HEAVY VEHICLE INDUSTRY AUSTRALIA

To the Main Roads Western Australia Draft Roll Coupling Policy

hvia.asn.au

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Heavy Vehicle Industry Australia

Represents and advances the interests of manufacturers and suppliers of heavy vehicles and their components, equipment and technology.

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What is Heavy Vehicle Industry Australia?

Heavy Vehicle Industry Australia (HVIA) is the peak industry association for Australian manufacturers of trucks and trailers (collectively referred to as heavy vehicles), as well as the dealerships, repairers, suppliers, and service providers that support the entire industry. HVIA represents almost every major truck manufacturer/importer, all of Australia's major trailer manufacturers, and an ever-growing list of their component, equipment and technology providers.

HVIA's 320-plus corporate members collectively employ a local workforce of over 70,000 staff.
Member interests cover an extensive range of vehicles, starting with 3.5-tonne light commercial trucks, and extending all the way up to Australia's unique 50-metre long, 100-tonne road trains.

The industry provides some of the world's most efficient, safe, innovative, and technologically advanced vehicles. HVIA seeks to work with government and industry stakeholders to promote an innovative and prosperous industry that supports a safe and productive heavy vehicle fleet operating for the benefit of all Australians.

Background

Many HVIA members are involved in the design, construction and certification of trailers and dollies used in heavy vehicle combinations, and their safety-critical components, including all types of couplings. Many of those members are national operations and thus have interests in the policies of all state and territory road managers, including Main Roads Western Australia (MRWA).

As such, HVIA is committed to working with MRWA to improve the safety of all heavy vehicle operations, while fostering innovation and continuous improvement in equipment and practices.

HVIA acknowledges the consultation efforts undertaken by MRWA, and specifically the webinars held throughout June and July, which were attended by many HVIA members.

HVIA has consulted individual members and provides the following collective response to the MRWA draft Roll Coupling Policy (hereafter referred to as 'the policy'). HVIA understands that individual members may also have submitted their own individual responses and feedback to MRWA.

HVIA's response to the policy

Overall, HVIA supports the intent of the policy, in that it aims to reduce the number of heavy vehicle rollovers in Western Australia but **does not support** the policy in its current form.

HVIA's primary reason for that position is that the safety benefits underpinning the policy have not been properly established. That lack of information prevents the completion of a cost-benefit analysis, and any sort of regulatory impact assessment. **Both items are considered necessary for a policy of this nature.**

While HVIA provides explanatory points in an Appendix, alongside a summary of other safety, technical, feasibility, economic, productivity, and regulatory concerns raised by HVIA's members, **HVIA will not consider supporting the policy until**:

- the safety benefits and impacts have been properly established
- a cost benefit analysis of the proposed policy (and alternative options) is completed
- a regulatory impact assessment is completed.

HVIA looks forward to engaging positively with MRWA on the above items.

Appendix – further explanatory points and summary of other concerns

Robustness and thoroughness of the safety analysis

The 'lack of roll coupling' as a causal or contributing factor in Western Australia's recent rollover incidents has not been quantified. That link is necessary as the foundation for any policy that seeks to mandate mechanical roll coupling equipment. Without it, it is not possible to make any definitive statements regarding the expected effectiveness of such a policy.

HVIA notes that the policy infers a link between 'lack of roll coupling' and rollovers via the dominance of non-roll-coupled vehicles in the rollover data. HVIA does not consider that approach to be robust, and it ignores the contribution of the following factors:

- fatigue/distraction
- impairment (e.g. drugs, alcohol)
- skill/experience (e.g. speed selection, lane position, brake application)
- adverse road geometry (e.g. narrow lanes, lack of a shoulder, steep shoulder slopes, high road crossfall, sharp curve radius, low sight distance etc.)
- road location (e.g. 'blackspots')
- vehicle loading (e.g. centre of gravity position, laden axle weight)
- vehicle type (e.g. livestock trailer, bulk material tipper, general freight, refrigerated)
- equipment fitment, malfunction or failure.

The policy states that the crash data has not been normalised by the fleet size, nor by freight-kilometres travelled, and is therefore biased. The impacts of that bias should be properly investigated.

HVIA agrees with the hypothesis that roll-coupling decreases the risk of rollover for a combination but **does not consider it investigated to the extent necessary** to serve as the basis for a policy that mandates mechanical roll coupling to any/all classes of Restricted Access Vehicles (RAVs) in Western Australia.

Investigation of alternate policy options

Any one of the above bullet points might be equal or better targets of heavy vehicle safety policy if investigated. Specifically, the link between centre of gravity height and dynamic stability is well established. It has been suggested that centre of gravity height could be reduced, if length limits were relaxed, which is particularly relevant for the short (27.5 metre) A-doubles identified in the policy as 'high' risk. In that instance, MRWA could prevent or reduce the need for this new policy, by revising an existing one.

Thorough consideration of all available policy options is considered essential for the cost benefit analysis and regulatory impact assessment and must be conducted. To that end, HVIA calls on MRWA to complete the seven RIS questions listed in the *Australian Government Guide to Regulatory Impact Analysis (2020).* Specifically, doing so will ensure that all policy options are considered, the net benefit of each is quantified, and a robust process is followed in proposing the 'best' option to achieve the desired road safety outcome.

Scope of the policy

The policy categorises vehicle combinations with pin couplings as presenting varying degrees of rollover risk. Generally, double and triple combinations are presented as high and medium risk, while quad combinations are presented at lower risk. Pig trailer combinations are not listed at all. Given the effort put into that separation, it is unclear why the policy is stated as applying to all vehicle combinations equally. HVIA notes that MRWA has separately indicated a willingness to consider applying the policy selectively.

Nonetheless, the extent of the scope is crucial for assessing the benefits and impacts, and should either be definitively stated or considered separately as alternative options (i.e. costs/benefits/impacts of applying only to high/medium risk, etc.).

While not as prevalent, there are alternate non-roll-coupled connections available in the marketplace, which include pintle hooks, and 127 mm 'Bartlett' balls that can feature on hinger drawbars in dog trailers. It is unclear if those connections have been considered, and if so, why they are excluded from the policy.

Potential negative impacts on crash outcomes from mandated roll coupling

Trailer rollover is an undesirable outcome with often tragic consequences. Yet in some circumstances, it may be preferrable to hauling unit rollover, which might increase in prevalence if roll coupling is mandated. The eventual result may be increased injury and fatality outcomes for heavy vehicle drivers.

HVIA acknowledges anecdotal evidence refuting the above that points to quad and quin trailer combinations where roll coupling has been applied yet has not resulted in an increase in hauling unit rollover. HVIA understands that for those vehicle combinations, the high overturning moments in rollover and run-off-road scenarios can result in failure of other components, including ballraces, fifth wheels, and dolly A-frames or chassis.

In those instances, the overturning forces originating in the rear-most unit may never reach the hauling unit, preventing the hauling unit from rolling. In shorter combinations, however, there are fewer components between the rear and hauling units. That characteristic may lead to a higher prevalence of hauling unit rollovers when roll coupling is applied, particularly for the 'high' risk combinations identified in the policy including short (27.5 metre) A-doubles.

Like the 'lack of roll coupling' as a causal and contributing factor to rollovers, this is not explored in the policy and should be properly investigated. A thorough analysis of the previous rollover incidents would not only quantify 'lack of roll coupling' as a causal/contributing factor but also allow the impacts of mandatory roll coupling on crash outcomes to be quantified, for all RAV classes, freight sectors, and coupling types.

Lost productivity due to increased weight

The policy provides upper weight limits for the towbar assembly at 180 kg, and the drawbar assembly at 685 kg. That gives a total upper weight limit for the proposed roll-coupled assembly at 865 kg. HVIA understands that figure is more than double the weight of a conventional towbar and drawbar, which means that the policy presents an approximate 400 kg weight penalty for each pin coupling in a heavy vehicle combination. There is no indication of a corresponding increase to regulated axle load limits to offset that penalty, although HVIA understands that it may be under consideration.

Creation of pinch/crush points and manual handling risks

The proposed roll coupling mechanism appears to create additional pinch/crush points near the pin coupling, and as outlined above, it doubles the mass of a hinged drawbar. The increased mass presents additional manual handling safety risks for designers, manufacturers, operators, and service/maintenance staff, yet those risks are not discussed in the policy.

It is unclear if existing coupling and manual handling practices will remain possible/feasible under the proposed design. Auxiliary drawbar lifting devices such as jacks or stands may be required, but are not included in the policy. As such, a thorough risk assessment of the impacts to existing work practices is required.

In that context, implementation of the proposed drawbar may also conflict with existing workplace health and safety legal obligations to eliminate or minimise risks as far as reasonably practicable.

Additional costs

The policy is silent on the increased capital cost brought about by the heavier and more complex towbar and drawbar arrangement, and increased operational costs from higher fuel consumption, and additional maintenance.

The policy is also silent on increases in engineering and certification costs arising from designs built according to the proposed design, or any alternative design.

Technical considerations

The policy discusses a wide range of technical considerations, yet some significant questions remain unanswered. Notable examples are the longitudinal lash limit, D-value impacts, the overturning moment minimum, and the warranty impacts on mating components (notably, the pin coupling itself, and the towbar attachments) arising from the application of forces not originally captured in the design of those components.

The design features a maximum of ±2 degrees of lash (4 degrees total) about the longitudinal axis. The policy indicates that the chosen limit was guided by an analysis of impacts on vehicle dynamic performance, namely Rearward Amplification (RA) and High-Speed Transient Offtracking (HSTO), traded off against increased forces applied to the pin coupling. However, the policy is silent on the expected impact of the chosen lash limit on crash outcomes and does not comment on the possible variance in crash outcomes under alternate lash limits.

D-value for towing components is impacted by applied vertical load. The increased weight of the proposed towbar may impose higher vertical loads than accounted for during D-value certification testing for towing components. The costs of any re-testing required will fall on equipment suppliers. The policy is silent on such potential negative impacts.

The policy recommends a minimum overturning moment of 135 kNm, and notes that value as higher than the 112 kNm value quoted as being typical for fifth wheel assemblies. For combinations featuring both fifth wheels and roll-coupled pin couplings, the fifths wheels would hence be expected to 'fail first' when subjected to high overturning moments. Again, the policy is silent on the expected impacts of those changes on crash outcomes.

HVIA understands that the roll coupled assembly has been designed to avoid applying forces to mating components that are outside of the original design. Some concerns have been raised regarding additional unindented loads applied to the tow eye pins during the connection process, if the roll-coupling mechanism results in misalignment of the pin and the eye.

Practical considerations

Whilst the proposed towbar design is relatively compact, its suitability and feasibility for fitment to a range of different vehicles and sectors is unclear. It may not suit a trailer where there is relatively little clearance above or below the pin coupling, such as a tipping trailer with a 'tip over axle' arrangement. It may not suit trailers where couplings are recessed under decks, such as livestock trailers. It may not suit trailers with special load bodies such as bulk liquid tankers, which can feature safety equipment such as access ladders above the coupling.

The interaction of the proposed design with ancillary systems often fitted to pin couplings also remains unanswered. Such systems include video cameras that aid drivers to achieve secure coupling connections, and pneumatic pin release mechanisms. Furthermore, fitment may conflict with existing vehicle warning signage requirements, such as those outlined in Vehicle Standards Bulletin 12 (VSB12), and other national standards and guides.

There may also be impacts on overall vehicle and combination length that are not discussed in the policy. If existing length limits remain, trailer (and payload) capacity may have to be reduced, and payload distribution may also be impacted.

For operators that are impacted by the policy, interoperability will be greatly reduced within their fleets. Currently, standardisation in pin and drawbar coupling arrangements provides the necessary level of

flexibility within a fleet to service customer transport needs and remain financially viable. Splitting fleets into 'conventional' and 'roll coupled' pin coupling connections will severely impact flexibility, possibly to the extent that some operations/sectors cease to be viable.

National regulatory harmonisation

HVIA strongly advocates for national harmonisation on all matters relating to heavy vehicle standards, policy and regulation. Having a patchwork set of differing rules and requirements across states and territories unnecessarily hinders the industry and its contribution to the economy.

In that context, the policy as intended solely for vehicles operating in Western Australia presents a backwards step. It is unclear if any conversations with other states, the Federal Government, and the National Heavy Vehicle Regulator (NHVR) have taken place. It is unclear if the rollover problem manifests in other states or is specific to Western Australia. The impacts on vehicles completing cross-border haulage tasks are not explored. Such investigation and discussions are considered necessary.

Duplication of existing engineering controls

The policy is silent on the role and function of trailer Electronic Brake Systems (EBS), which is difficult to reconcile, as they are designed specifically to eliminate (or reduce) the types of rollovers that the policy seeks to address.

EBS systems were mandated nationally in ADR 38/05 for all new trailers manufactured after 2019. They are a mature technology that has widespread industry acceptance and are supported by a range of local distributors and service personnel. Additionally, EBS data from fleets may provide useful insights that can inform the safety analysis.

As such, it is difficult to understand why the chosen policy direction is a new, alternate engineering control that doesn't currently exist, is of an untested and unproven design, which carries additional cost and weight penalties, to solve a problem that has not been properly quantified, and may introduce additional, unexplored risks.

HVIA also notes the NHVR's latest revisions to the Directional Stability Under Braking (DSUB) standard in the PBS scheme, which will mandate fitment of EBS to dollies. HVIA encourages MRWA to explore the benefits and impacts of a similar policy change for RAV combinations in Western Australia, in the context of reducing rollovers.