change

No change to the current performance standards for heavy vehicles. Operators should be encouraged to meet the current standards before considering the introduction of higher or stricter requirements.

6.2.2 Vertical displacement

The *Heavy Vehicle (Mass, Dimension and Loading) National Regulation* outlines loading performance standards that loads must be restrained to withstand. These standards specify the forces a load must resist during normal driving conditions, including forward, rearward, lateral and vertical forces.

Most of these forces, such as 0.8g forward, 0.5g rearward and 0.5g in a lateral direction, are relatively well understood. However, the vertical displacement requirement outlined in the regulation has raised questions within industry and among engineers. Specifically, the regulation has the effect that:

If friction or limited vertical displacement is relied upon to meet the horizontal restraint requirements, then the load must also be able to withstand 0.2g acceleration in a vertical direction.

This requirement is important where load restraint relies on friction between the load and the vehicle deck (rather than blocking or tie-down), since upward forces, such as those caused by road bumps or dips, could reduce that friction and compromise restraint.

The NHVR acknowledges that there are some differences of opinion and interpretation regarding the application of vertical displacement. For example, some technical experts have questioned whether the 0.2g vertical force should be applied simultaneously with horizontal forces, or if it is intended to be assessed independently.

Analysis of the issue by an external engineering consultant has suggested that reverse engineering analysis of the pre-calculated restraint tables in the 2018 LRG indicates that the 0.2g requirements is applied in isolation and not as a compound acceleration.

The NHVR agrees that the 0.2g vertical requirement should be assessed in isolation, not in combination with the other directional forces. It is intended to account for vertical lift scenarios, such as bumps or suspension rebound, where friction alone may not be reliable. The vertical restraint requirement ensures the load remains in contact with the deck under normal operating conditions, especially when friction is relied on for restraint.

This clarification will be reflected in the revised guide to support consistent understanding and application by engineers, certifiers and industry.

NHVR Position: No change

Any change to the definition of "acceleration in a vertical direction" or "limited vertical displacement" would require legislative changes and will not be considered in this review. However, the NHVR may consider providing further clarification or formal interpretation to industry in the form of an explanatory procedure or document to remove confusion. A broader review of limited vertical movement may be warranted in future.

6.3 Codes of Practice

The LRG is a widely used reference for understanding and applying safe load restraint practices. In recent years, several *Registered Industry Codes of Practice* (RICP) have been developed and registered by the NHVR, providing more detailed guidance on industry specific risks and practices including loading and load restraint.

Feedback has indicated some uncertainty and inconsistency around how these codes relate to the LRG, particularly whether the LRG should reference or incorporate individual codes. This can create confusion for industry about which documents to follow, how they interact, and their legal effect.

RICP's provide information and guidance about known hazards and risks in industries that work with heavy vehicles and describe control measures that can be used to manage those risks. Anyone can use a RICP to improve their understanding of safety, or to improve their own safety systems or training.

When a code of practice is registered by the NHVR it does not create new legal requirements, but it does give status to the information to which the code relates. Under HVNLs 632A a RICP is admissible as evidence of:

- whether or not a duty or obligation under the HVNL has been complied with; and
- what duty holders know, or ought to know about hazards or risks, risk assessments, or risk controls, to which the code relates; and
- what is reasonably practicable in the circumstances to which the code relates.

NHVR Position: Managed inclusion

To address potential confusion, the revised LRG will include an overarching reference to the role and status of RICP's under the HVNL. This will support user understanding of how codes complement the LRG and clarify that they may be used as supporting materials.

Incorporating references to specific individual codes of practice in the LRG is considered out of scope for this update. This is due to the requirement to ensure the guidelines are current, relevant and fit for purpose and that the hyperlinks are still active over time.

6.4 Inclusion of OSOM compliance pathway – Schedule 7, Section 2(4)

Section 2(4) of Schedule 7 of the *Heavy Vehicle (Mass, Dimension and Loading) National Regulation* provides an alternative compliance pathway for oversize and overmass (OSOM) loads. Under this provision, an OSOM load can be considered compliant with load restraint requirements if it meets specific conditions, including being covered by a valid exemption notice or permit and accompanied by an engineer's certificate confirming the load restraint system is suitable for the journey.

The current LRG does not clearly reference this alternate compliance pathway, which can create potential confusion for operators. Due to their unique size and shape, OSOM loads often cannot comply with standard load restraint obligations. Without clear reference to this exemption pathway in the LRG, industry may incorrectly assume the load must meet the same physical standards as regular freight.

While the HVNL does not apply in all jurisdictions, similar compliance pathways are available in Western Australia and the Northern Territory under their respective mass and dimension permit systems. In these jurisdictions, OSOM movements are typically authorised via permits or notices and it is standard practice to require evidence of appropriate load restraint, often through engineering documentation. To support continued national relevance and use of the LRG, these jurisdictional approaches will also be acknowledged in the updated guide.

NHVR Position: Include

The NHVR supports including Section 2(4) of Schedule 7 in both the introduction (pg. 4) and Appendix (pg. 241) of the LRG. Including this information will improve clarity for industry and will help to ensure consistent understanding and application of the law. The updated guide will also acknowledge equivalent approaches used in non-HVNL participating jurisdictions, such as WA and NT, to support its continued relevance and adoption at the national level.

6.5 Certification

6.5.1 How to certify a load restraint system

The 2004 Load Restraint Guide included a section titled "*How to certify a load restraint system*" (Section I), which provided guidance on the certification process for load restraint systems. However, this section was removed in the 2018 edition, leaving a gap in advice and information for certifiers and engineers wanting to validate load restraint systems.

Currently the only reference material available is the withdrawn European Standard EN 12640-2001 mentioned in the 2004 guide, or the revised standard EN 12640-2019, which supersedes it. Absence of this guidance has contributed to confusion and inconsistencies in load ratings, particularly with load rated curtains.

This gap raises the question of whether certification guidance should be reintroduced into a future version of the guide, or instead be provided as a separate, supplementary technical document.

NHVR Position: Develop supplementary technical document

Develop and publish a supplementary technical document detailing appropriate certification processes, including more in-depth information on who should certify, suggested methods of testing, reporting, records and loading/load restraint procedures.

The development of a supplementary technical document is recommended. Providing clear, nationally consistent guidance on certification and testing processes will help address ambiguity and promote consistency in interpretation across industry.

Including all the necessary certification information directly into the revised LRG would significantly increase the size of the document, making it more complex and potentially harder for the user to navigate. A standalone technical document would allow certification material to be presented in full detail, while keeping the main guide clear, practical and user-friendly.

6.6 Load Restraint Equipment and Components

6.6.1 Headboards and anchor points

During the NTC review of the LRG, an issue was raised in relation to specifying minimum headboard and anchor point strength ratings. These were not included in the vehicle structure rating requirements in the 2018 edition, as they were considered a vehicle standards issue, which should be addressed through the *Heavy Vehicle (Vehicle Standards) National Regulations*, and therefore out of scope of the LRG.

While vehicle structure rating requirements remain out of scope of this current review, it is important to promote awareness and understanding of the limitations that may exist in certain components of a load restraint system and associated equipment (such as headboards). The LRG should encourage users to understand equipment ratings by talking to vehicle/trailer manufacturers and considering independent testing where appropriate.

NHVR Position: Managed inclusion (information only)

The LRG should promote awareness and understanding of restraint systems, their capabilities and limitations, including headboard and anchor point ratings. Industry should be encouraged to discuss load rating information with vehicle and trailer manufacturers to ensure safe and appropriate use. As good practice, users should always confirm headboard capacities and anchor point ratings as part of their loading plan.

While testing is currently out of scope for this review, the NHVR will continue monitoring this issue and engage with other regulators, both here in Australia and internationally, to understand how similar challenges are addressed in other jurisdictions.

6.6.2 Load rated curtains (new and repaired)

The HVNL and the LRG do not currently provide guidance on how load rated curtains are assessed for compliance with the performance standards, either when new or after being repaired. There are also no specified test procedures or outlined certification or re-certification requirements following repairs.

It is not within the scope of the LRG to mandate curtains that form part of a load restraint system to be certified. However, as certification is best practice, reference to it should be incorporated into the LRG. This will encourage industry to follow appropriate repair and maintenance procedures to ensure curtains remain compliant.

NHVR Position: Managed inclusion (information only)

Testing is out of scope for this review. However, the LRG should incorporate guidance material on the certification process with input from relevant industry bodies. The LRG should also recommend seeking guidance on best practices for the repair and maintenance of load rated curtains to ensure continued compliance.

6.6.3 Load chokers

A load choker is a piece of equipment used to maintain lashing tension and provide restraint by 'choking' the load to restrict movement in all directions. Models are available for use with transport webbing or chains and are especially useful for restraining long products without the need to belly wrap.

This equipment is made to *AS/NZS 4344 Motor Vehicles – Cargo restraint systems – Transport chain and components* (withdrawn) and has gained popularity in the industry due to their effectiveness.

NHVR Position: Managed inclusion (information only)

Include references to load chokers in relevant sections of the LRG where load choking is discussed as an option. Testing is currently out of scope for this review, however the NHVR will continue to monitor industry use and developments related to this equipment to inform any future guidance needs.

6.6.4 Air-driven tensioners

New tensioning devices that provide higher pre-tension than those included in the current LRG tables are now available. These air-driven systems apply active pressure to maintain tension whilst in transit. The 2018 LRG refers to "auto-tensioning winches" in the Lashing Tensioners chapter (pg. 187-189) but does not specifically address air-driven tensioners.

The use of air-driven tensioners is gaining popularity in industry and should be recognised in the document/imagery for the updated guide.

NHVR Position: Managed inclusion (information only)

The LRG should be updated to include additional information on air-driven tensioners in the "Lashing tensioners" chapter due to their growing use in industry.

6.6.5 Over-centre tensioners

Over-centre tensioners ("dogs") are commonly used for tensioning chains in the transport industry as part of a load restraint system. However, it is now understood that these devices pose significant safety risks, particularly when used with extension handles ("cheater bars").

Workplace Health and Safety Queensland (WHSQ) undertook research on the ***Ergonomic assessment of load restraint devices*** in the transport industry, which found that "dogs and cheater bars present a fatality risk".

WHSQ has advised that dogs, with or without extension bars, should not be used to tension chains unless all other ways in which to safely secure the load have been assessed and the use of a dog, with or without an extension bar, is the only practical way to secure the load.

WorkSafe Northern Territory referenced WHSQ's report and summarised the advice. When chain tensioning devices are used, the device should:

- weigh less than 5kg
- be pulled down, not pushed up, to apply tension
- require a maximum force of 30kg to tension (less if achievable)
- not be able to be fitted with an extension bar or handle (as this encourages over tensioning)
- have a handle which allows a worker's wrist to be in a neutral (handshake) posture and be operated using two hands
- have a handle which allows for re-tensioning without removing and reattaching it to the device.

WorkSafe Victoria also found that load adjustment is one of the most common hazards for people working in the road transport industry and recommend "avoid using over-centre lever style tensioners (dogs) to tie down a load".

Over-centre tensioners are still available and used by industry in particular situations, despite being strongly discouraged. Using over-centre tensioners creates a risk of the bar flicking up and hitting a worker when the tensioner is released. The 2018 LRG notes that the use of over-centre tensioners is discouraged (pg. 175 and 188).

NHVR Position: Highlight hazard symbol, warning and replace terminology

Enhance visibility of the hazard symbol and amend the text to be more prominent and replace references to 'over-centre tensioner' in the tables with 'high pre-tension devices'.

While WHS advice strongly discourages the use of over-centre tensioners, they are still used by industry and are readily available for purchase. Completely removing reference to them from the LRG could create confusion or concern among operators and would show a missed opportunity to clearly highlight the safety hazards associated with their use. Because of this, they will not be removed from the guide as they are still actively used within industry. The position taken allows the NHVR to reinforce its safety-first approach while ensuring industry remains properly informed.

6.6.6 Non-rated Gates

During the NTC's review of the LRG, an issue was raised relating to clarification of the use of non-rated gates as part of a restraint system. At the time, the NTC's position was that only certified load restraint curtains can be used as a form of restraint.

Although the update to the LRG does not cover the engineering assessment and testing of non-rated gates, the guide should encourage users to understand the limitations and capabilities of gates. Users should seek guidance from vehicle/trailer manufacturers and where necessary, conduct independent testing to confirm the gate's suitability as part of their load restraint system.

NHVR Position: Managed inclusion (information only)

While formal testing of non-rated gates is currently out of scope for this update to the guide, the NHVR supports the inclusion of additional guidance to help industry understand the role and limitations of non-rated gates. The guide should advise industry to consult vehicle or trailer manufacturers to determine whether a gate is suitable for use as part of a restraint system.

6.6.7 Restraints for transporting vehicles

There is ongoing confusion amongst industry about correct restraint methods for light vehicles when transported on car carriers. For example, there is a common perception that vehicles on car carriers must be restrained using diagonal lashings, despite there being no written requirement for this approach.

The 2018 LRG provides advice that at least two lashings at each end of the vehicle should be applied if using direct restraint (pg. 124), but these are guidelines only and that other restraint methods can be used. The guide does not consider whether a vehicle's brakes are applied, or the wide variety of restraint systems commonly used by industry.

Any load restraint system designed to meet the performance standards needs to consider many variables, including:

- restraint method
- coefficient of friction between the load and the truck deck
- lashing types and angles
- if the load is partly or fully contained
- if the wheels of the vehicle are braked
- mass of the vehicle.

The common restraint methods used to secure light vehicles on car carriers are:

- **Straps and Tie-Downs:** Heavy-duty straps and tie-downs are commonly used to secure vehicles in place. These straps are typically made of solid and durable materials like nylon or polyester and have ratchets or tensioning mechanisms to tighten them securely. They can be applied in different ways depending on the type of vehicle and trailer set up. For example, over a wheel, around the back of wheel, or attached to a specific anchor or structural points to prevent movement or shifting during transit.
- **Wheel Chocks:** Wheel chocks are wedges placed against the vehicle's wheels to prevent rolling or movement. They help keep the wheels in position, adding an extra layer of stability and security.
- **Decks and Levels:** Car carriers have multiple decks or levels where vehicles are positioned. The decks are designed with grooves or tracks to ensure the tyres fit securely, reducing the chances of lateral movement or shifting during transit.
- **Vehicle Spacing and Blocking:** Vehicles on the carrier deck are positioned to ensure an efficient use of space and a secure fit. Adequate spacing is maintained between vehicles to prevent contact or potential damage during transit. In some cases, blocking mechanisms such as wooden blocks or wheel braces are used to further stabilise the vehicles.

NHVR Position: Managed inclusion (information only)

The LRG should clarify that multiple restraint methods may be appropriate, provided they meet the required performance standards. It should also clearly state that diagonal strapping is not a legal requirement.

The NHVR acknowledges that further testing and analysis is required on this topic. Opportunities to develop further technical guidance or a Loading Guide to provide clearer advice on this topic may be explored as part of future updates or education initiatives.

6.6.8 Packaging

Packaging plays a critical role in unitising and maintaining stability and integrity of loads. However, packaging alone is not considered a load restraint system. Failures in packaging can contribute to load shifts, especially when packaging is assumed to provide restraint without additional systems in place. This is a common failure point observed in industry and should be clearly addressed in the LRG and supporting materials.

There is confusion around whether packaging forms part of a compliant load restraint system. While packaging contributes to unitising a load for easier handling, it is not a complete load restraint system by itself. Operators have the responsibility to ensure the total load restraint system meets the performance standards.

NHVR Position: Managed inclusion (information only)

Packaging should be recognised as a component that supports load unitisation and can contribute to the effectiveness of a broader load restraint system. The LRG should emphasise that while packaging alone is not enough to restrain a load, it can play a role in maintaining load stability when used alongside appropriate restraint methods. Users should be encouraged to consult packaging suppliers for information on packaging strength and its role within a load restraint system.

6.7 Technical Considerations and Assumptions

6.7.1 Table assumptions

The Load Restraint Guide includes a number of worked examples and tables to support understanding and demonstrate key restraint principles. These examples are underpinned by technical assumptions and calculations developed at the time of publication. However, many of these have not been reviewed since the guide was first released.

Some assumptions, such as how pre-tension is calculated or how friction values are applied, may not fully reflect real-world variability or current restraint practices. For example, the guide assumes equal pre-tension is achieved on both sides of lashings, yet testing conducted for the *Log Haulage Code of Practice* showed tension could be unevenly distributed, with results such as a 70/30 split between sides.

Given the volume of worked examples and technical work required to validate them, a review of these assumptions is a substantial task. It would require engineering input and may need to be delivered in phases managed over time.

NHVR Position: No change

Revising the assumptions would require significant technical validation and physical testing to ensure safe and accurate guidance for industry. However, the NHVR recognises the importance of transparency around these assumptions and recommends that the revised guide includes a clear and explicit statement listing the key assumptions, so users can apply them with an understanding of their limitations.

6.7.2 Withdrawn standards

The LRG references several Australian Standards relevant to load restraint systems. Standards Australia routinely reviews all existing standards and publications that have been published for more than 10 years without revision. These reviews have identified a number of standards as outdated and as they were not reviewed, these standards have been withdrawn.

As a result:

- The following standards have been removed from revised LRG:
  - AS4142 Fibre ropes
  - AS/NZS 4384 Motor Vehicles – Anchorages and anchor points for securing internal cargo
- The following withdrawn standards have been retained within the revised LRG but marked with a note advising that they have been withdrawn:
  - AS/NZS 4380:2001 Motor vehicles - Cargo restraint systems -Transport webbing and components
  - AS/NZS 4344:2001 Motor vehicles - Cargo restraint systems - Transport chain and components
  - AS/NZS 4345: 2001 Motor vehicles – Cargo Restraint systems – Transport fibre rope

The term Withdrawn indicates that the standard:

- is not up to date technically;
- does not reflect current practice;
- is not suitable for new and existing applications (products, systems, or processes); or
- is not compatible with current views and expectations regarding quality, safety, and the environment.

Standards on their own are not legally binding unless they are prescribed in State, Territory or Commonwealth legislation. Under the HVNL, specific Australian Standards for load restraint systems are not directly referenced. Instead, the HVNL outlines the loading requirements and loading performance standards that must be met.

The LRG refers to standards as a way of promoting best practice and whilst not mandatory, using equipment that complies with Australian Standards is generally considered a good way to help meet safety requirements and appropriately restrain a load. A standard being withdrawn has no bearing on the obligation to meet the HVNL's loading requirements and loading performance standards.

NHVR Position: Include

When designing a load restraint system, it's important that the system meets the loading requirements. Using equipment that meets current Australian Standards helps ensure that it is safe, reliable and performs as intended.

Where standards referenced in the LRG have been withdrawn, they should be:

- Clearly identified as withdrawn within the guide
- Removed during future updates where appropriate, or
- Noted on the NHVR website to advise users that the referenced material is no longer current.

6.8 Special Load Types and Industry Requests

6.8.1 Concrete (panels, beams, blocks etc.)

The current LRG briefly mentions the transport of concrete panels but does not provide specific guidance on the coefficient of friction for concrete surfaces or materials. Expanding the friction coefficient tables to include values for concrete panels, beams and blocks would improve the guidance provided to industry, particularly given the unique characteristics of concrete products.

Expanding this guidance would require:

- Additional testing to determine the friction coefficients of concrete materials under typical transport conditions.
- Potential inclusion of deck surfaces such as flat and checker plate decks, which are commonly used in concrete transport.
- Consideration of external references, such as ***VicRoads Guide to Loading Concrete Panels*** and ***V64: Load Restraint Guidelines for Concrete used in the Northern Territory***.

The transport of concrete presents specific risks due to high mass and smooth surfaces. Improving available friction data and restraint methods would help industry better manage these loads safely.

NHVR Position: Managed inclusion (information only)

While undertaking new technical testing is out of scope for this LRG review, the NHVR recognises the need for more detailed guidance in this area. We will work with stakeholders and industry to better understand what testing, data and guidance already exists.

If there is sufficient and reliable testing and data available, the NHVR work with industry to develop relevant guidance for inclusion in the LRG. If not, users will be directed to relevant external references, such as the *VicRoads Guide to Loading Concrete Panels* and the Northern Territory's *V64: Load Restraint Guidelines for Concrete*, as supporting information outside the LRG.

Where appropriate the LRG will note the variability in surface types (e.g. concrete to metal, timber or rubber surfaces) and highlight the importance of using friction increasing materials.

6.8.2 Cumulative gaps between packaged loads and vehicle structure

During stakeholder discussions, concerns have been raised around the interpretation and application of sidewall gap allowances between packaged items and the vehicle's structure. While individual gap ranges of 0-18mm are commonly cited, references to cumulative gaps of up to 200mm can be misleading, particularly when applied to sideways movement. Side-to-side movement has a greater effect on load transfer and vehicle stability compared to forwards or rearwards movement.

These figures are typically intended as design or handling guidance to ensure stability during transport. However, they are sometimes misunderstood or misapplied as compliance thresholds, rather than design or handling guidelines.

Gaps between loads and vehicle structures can influence how a load shifts or behaves in transit. The revised LRG should clarify that gap measurements are not regulatory limits but are context specific considerations that must be assessed as part of an overall load restraint system. It is important to minimise unnecessary gaps by using appropriate restraint methods, such as blocking or dunnage, to prevent movement during the journey.

NHVR Position: Managed Inclusion (clarification only)

The LRG should include guidance on cumulative gaps as part of load planning and packaging considerations, but clearly state that:

- Gap measurements (e.g. 0-80mm or 200mm cumulative for forward/rearward blocking, 100mm for side-to-side) are not enforceable. Reducing side-to-side gaps and centring loads can improve stability.
- These references should be clearly marked as guidance only.
- The overall restraint system, not the gap measurement, determines compliance with loading requirements and performance standards.

If gaps are present, operators must ensure that they do not compromise the load stability or restraint performance. This issue may warrant further education or targeted advice materials.

6.8.3 ISO tanker requirements

The 2018 edition of the Load Restraint Guide removed the previous section relating to ISO tankers and *section G – Vehicle Structures*. Since then, there have been ongoing questions from industry, particularly regarding the transportation of Dangerous Goods in ISO tankers and the applicable stability requirements (62° and 64° angles) referenced in AS 2809 and the *Australian Dangerous Goods Code*, which is currently under review by the NTC.

Given the frequency of enquiries, the critical safety risks associated with bulk liquid transport and the fact that AS 2809 only covers certain portable tanks, providing clearer guidance on ISO tankers in future editions of the LRG would significantly benefit industry.

NHVR Position: No change

While ISO tanker restraint requirements are out of scope for detailed inclusion in the LRG, the revised guide should acknowledge the unique restraint considerations associated with ISO tankers and reference relevant regulatory frameworks, such as the Dangerous Goods Code. This helps ensure industry is directed to the appropriate technical sources for safe and compliant tanker transport.

6.9 Testing and certification of load restraint equipment

To ensure evidence based, best practice load restraint guidance can be provided in the updated version of the LRG, testing and certification of load restraint equipment should be undertaken. Undertaking testing and certification would be a project that would require input from external stakeholders and an appropriate budget and timeframe. This project would provide NHVR with data to underpin the information in the LRG and provide confidence and certainty for future advice by affirming information in the guide.

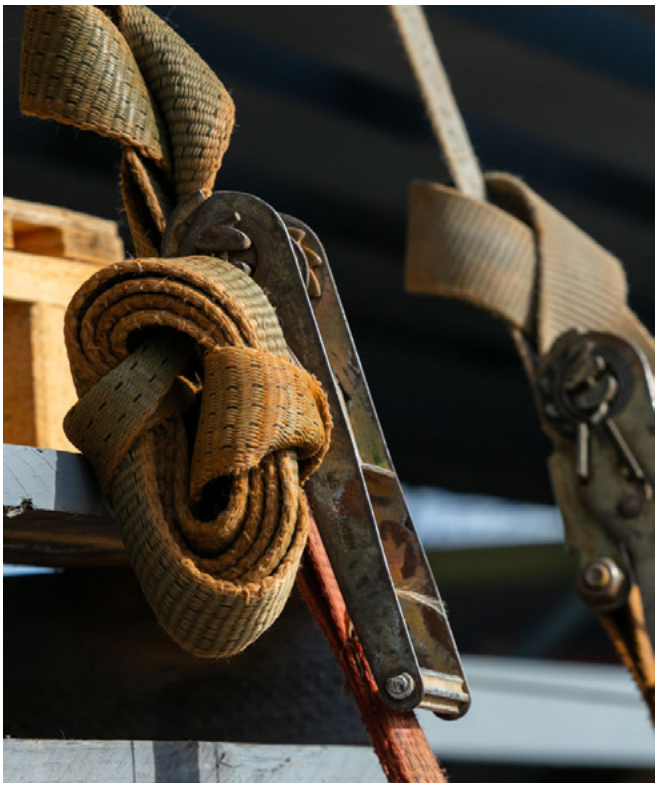
Testing and certification of load restraint equipment is currently out of scope for this edition of the LRG, given the resource requirements and need for extensive stakeholder engagement. However, the NHVR recognises the importance of evidence-based guidance and supports the principle of using tested and certified restraint equipment.

If there is sufficient stakeholder interest in testing specific equipment types, the NHVR will consider future initiatives, projects and potential inclusion in a future online module or other supplementary resource.

As part of the review, it is recommended that additional information on load restraint equipment be in included to support industry understanding and limitations, and the importance of using appropriately rated equipment within a load restraint system.

NHVR Position: Managed inclusion

The NHVR welcomes feedback from stakeholders on equipment or restraint methods that should be prioritised for engineering assessment or testing if such work were to be considered in future. The NHVR will seek specific feedback to understand industry appetite for the NHVR to undertake/ facilitate testing. Feedback requests will also ask industry to outline their top 3 priorities for testing to gauge if there are identifiable areas which should be addressed first.



7 QUESTIONS

The purpose of this discussion paper is to seek feedback from stakeholders to help shape the next edition of the Load Restraint Guide. We encourage you to share your practical experiences and suggestions to help ensure the guide is clear, consistent and useful for all who rely on it.

To guide your feedback, please see the following questions:

1. Are there any sections of the guide that you believe need further clarification or explanation?
2. Are there particular loading scenarios, vehicle types, or equipment that you think should be added or updated in the guide?
3. Do you believe the case studies reflect common real-world loading practices? Would you like to see additional case studies included?
4. Do the images and diagrams in the LRG help you understand and apply the guidance effectively?
5. Are there ways the guide could be made easier to use or apply in day-to-day operations, on the road or in training?
6. Would you or your business be interested in participating in industry-led testing or validation of restraint systems as part of this project? What would be your top three testing priorities?
7. Are there any other matters or comments you wish to address?
8. Any other comments?

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