Review of the Vehicle Dimensions & Mass (VDAM) Rule

Discussion Document

December 2015

New Zealand Government

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Minister’s Foreword

Road transport contributes more than $3 billion a year to New Zealand’s economy, with heavy vehicles playing a crucial role in our transport system.

The *Land Transport Rule: Vehicle Dimensions and Mass 2002* (the VDAM Rule) specifies dimensions and mass limits for heavy vehicles, along with vehicle performance and towing requirements.

The VDAM Rule has been in place for over 13 years and has undergone 11 amendments. This review ensures the Rule will continue to strike a reasonable balance between public safety and the efficient operation of heavy vehicles, particularly given ongoing changes in vehicle technology, design and use.

Freight levels are expected to increase by 75 percent over the next 25 years. The majority of this growth will be seen in road freight, which means we are likely to see a greater number of heavy vehicles on our roads. By allowing trucks to operate more productively, we can reduce the number of trips heavy vehicles need to take.

The proposals in this discussion document would give operators access to newer, safer and more innovative vehicles that could further increase efficiency and improve environmental outcomes.

This discussion document addresses the issues of axle mass and gross mass, including in relation to single vehicles (rigid trucks), High Productivity Motor Vehicles, and specialist vehicles, such as buses, concrete mixers, rubbish trucks and fertiliser spreaders.

It also addresses size limits and permitting, with a view to reducing costs and creating new opportunities for vehicle operators.

By encouraging more productive use of the road network, these proposals would boost economic growth and enhance safety for all road users, which are priorities for the Government.

The Ministry of Transport and the NZ Transport Agency have engaged with transport industry stakeholders to help develop proposals for change. I encourage you to read this discussion document and make a submission about the areas that interest you.

Hon Craig Foss
Associate Minister of Transport

Purpose

Introduction

This discussion document seeks your views on proposals to update and improve the Land Transport Rule: Vehicle Dimensions and Mass 2002 (the VDAM Rule).

What is in the review?

The review aims to make the heavy vehicle transport regime work better for New Zealand. Proposals in this document focus on changes to:

- general requirements for dimension and mass limits
- permitting and access conditions, and
- management of overdimension loads.

How you can have your say

This discussion document contains proposals to improve the VDAM system, and your comments are sought on the proposed changes.

The document describes each change, the reasons for proposing that change, and then asks a brief set of questions to guide your feedback. Please choose which sections are relevant to you. Please also give reasons for your answers, as this will help to understand your views.

You can either:

Complete an online submission at http://www.transport.govt.nz/vdam and choose which sections to answer.
Or
Send a written submission addressing the questions in this document that you wish to answer. Please use the submission template available at the web address above.

Please email your submission to VDAM_REFORM@nzta.govt.nz with the words **VDAM Submission** in the subject line.

Or post to:

Ministry of Transport
VDAM Rule Review
Submissions
PO Box 3175
Wellington 6140

The deadline for submissions is Wednesday, 17 February 2016.

Information on the VDAM Rule review, including the current VDAM Rule, is available at http://www.transport.govt.nz/vdam

How submissions will be treated

Your response will be used to develop recommendations for the Government to consider. Public submissions will then be sought on a draft Rule that adopts agreed proposals

A summary of submissions will be published at http://www.transport.govt.nz/vdam. This summary may include names of the organisations or individuals that made submissions. It will not include contact details.

Confidentiality

Once a submission is lodged, anyone can request it under the Official Information Act 1982.

If you do not want your submission released (or aspects of it), please advise what you want withheld, and why, at the time you make your submission.

Under the above Act, the Ministry of Transport, in consultation with the NZ Transport Agency, decides whether to release, or to withhold material. Requesters can appeal any decision to withhold information through the Ombudsman. Further information on the release of information is available at http://www.ombudsman.parliament.nz/.

Summary of proposals

Introduction

Road transport contributes more than $3 billion annually to New Zealand's Gross Domestic Product[1] with heavy vehicles playing a key part.[2] Total freight moved on roads is expected to increase from 236 million tonnes in 2012, to 373 million tonnes by 2042, an increase of 58 percent over 30 years.[3]

By establishing limits for the size and weight of vehicles, and managing exceptions to those limits, the VDAM Rule has a significant role in ensuring that the heavy vehicles moving the nation's freight do so efficiently and safely. The Rule has been in place for 13 years and while it has undergone 11 amendments to aspects of it, there has been no comprehensive overall review. While the Rule generally works well, it needs a thorough examination to ensure:

- it can effectively contribute to meeting the demands on the road network as a result of increased road-based freight and passenger transport
- businesses can take advantage of on-going innovation in vehicle technology and design
- it meets the Government's commitment to *Better Public Services*[4] and better quality regulation.

Heavy vehicle facts

- 142,000 heavy vehicles registered on New Zealand's roads
- Heavy vehicles make up more than 7 percent of all road travel taken[5]
- High productivity motor vehicles (HPMVs) make up 25 percent of truck-trailer combinations
- 90 percent of total freight tonnage is carried on the road network
- 34 percent of the fleet are used imports
- 17.5 years – average age of the fleet
- Emitted 21.5 percent of New Zealand's CO_2 emissions[6]
- 18 percent of road fatalities involved Heavy Vehicles 2010 – 2014 with truck drivers responsible in 35 percent of these fatalities.[7]

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[1] Statistics New Zealand data, available at http://www.stats.govt.nz/browse_for_stats/economic_indicators/NationalAccounts/NationalAccountsIndustryBenchmarks_HOTPYeMar12.aspx.
[2] A heavy vehicle is a vehicle (including buses) that exceeds a Gross Vehicle Mass (GVM) of 3.5 tonnes.
[3] Ministry of Transport, *National Freight Demand Study*, 2014, at http://www.transport.govt.nz/assesstes/Uploads/Research/Documents/National-Freight-Demand-Study-Mar-2014.pdf.
[4] Better for Business – Result 9 is delivering better public services to business customers.
[5] Ministry of Transport, *2014 New Zealand Vehicle Fleet Annual Spreadsheet*, Table 1.11, at http://www.transport.govt.nz/research/newzealandvehiclefleetstatistics/#annual.
[6] Ministry of Transport, *Annual fleet statistics 2014*, p.10.
[7] Ministry of Transport, *Trucks 2015*, p.5, available at http://www.transport.govt.nz/assets/Uploads/Research/Documents/Trucks-2015.pdf.

Suite of preferred proposals

This discussion document seeks your views on proposals to:

Axle and gross mass	• Increase gross mass from 44 to 45 tonne for 8-axle vehicles • Increase axle mass limits for specific categories • Increase pro-forma car transporter gross mass from 36 to 38 tonne • Standardise tolerance levels for weighing mass at 500kg
Width	• Increase allowable vehicle width from 2.50m to 2.55m
Height	• Increase allowable vehicle height from 4.25m to 4.30m
Permitting	• Allow 50MAX vehicles to operate without a permit on the 50MAX network • Introduce bulk permits for HPMV • Give road controlling authorities (RCAs) greater flexibility to permit overweight vehicles • Formalise current working list of indivisible loads • Allow multiple crane boom sections to be carried as a single load
Smaller changes	• Allow a temporary increase in vehicle height for ground clearance • Allow overweight/overdimension vehicles to operate without permit in emergencies • Revise Schedule 2 mass limits • Remove pilot tyre size requirement

Impacts of proposed Rule changes

This suite of policy proposals would likely lead to changes in the heavy vehicle fleet. It would:

- accelerate fleet turnover and introduce new vehicles with intelligent technologies that can improve safety and efficiency, and lower emission levels
- increase options to purchase new vehicles – moving to 2.55m width increases the range of vehicles available to operators
- grow 50MAX, HPMV and 45 tonne vehicle combinations market share
- lead to fewer heavy vehicle trips
- lead to fewer heavy vehicles on the network for an equivalent transport task.

Productivity will increase

Allowable weight and dimensions significantly affect the efficiency of passenger and road freight transportation. If a vehicle is able to take greater weight, this generally results in lower costs per tonne-kilometre. This was the basis for introducing HPMV and the 50MAX class (within HPMV), which can carry heavier and/or longer loads than standard vehicles. The proposals in this paper to increase allowable width, weight and height are expected to lead to fewer vehicle trips and so (with other things remaining equal) further reduce costs per tonne-kilometre.

Safety: Net risk is expected to reduce, but some risk created

Heavy vehicles pose a particular challenge to road safety. The number of fatal truck crashes per million kilometres reduced by about half from 2000 to 2008, but the rate has remained reasonably constant for the past six years, at about two fatal crashes for every 100 million truck kilometres.[8] However, the crash rate for trucks remains three times higher than for light vehicles, and the consequences of crashes involving heavy vehicles are generally more serious than light vehicle crashes.

In developing the proposals for this discussion document, particular care was taken to consider their safety implications. Key risks include:

- increasing allowable mass for some vehicles has the potential to increase the consequences of some crashes
- increasing the maximum vehicle width may pose a risk for other road users because of reduced separation between vehicles on narrower roads, and with other road users.

However, these risks are expected to be mitigated by the following:

- the reduction in the number of vehicle trips for a given freight task is likely to lower the risk of crashes for all users of the network
- the changes will likely accelerate fleet turnover for larger and heavier vehicles and so hasten the uptake of new safety technologies such as autonomous emergency braking, blind spot warning systems, electronic stability control, and lane departure warning systems.[9]

Environmental effects expected to be positive

The reduced number of vehicle trips for a given freight load also benefits the environment. Improved environmental results are likely to result from:

- fewer truck trips creating benefits by reducing noise, localised congestion, and emissions
- incentives for operators to move to newer vehicles will help to hasten the introduction of new technologies for reducing emissions and pollutants.

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[8] Ministry of Transport, *Trucks 2015*, p.4, available at http://www.transport.govt.nz/assets/Uploads/Research/Documents/Trucks-2015.pdf.

[9] Safer Journeys, Vehicle Standards Map 2014. For a report on the benefits of emerging safety technologies, see Budd and Newstead (2014), *Potential Safety Benefits of Emerging Crash Avoidance Technologies in Australasian Heavy Vehicles*, at http://www.monash.edu.au/miri/research/reports/muarc324.pdf.

Pavement wear would be impacted

Road damage increases rapidly with increased weight on each axle. The configuration of the overall fleet of trucks in New Zealand, that is their weight and axle arrangements, is a critical factor affecting pavement longevity and the need for road maintenance and repair.

These proposals are expected to encourage further uptake of 9-axle 50MAX vehicle combinations. These vehicles carry heavier loads but have the same or even less impact on pavement wear as a standard 8-axle vehicle with 44 tonne gross weight.

The proposal for road controlling authorities (RCAs) to allow a wider range of heavy vehicles to access roads under permit, may create increased pavement wear. This would be a factor the RCAs will need to consider when deciding whether to issue such a permit.

Some infrastructure costs would slightly increase

Infrastructure costs, such as for bridges and tunnels, may increase, although not significantly. The proposed increase in vehicle height may increase the risk of overhead strikes on some overpasses, tunnels and bridges.

The Transport Agency has a programme to extend 50MAX and HPMV networks including upgrading some bridges. This work is independent of any changes that may occur from the review of the Rule.

Compliance costs reduced by permit changes

Compliance costs result from enforcement activities and from permitting requirements. The increase in the allowable mass of an 8-axle vehicle from 44 to 45 tonnes, in conjunction with a reduction in weighing tolerance from 1.5 tonne to 500kg, would benefit those operators who currently comply with the Rule, as they would gain access to a further one tonne of load. The proposals for permitting would reduce compliance costs for many heavy vehicle operators, especially those using 50MAX vehicles, or those operators ho currently require multiple permits for their fleets.

Estimated benefits of proposed VDAM Rule changes

A preliminary cost-benefit assessment of the proposals has been undertaken by independent advisors.[10] Their analysis showed that the combined effect of the proposed changes would deliver net present value benefits over 30 years of:

- $634 million (expected)
- $1,059 million (optimistic estimate)
- $313 million (conservative estimate).

[10]Castalia Strategic Advisors. 2015. *Vehicle Dimensions and Mass Review: Framework for Options Assessment & Draft Rule Change Cost Benefit Analysis*. Benefits are in addition to those expected to be achieved through current policy settings, p.iv.

About the Review

What the review is about

The Ministry of Transport and the NZ Transport Agency have initiated a joint review of the framework that regulates the dimensions and mass of vehicles operating on New Zealand roads. The aim of the review is to enable improved transport productivity through ensuring a better fit between vehicles and the roading network, by reducing compliance costs, and taking a risk-based approach to enforcement. The review aims to deliver benefits that:

- improve road safety and community well-being through encouraging freight and passengers to be carried by safer vehicles
- improve vehicle operator compliance
- optimise the use of New Zealand's roading network.

Why change is required

The VDAM Rule needs to support a range of competing elements such as economic growth, public road safety, the delivery of goods and services to the public, and provide confidence and certainty to business and public entities wanting to invest or innovate in the transport marketplace. In short, the regulatory environment that the Rule creates needs to be relevant, stable, and fit for purpose.

The Rule has been in place for 13 years and has undergone 11 amendments, but no comprehensive review has occurred. While the Rule is generally working well, it requires well-placed change if it is to:

- meet projected increases in land-based freight and passenger transport demand
- take advantage of on-going innovation in vehicle technology, design and use
- provide an agile regulatory platform that can systematically meet economic growth while ensuring New Zealand's roading assets are maintained
- meet Government's commitment to *Better Public Services*[11] and better quality regulation
- be consistent with Government's *Safer Journeys*[12] commitment to improvements in road safety.

[11] Better for Business – Result 9 is delivering better public services to business customers.
[12] The *Safer Journeys* strategy is available at http://www.saferjourneys.govt.nz/.

The VDAM System

Understanding the constraints and the vehicle system

Most vehicles used on public roads are required to fit within the maximum size (dimensions) and weight (mass) limits specified in the VDAM Rule. The Rule also sets out the performance requirements vehicles must comply with to gain general access to the roading network. It also specifies the conditions under which vehicles that do not meet the standards for general access, can use the roading network.

A key objective of the Rule is to balance the risks that heavy vehicles present to other road users, and their impact on the road infrastructure, against the need to allow the heavy vehicle fleet to optimise its operations. Diagram 1 below illustrates the environment in which the Rule operates.

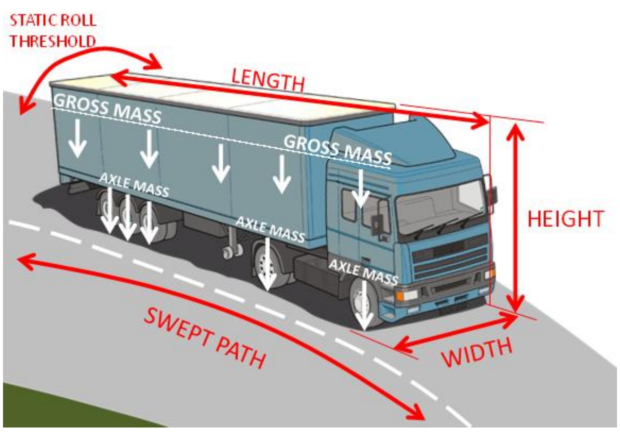
Diagram 1: System view of the VDAM Rule

The World of VDAM

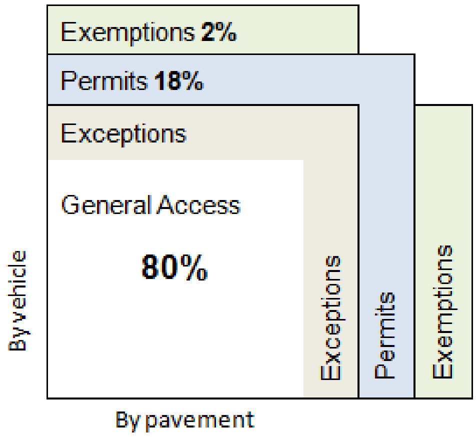
Vehicles this review impacts

- All vehicles over 3500kg gross vehicle mass – refrigerated, open deck, buses, trailers
- Agricultural vehicles – fertiliser spreaders, tractors, harvesters
- Cranes – including mobile cranes
- Specialist loads – rubbish trucks, concrete mixers, other utility vehicles
- Other specialised heavy haulage vehicles

Vehicle & pavement



The VDAM System



Underpinned by a compliance and enforcement strategy

Balancing these requirements

Most of the options provided in this document establish boundaries between general access and constrained use of the roading network. The preferred approach is to allow general access for a high proportion of the heavy vehicle fleet, and only require permits for a small portion of the freight and other transport tasks. The Rule already provides for some exceptions for vehicles or loads not meeting general access, but for which no permit is required. Permits provide RCAs with visibility of the loads carried on their roads, and allow the constraints to be made explicit. Permits also impose costs on operators. Permits are not automatic – an RCA may refuse to issue a permit, and can revoke an existing permit where breaches of its conditions occur.

The VDAM Rule outlines the following requirements under which heavy vehicles may operate:

General Duties such as:

Must fit on road, not cause damage

Static Roll Threshold

Stability requirements

Weight requirements (mix of):

- Configuration (axle types and distances)
- Axle weights
- General limits above 39 tonnes

Dimension requirements:

- Width standard plus exceptions for some load types
- Turning circle / swept path

Permits for additional weight

Permits for over dimension travel

Piloting requirements

Responsibilities (links to offences)

Schedules

- Mass limits
- Permit forms
- Travel times and restrictions
- Swept path

Approach

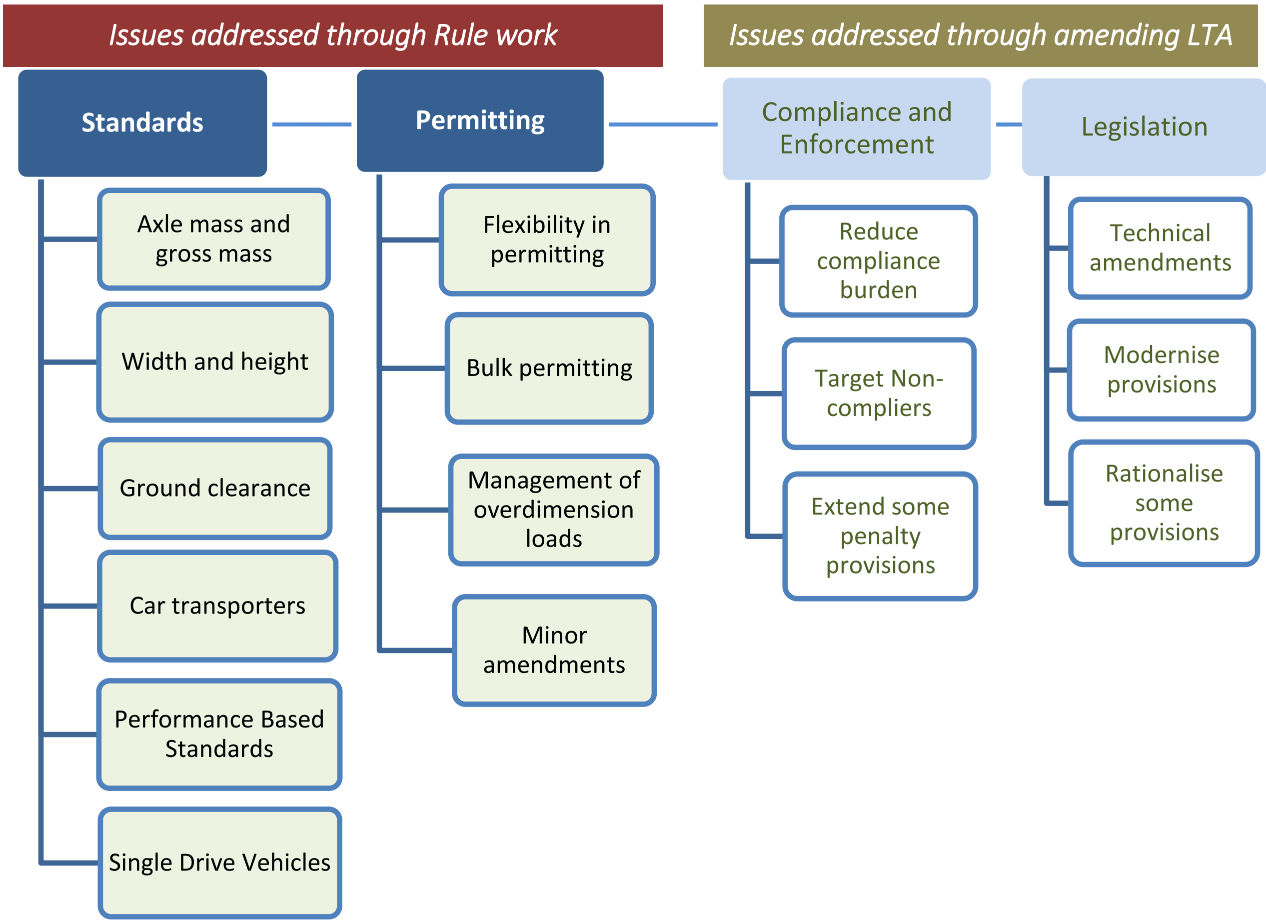
The review at a glance

Stakeholder workshops held in 2014 and 2015 identified a broad range of policy issues for consideration. The majority of issues related to provisions in the Rule, with a smaller number relating to its administration, and/or the design of the broader regulatory framework (e.g. whether certain matters should be provided for in the Land Transport Act 1998 (LTA), regulations or in the Rule). A small number of issues relating to compliance and enforcement can only be addressed through amendments to the LTA.

What views are being sought – standards & permitting proposals

Diagram 2 outlines the workstreams and channels through which issues will be addressed. The substantive changes are in the standards and permitting workstreams. While the document briefly discusses the other two workstreams, your views are sought particularly on changes to existing legal standard limits and the permitting regime.

Diagram 2: VDAM Work Programme and how issues will be advanced



Developing the proposals and options in this paper

Proposals need to strike a balance between productivity, road safety, vehicle operator compliance, and the road infrastructure. The following principles also guided thinking:

- general access should prevail where possible
- permits and exemptions are used only when necessary
- proposals need to provide certainty for New Zealand's vehicle owners and fleet operators
- approaches to enforcement are risk-based
- compliance should be made easy.

Consultation

In developing this discussion document there was active engagement with stakeholders, including those from the transport industry and others with particular interests, such as road safety.

Stakeholder engagement involved:

- workshops where issues with the current VDAM Rule were identified and ways to address those issues discussed. Subsequent workshops explored proposed solutions and their effectiveness from stakeholders' perspectives
- presentations to stakeholder conferences on the Rule review, including the Road Transport Forum, Heavy Haulage Association, Institute of Road Traffic Engineers of New Zealand and others
- participation in Government/industry development groups, such as the High Productivity Reference Group (jointly chaired by the Transport Agency and the Road Transport Forum) and the Freight Operators Forum
- meetings with individual stakeholders.

This review provides an opportunity to improve the Rule and how vehicles operate on New Zealand's roads. By having your say on the VDAM Rule Review, you can help shape these changes.

Your response will be used to develop recommendations for the Government to consider. Public submissions will then be sought on a draft Rule that adopts agreed proposals.

Links to other work

The Rule review will also be informed by the following pieces of work:

- review of performance based standards – A series of performance requirements that a vehicle must meet, while allowing operators and manufactures to determine how to configure a vehicle to meet those requirements. Currently being undertaken by TERNZ[13] and will be discussed with industry stakeholders.

- proposals for assessment of pavement impact from increased axle loads by Infrastructure Decision Support.

The following consultation document may also be of interest to readers of this discussion document:

- Land Transport Rule: Vehicle Dimensions and Mass Amendment [2016], relating to buses (submissions close on 21 December 2015).[14]

[13] Transport Engineering Research New Zealand Limited.
[14] Available at http://www.nzta.govt.nz/VDAM-Amendment-2016.

Axle mass and gross mass

Current axle mass and gross mass standards

The VDAM Rule currently places limits on vehicle mass in two main ways:[15]

- limiting the gross mass of a vehicle, or combination of vehicles[16] to protect the main structural elements of bridges and other structures
- limiting the mass on axles and axle sets[17] to protect roads from excessive wear and damage, as well as protecting bridges.

Mass limits for truck-trailer combinations are similarly designed, but with a particular consideration for the safe operation of the combination. The setting of mass limits for general access takes into account the differing standards of New Zealand's roading network, including State highways and local roads designed for different levels of expected use.

Axle mass limits vary depending on the size and/or number of tyres per axle, and whether axles are spaced or in sets.[18] Axle mass limits that are higher than those stated in the Rule can be allowed only for high productivity motor vehicles (HPMVs) under permits for indivisible loads.[19]

Data from the Transport Agency's weigh-in-motion sites on State highways indicate that 91 percent of operators are complying with the current weight limits. The estimated level of compliance drops to 82 percent for truck and trailer combinations.

Problems with current axle mass and gross mass standards

Consultation with stakeholders identified four main concerns with the mass limits contained in the current Rule:

- the network may be under-utilised because limits may be conservative in relation to current road and bridge conditions and capacities
- limits need possible updating to reflect changing vehicle and tyre design. For example, the defined axle sets and vehicle combinations may no longer fully reflect the characteristics of the current fleet, or be appropriate for emerging vehicle designs
- newer technologies, such as air suspension systems and electronic braking, are resulting in reduced impact on roads
- the current tables in Schedule 2 of the Rule are considered by many to be overly complex, and could be simplified, especially in relation to multi-axle sets.

[15] Section 4.5. Further requirements are placed on vehicle combinations, in relation to towed and towing vehicles (sections 4.4. and 4.6).
[16] Section 4.3.
[17] Section 4.5.
[18] Schedule 2 of the VDAM Rule – Part A provides general (standard) limits, Part B details the limits for HPMVs, and Part C (inserted into the Rule in 2015) provides higher rear axle set limits for High Capacity Urban Buses.
[19] Section 5.1.

As a result, the existing network infrastructure may not be fully utilised under the existing limits. An increase in limits would provide productivity benefits to industry, and community well-being benefits from fewer heavy vehicle trips reducing crash risks, congestion and vehicle emissions.

A simple correlation exists between axle mass limits, productivity, and the impact on infrastructure. That is, an increase in the axle mass limit would provide a related productivity gain from vehicles carrying heavier loads and making fewer trips. Safety outcomes would not be adversely impacted, as vehicles would still be operating within their design specifications, and the reduced number of trips can be expected to reduce the crash risk. However, heavier axle limits will result in increased costs of maintaining the roading network, as infrastructure deteriorates more quickly under heavier loads.

Consequently, there could be a cost from delays caused by increased road maintenance. In addition, extended maintenance work may place additional pressure on detour routes that may not be designed to cope with heavy vehicles – this could be a particular concern if axle mass and gross mass limits are both increased.

Heavier axle mass limits would correlate with higher Road User Charge (RUC) rates, to reflect the increased impact on the roading network. Ideally, the increased revenue from the higher RUC rates would match the increased costs of more regular maintenance of the roading network infrastructure. The focus of the following options is to consider the relationship between these impacts, and the costs and benefits for each.

New Zealand Roads

New Zealand typically has lower axle mass limits than those allowed overseas. This reflects New Zealand's generally softer volcanic soils compared to the stronger residual soils found in continental countries. In addition, the chip-sealed granular pavements that are extensively used in New Zealand have poorer load-bearing capacity when compared to the widespread use of structural asphalt or concrete (as used overseas).

The combination of these factors means that higher axle loads create more rapid deterioration of the road pavement. For road users, the most obvious effect is increased rutting of the pavement along the paths of heavy vehicle wheels. Therefore, any increase in total vehicle or axle mass limits needs to be carefully considered against the consequent need to develop and maintain New Zealand's roading network to an increased standard.

Impacts of increased axle mass and gross mass

Productivity

Under the existing Rule, productivity has increased in recent years through the introduction of HPMV permits (including the 50MAX class), and more recently with increases to axle mass for high capacity urban buses (HCUB). The Transport Agency estimates a commercial saving of $30-50 million has been achieved since the introduction of 50MAX in 2013. Additional productivity benefits can be difficult to quantify as they relate to the particular transport task, vehicle, or mass increase being considered. However, any increase in current axle mass limits could add to the productivity of the sector of the heavy vehicle fleet concerned. In addition, a reduction in the need for issuing permits, where possible, would reduce operator and regulator costs.

Safety and community well-being

There would be no change to the requirement that vehicles are operated to interact safely with road users, and that the dynamic handling characteristics of the vehicle remain safe in terms of stability and steering manoeuvres.[20] Any increase in load-carrying capacity as a result of this proposal would still require a vehicle to be operated within its design specifications.

Improvements in efficiency through increased carrying capacity means the same freight task could be completed with fewer vehicles kilometres travelled (VKT). The actual risk of crashes can be expected to reduce due to the fewer VKTs and heavy vehicles on the road network. This would also have a positive impact on current congestion levels. However, increased mass may mean that the consequences of crashes that do occur are greater.

Improvements in productivity are likely to create an incentive to renew New Zealand’s heavy vehicle fleet more quickly, providing a faster take-up of new safety, vehicle performance and emissions technologies. A reduction in vehicle use for the same freight task would also contribute to fuel savings and a reduction in harmful emissions.

Network utilisation

Increases to axle mass and gross mass limits may require RCAs to manage access on local roads, and to place restrictions on parts of their roading network (particularly bridges) that may not be able to cope with the heavier loads. However, the number of ‘choke’ points on main transport routes is steadily decreasing through an extensive programme of bridge-strengthening work.

The overall objective of the proposals is to match the total transport task to the capacity of the roading network, providing greater use of network resources.

Proposals to increase axle mass and gross mass

Seven proposals have been identified, including maintaining the status quo. It is possible to support a suite of proposals, rather than just one. A summary of these proposals is discussed below.

[20] Section 2 VDAM Rule.

Proposal 1 – Maintain current axle mass and gross mass limits

Proposal 1: Maintain current axle mass and gross mass limits	
Benefits • Allowance for heavier vehicles through HPMV and HCUB • Current limits are considered to be within network infrastructure capacity • Limits are known and understood by operators and regulators.	**Risks and Implications** • Does not optimise productivity by matching the transport task to network capacity • Current limits do not reflect changing vehicle designs and new technologies.

Proposal 2 – Revise Schedule 2 limits

Proposal 2 provides for a more accurate matching of axle mass limits to the impact that vehicles have on the roading infrastructure. The revision would also simplify the General Mass Limits in Part A, to make these more easily understood. Any revisions would either maintain or slightly increase existing mass limits. Proposed revised tables are set out in the Appendix on pages 57-63.

Proposal 2: Revise current Schedule 2 limits	
Potential Gains • Minor productivity gains • Regulation is simplified, easier to understand.	**Potential Risks and Implications** • As this proposal is not suggesting significant changes to existing limits, there are no anticipated disadvantages.

Proposal 3 – Increase general access gross mass limit from 44,000kg to 45,000kg

Proposal 3 provides that the gross mass limit is increased for vehicle combinations of at least 16m length and at least 8 axles, from the current maximum of 44,000kg, to 45,000kg. This proposal benefits those operators who operate to the legal maximum limit and have the capacity to carry an additional 1,000kg. This would be expected to result in a reduction in the number of vehicle trips required for the same freight task, and increase the productivity of this sector of the vehicle fleet. The proposal includes the safeguard for pavement impact that the maximum 45,000kg has to be carried over 8 axles. A 7-axle vehicle combination weighing 44,000kg causes more wear to roads than an 8-axle vehicle combination weighing 45,000kg, as it equates to heavier weight on individual axles. Seven-axle combinations currently also have a payload advantage over 8-axle combinations, due to having a lower tare weight. Increasing the limit to 45,000kg (only for combinations with at least 8 axles) would remove that advantage, and encourage the take-up of safer, more pavement friendly, 8-axle combinations.

This proposal should be considered in conjunction with Proposal 7 in this section (reducing tolerance from 1,500kg to 500kg). There would be a cost to operators of 7-axle combinations who currently load above the legal limit, to the tolerated 45,500kg, without obtaining a permit and without purchasing a road user charge (RUC) licence appropriate to the additional weight. These operators will need to reduce their load by 1,000kg to avoid being liable for overloading penalties. This cost is outweighed, however, by the benefits obtained from reduced road damage. A 7-axle vehicle combination loaded to 45,500kg is estimated to cause, on average, 50 percent more pavement damage than 8-axle combination at the same weight. Road user charges for 7-axle combinations do not reflect the damage caused when running at more than 44,000kg.

Proposal 3: Increase general access gross mass limit from 44,000kg to 45,000kg	
Potential Gains	**Potential Risks and Implications**
• Improved productivity, allowing the same transport task to be completed in fewer VKT • Greater safety and amenity, and less congestion for other road users due to fewer heavy VKT • Encourages take-up of safer, more pavement friendly 8-axle combinations.	• No benefit for 7-axle combinations.

Proposal 4 – Remove the permitting requirement from the operation of 50MAX

This proposal puts forward that the current 50MAX sub-set of HPMVs not be required to operate under permit. The 50MAX pro-forma designs were developed with the expectation that they would eventually be able to access almost all of the roading network, with the Transport Agency's bridge strengthening programme contributing to the extension of the 50MAX network. By the end of July 2015, 4,881 50MAX permits (including 1,978 prime movers) had been issued to around 550 operators.

Experience with the 50MAX initiative has indicated that uptake of HPMV permits may be increased by moving away from the principle embodied in the current Rule that over weight and over dimension loads are exceptional. In particular, the use of standard vehicle requirements and access to a common network can expand the potential benefits to operators.

This proposal would be achieved by extending Table 6 (Part A, Schedule 2) to 50,000kg (see the Appendix), giving vehicles to this mass limit and 50MAX configuration an 'as-of-right' access to appropriate parts of the roading network.[21] Conditions could be attached to this portion of the general

[21] It is envisaged this would be an evolving and changing network reliant on the load-bearing capacity of bridges and roads, in the same way that the current 50MAX regime operates.

access category, as currently occurs under 50MAX permits. However, the requirement for a permit would be removed.

The 50MAX fleet has been operating under permit since 2013, enabling the same transport task to be moved in fewer trips. This has resulted in fewer emissions and less congestion. Vehicles in the 50MAX fleet have better standards of safety systems (such as electronic braking, and increased roll-over resistance) than conventional 44-tonne combinations.

If 50MAX vehicles were allowed to operate without the need for a permit, this would likely further encourage the take-up of these vehicles as an industry standard.

Proposal 4: Remove the permitting requirement from the operation of 50MAX	
Potential Gains	**Potential Risks and Implications**
• Provides efficiency and economic benefits for operators • Enables greater flexibility in the use of vehicles • Acknowledges current practice in a sector that is operating well under permit.	• May reduce compliance incentives – permits provide a compliance incentive as poor compliance can result in loss of permit • About 3,000 of 14,000 local road bridges are currently not available for 50MAX vehicles.

Proposal 5 – Increase axle mass limits for specific categories of vehicles

To make greater use of roading infrastructure, specific components of the heavy vehicle fleet could be allowed to exceed standard limits, within prescribed conditions and parameters. Some caution is required, as while roading infrastructure is designed to bear a limited number of loadings above the standard Rule limits, repeated loadings can reduce the service life of the infrastructure. Therefore, the frequency and weight of specific transport tasks need to fit within the design parameters of the roading network. In this way, a better 'fit for purpose' could be achieved. Examples of where this currently exists are the special HPMV and HCUB axle mass limits in Schedule 2 of the Rule.

Following the introduction of HPMV permits, local RCAs expressed concern over the impacts of heavier vehicles on less well-built local roads. RCAs were also concerned about whether sufficient central government funding would be available in the event of unanticipated negative infrastructure impacts.[22]

Providing more specialised categories in the Rule, with or without the need for permits, could better reflect the needs of the road transport industry, and particularly for specific sectors that have specialised vehicle requirements, without necessarily putting unsustainable pressure on the network infrastructure. Suggested vehicle types, transport tasks, and road networks that could be given special dispensation, could include:

[22] Stimpson and Co. 2014. *Monitoring, Evaluation and Review of the Vehicle Dimensions and Mass Rule Implementation: May 2011 to April 2013*, 6 May 2014, v5.0, p.9, at https://www.nzta.govt.nz/assets/Commercial-Driving/docs/Monitoring-evaluation-and-review-of-the-Vehicle-Dimensions-and-Mass-Rule-30-April-2013.pdf.

- buses – due to their rear-mounted engines
- concrete mixers and rubbish trucks – where it is difficult to add axles to distribute load
- fertiliser spreaders – mostly working off-road, and not suited to additional axle sets.

In October 2015, an amendment to the Rule allowed HCUBs access to heavier rear axle weights.[23] The Government is separately proposing a further Rule amendment to extend HCUB limits to all buses. If this were adopted, the amendment would come into effect in mid-2016, ahead of any amendments from this review.[24]

This proposal could adopt a similar approach to dealing with specific types of vehicles or tasks. It could also involve defining routes on which vehicles configured for the transport of such freight tasks could operate.

A further consideration is whether access to heavier mass limits should only occur by permit. A permitting regime provides a greater degree of control and monitoring by RCAs, helping to ensure that the impacts of increased mass are within the capacity of the roading infrastructure.

The primary questions for this proposal are:

1. Should higher axle mass limits extend to additional vehicle categories or transport tasks?
2. If yes, which categories or tasks should have access to higher axle mass limits?
3. What conditions, permitting requirements and/or limitations should be placed on the use of higher axle mass limits?

Proposal 5: Increase axle mass limits for specific categories of vehicles	
Potential Gains	**Potential Risks and Implications**
• Productivity gains for sectors gaining access to heavier allowable limits • Ability to more accurately match the overall transport task with network capacity.	• Productivity benefits can be difficult to quantify – dependent on the type of vehicle or task being considered, and the increase in allowable axle mass • More complex regulation, resulting in additional monitoring and compliance effort.

Proposal 6 – Amend tyre size categories for axle mass

The Rule currently provides for two tyre sizes, and sets mass limits in relation to these:

- Single large-tyred axle means a single-tyred axle that is not a single standard-tyred axle.
- Single standard-tyred axle means a single-tyred axle fitted with tyres smaller than:

[23] Land Transport Rule: Vehicle Dimensions and Mass Amendment 2015. This amendment inserted a new Part C into the Schedule 2 axle mass tables – see Appendix A.
[24] Interested stakeholders are encouraged to make a separate submission to the proposed Rule change, which is open for submissions until 21 December 2015. Information is available from the Transport Agency website, at http://www.nzta.govt.nz/VDAM-Amendment-2016.

(a) a manufacturer's designated tyre section width of 330mm and a rim diameter of 24 inches at the bead seat; or

(b) a manufacturer's designated tyre section width of 355mm and a rim diameter of 19.5 inches at the bead seat.

Stakeholder consultation has led to proposals that the Rule could reflect a greater variety of tyre sizes. For example, wider ‘mega’ (also known as ‘super single’) tyres have the benefit of distributing mass over a larger footprint, therefore reducing pavement impact and wear. However, at some sizes, current allowances are already more generous than comparable Australian standards. For example, the New Zealand limit of 7,200kg for tyres of 355mm to 374mm width is 1,200kg heavier than the Australian equivalent.

This proposal would remove the reference to rim diameter from the Rule’s tyre size definition. In addition, it is proposed that a third tyre size be included to facilitate the increasing use of ‘mega’ tyres. The proposed sizes, and a comparison of axle mass limits (for non-steer single axles), are shown in Table 1 below. There would be no increased axle mass benefits for the use of ‘mega’ tyres within other axle sets.

Table 1: Proposed axle mass limits

Tyre width	Australia[25] (kg)	VDAM current (kg)	VDAM proposed (kg)
less than 355mm	6,000	6,000	6,000
355mm – 374mm 375mm - 449mm	6,000 6,700	7,200	7,200
450mm +	7,000	7,200	8,200

Proposal 6: Amend tyre size categories for axle mass	
Potential Gains	**Potential Risks and Implications**
• Productivity benefits for some operators.	• No new benefits for the use of ‘mega’ tyres in other axle sets and configurations.

Proposal 7 - Reduce weighing tolerance from 1,500kg to 500kg

Regulations allow for a weighing tolerance that anticipates: the weight of some loads may be difficult to determine; there may be some variability in the weights recorded by different sets of scales; and that there may be increases in weight resulting from causes such as rainfall on exposed loads or livestock. Maximum weighing tolerances are provided for in the Land Transport (Offences and Penalties) Regulations 1999, with current tolerances scaled from:

[25] From *National heavy vehicle mass and dimension limits*, National Heavy Vehicle Regulator, August 2015, at https://www.nhvr.gov.au/files/201508-0116-mass-and-dimension-limits.pdf.

- 500kg - weights up to 11,000kg
- 1,000kg - weights from 11,000kg to 33,000kg, and
- 1,500kg - weights heavier than 33,000kg.

It has become a widespread practice for operators to load up to the current tolerance levels, above the legal limits prescribed in the Rule. For example, where the prescribed maximum vehicle mass is 44,000kg, the 'tolerated' mass of 45,500kg is often adopted as the acceptable limit. In these cases, operators are paying RUC on 44,000kg, and therefore not paying for the impact the additional 1,500kg is having on the road network. This is also creating a competitive disadvantage for operators who comply with legal limits.

This proposal reduces tolerance to 500kg for most legal maximum weights, with the exception being the 300kg tolerance on front-steering axles, which will be retained.[26] Adoption of this proposal will also be consistent with the existing 500kg tolerance for HPMVs under the Rule.[27] The proposal better reflects the level of accuracy of modern weighing techniques, compared to accuracy levels when the 1,500kg tolerance level was established.

This proposal should be considered in conjunction with Proposal 3 (increasing the general access gross mass limit from 44,000kg to 45,000kg). Without adoption of this reduced tolerance proposal, the move to 45,000kg would equate to a 46,500kg tolerated limit. This is considered beyond acceptable general access gross mass limits, and therefore it is expected that Proposal 3 will only be progressed in conjunction with this proposal.

Proposal 7: Reduce weighing tolerance from 1,500kg to 500kg	
Potential Gains	**Potential Risks and Implications**
• Reduces current levels of over-loading • Provides equity for operators loading to legal limits • Reflects the accuracy of modern weighing devices • Reduces non-payment of RUC on over-loading.	• Lower tolerance level could impact on some operators who do not have convenient access to a weighbridge, or in calculating off-road loading (e.g. livestock, logs).

Single-drive combinations

In preliminary discussions with industry, an increase from the current gross mass limit of 39,000kg[28] to 44,000kg for single-drive combinations was suggested, to align with overseas jurisdictions. As part of the review of gross mass limits, the analysis showed that operating conditions (topography and lower axle mass limits) in New Zealand would not support a higher mass limit for single-drive combinations. Single-drive combinations operating at the proposed 44,000kg under New Zealand conditions would

[26] Schedule 1A, Clause 5(2)(a), Land Transport (Offences and Penalties) Regulations 1999.
[27] Section 5.8(1), VDAM Rule.
[28] Section 4.3, VDAM Rule.

not be able to maintain traction or startability at a gradient of 12 percent or more, whereas the appropriate standard for New Zealand conditions is considered to be about 15 percent. At this stage, the preferred option is to maintain the status quo to ensure single-drive combinations are operated safely in New Zealand.

Increase mass limits beyond current proposals

This paper also seeks your views on whether mass limits could be extended beyond what is being proposed above, with the aim of further improving productivity and reducing vehicle trips. Any extension of mass limits beyond what is being proposed would require an impact assessment regarding safety, pavement wear and bridges, to determine appropriate heavier limits for State highways and local roads. A further consideration is that increased mass limits could be expected to result in increased RUC rates over time, as a reflection of accelerated pavement impact.

Submitters are encouraged to consider these issues with regard to how greater mass limits would impact: (a) vehicle operators and their fleets; and (b) local infrastructure, road safety, and the regional economy for RCAs, and community groups and local businesses.

Preferred Proposals

Proposal	Description
1	Maintain current axle mass and gross mass limits
2	Revise current Schedule 2 limits
3	Increase general access gross mass limit from 44,000kg to 45,000kg
4	Remove the permitting requirement from the operation of 50MAX
5	Increase axle mass limits for specific categories of vehicles
6	Amend tyre size categories for axle mass
7	Reduce weighing tolerance from 1,500kg to 500kg

Proposals 2, 3, 4, 6 and 7 are all preferred against the status quo, for the reasons outlined above. Proposal 5 is also supported, to allow for the extended use of heavier axle mass limits for particular vehicles where assessed as appropriate. It is intended that Proposal 3 will only be adopted if Proposal 7 is also adopted, due to the impact of heavier gross mass limits.

1. Axle mass and gross mass – questions for your submission

a) Select the proposals you support in relation to axle mass and gross mass limits:

- ☐ Proposal 1: Maintain current axle mass and gross mass limits.
- ☐ Proposal 2: Revise current Schedule 2 limits (as shown in Appendix A).
- ☐ Proposal 3: Increase general access gross mass limit from 44,000kg to 45,000kg.
- ☐ Proposal 4: Remove the permitting requirement from the operation of 50MAX.
- ☐ Proposal 5: Increase axle mass limits for specific categories of vehicles (please state which categories of vehicles, and your reasons).
- ☐ Proposal 6: Amend tyre size categories for axle mass.
- ☐ Proposal 7: Reduce weighing tolerance from 1,500kg to 500kg.

b) Why have you chosen these proposals?

c) Are there any potential gains, risks or implications of these proposals you think have not been discussed?

d) In relation to increasing mass limits beyond current proposals, indicate whether you would support heavier limits or not, and how this is likely to impact your area of interest?

e) Do you have another proposal that has not been presented?

Width

Current width standard

The VDAM Rule currently prescribes a general maximum width of 2.50m for all vehicles and their loads.[29]

It also provides a list of exceptions[30] that allow a vehicle's width to extend beyond 2.50m, without specific approval. These include:

- load-securing devices, such as ropes, lashings, straps, chains, and j-hook assemblies, which can extend an additional 25mm from either side of the vehicle
- tyre bulge.

These exceptions create a maximum 'on-the-road' width of 2.55m, and this maximum width is a primary factor in the relationship between vehicle dimensions and New Zealand's roading network design.

Other exceptions, also not requiring specific approval, include:

- side marker lamps and direction indicators (measurements not specified)
- side mirrors (+240mm either side)
- hubodometers and tyre inflation system hoses (+75mm either side)
- grab rails (+50mm either side).

Further exceptions relating to loads are also allowed. These are specifically for hay bales, wool bales, and concrete pipes loaded transversely. In these cases, the maximum width is 2.70m.[31]

The Transport Agency and other road controlling authorities (RCAs) may issue permits for indivisible loads to exceed standard widths.[32] For overwidth vehicles and loads beyond the general limits, which also relate to height, length and overhang dimensions, special operating requirements need to be met (e.g. signage, use of pilots, operating hours).[33]

Problems with the current width standard

The potential maximum carrying capacity of the 2.55m road 'footprint' is constrained by the current width standard. The current Rule allows vehicles with a chassis and body width of 2.50m to have a total width of 2.55m when load-securing devices are included. Operators of box body (enclosed) vehicles, who do not need the additional 50mm width to secure their loads, are constrained to 50mm

[29] Other than two-wheeled vehicles, which have a maximum width of 1.0m. Motorcycle width is not under consideration in this review.
[30] Section 4.1(4).
[31] Section 6.2(4).
[32] Sections 6.8 and 8.5 of the VDAM Rule. The Transport Agency can also issue exemptions under section 166 of the Land Transport Act 1998, if it is satisfied 'that the risk to safety would not be significantly increased by the granting of the exemption'.
[33] Table 6.1.

less width than tray-top operators. This constraint denies operators the ability to configure side-by-side palleting within box bodies, for which 2.55m width is required.

The current maximum width of 2.50m limits the vehicle choices available to operators. International standards, particularly in regions that are major exporters of truck and bus chassis, are moving to widths greater than the current New Zealand maximum. For example, Europe now allows 2.55m width, and 2.60m for refrigerated box bodies, while the USA allows 2.60m for all vehicles. The current width status quo is increasingly limiting the vehicle choices and related capital investment savings available to New Zealand operators, and access to safety and emissions technologies that greater choice may provide. This is a particular issue for the bus industry, where the current 2.50m maximum width constrains the range of vehicles suitable for importation, especially as suppliers are increasingly using the 2.55m width standard when designing and building chassis to Euro 6 emission standards.

Impact of increased width limits

Productivity

An increase in usable width can potentially provide productivity benefits for the transport industry. An increase from 2.50m to 2.55m could create significant benefits, especially for operators using enclosed body vehicles. Increasing the maximum allowable width further, for example to 2.60m, could achieve commensurate increases in freight capacity and productivity, particularly in relation to increased cubic capacity for low-density bulk goods. An increase in width, with its related productivity gains would result in fewer trips for the same freight task, thereby contributing to a reduction in operating costs (e.g. fuel and maintenance).

It is estimated that a 50mm increase in usable width would result in a 30-year Net Present Value (NPV) benefit of $189.5m.[34] This would result primarily from allowing greater internal width for enclosed body vehicles. As an example, refrigerated box bodies could accommodate side-by-side palletised loads, instead of current ‘parquet’-style patterns. In longer vehicles, this could allow operators to load an additional row of pallets. That is, in a 15.2m long trailer, this would increase capacity from 27 to 30 pallets. Increasing the productivity of refrigerated box bodies could be of particular benefit to New Zealand’s primary produce export industries.

An increase in allowable width could also open up the international supply market of heavy vehicle cabs and chassis. This would encourage competitive pricing and a greater range of choices for vehicle purchasers. The current 2.50m maximum is identified as a particularly limiting factor in the range of bus model options available for New Zealand’s public transport and longer-distance bus fleets. In considering purchase options, bus operators would be able to access a greater range of suppliers from Europe and the US, where buses are built to the 2.55m standard.

[34] Castalia. 2015. *Vehicle Dimensions and Mass Review: Framework for Options Assessment & Draft Rule Change Cost Benefit Analysis*, p.19.

Safety and community well-being

Many heavy vehicles currently travelling on New Zealand roads have an allowable maximum operating width of 2.55m (including securing devices). Therefore, risks to road safety by increasing the maximum width of the vehicle body to 2.55m, if securing devices remain within this limit, is not likely to be significant.

Greater width means the same freight task can be completed with fewer vehicle trips. This lessens the risk of crashes through reduced VKT. Productivity improvements would create an incentive to renew New Zealand's heavy vehicle fleet more quickly, providing a faster uptake of safety technology. Most new vehicles with a body width of 2.55m are equipped with better safety technology (e.g. electronic braking), which can improve safety considerably.

A reduction in vehicle use for the same freight task could also contribute to fuel savings and a reduction in harmful emissions. Furthermore, new vehicles generally have better emissions technology.

If the maximum width was extended to 2.55m, it would be possible for box bodies to be built to the existing 2.50m width, but with door hinges extending to the 2.55m maximum (as a cheaper option when the additional width is not required for the freight task). This could create a potential hazard for cyclists and pedestrians (especially in relation to vehicles with low-floor bodies), but this could be overcome by specifying in the Rule that box body hinges are required to be flush with the body's walls, irrespective of overall width.

Further measures could be incorporated into the Rule, by requiring safety improvements as a condition of access to increased width. This could reduce risks to vulnerable road user groups, such as cyclists and pedestrians. Measures that have direct relevance to increased width are the use of under-run skirts, collision detection systems and 'lane departure' warning systems. In late 2014, the Cycling Safety Panel recommended further consideration of requiring side under-run protection.[35] An investigation is currently being undertaken,[36] and the outcomes will inform a decision on whether to regulate such measures. Proposed increases to mass and dimensions limits in this document are designed, in part, to accommodate future safety requirements, such as the additional weight of side under-run skirts.

An increase in maximum allowable width from 2.50m to 2.55m could see an increase in European motorhomes being operated in New Zealand. While this could have the advantage of access to newer technologies, it could create an increased safety risk as most of these motorhomes have doors opening to the right, and therefore into traffic on New Zealand's roads. While this issue should be addressed irrespective of a change in maximum allowable width, a move to 2.55m could encourage greater importation of these vehicles. The Rule (or another Land Transport Rule) could be amended to address this issue.

[35] See http://www.saferjourneys.govt.nz/assets/Panel-Report-Safer-cycling.pdf.
[36] See https://www.beehive.govt.nz/release/government-committed-cycle-safety.

An increase of general access width to 2.60m could mean wider axle sets being used. Wider axle sets would improve stability of vehicles and could result in a reduction in loss of control crashes. Analysis on heavy vehicle stability versus crash rate indicates a 7 percent improvement in stability from 2.60m wide axle sets.[37]

Any increase in maximum allowable width could cause an increase in crash risk because of reduced separation between vehicles. The other safety factor is vehicle stability. Vehicles operating at 2.55m under current arrangements do not appear to have stability issues. Experience from the USA indicates that when 2.60m limits are used without an associated requirement for 2.60m-wide axle sets, there may be an increase in stability-related crashes. When wider axle sets are used, the risk from the reduced separation of vehicles is almost offset by the enhanced stability provided by the wider axle set.

There are no identified additional safety technologies or improvements in emissions in 2.60m vehicles that are not already available in 2.55m vehicles.

Network utilisation

A reduction in the number of vehicles required for the same freight task could result in reduced congestion. A reduction in vehicle movements may also see less road maintenance costs, although this may be off-set by the impact of heavier loads. If extending to a 2.55m width, there should be no issues with ‘network fit’, as many heavy vehicles currently operate with a road ‘footprint’ width of 2.55m.

An increase in general access width to 2.60m could require a review of the national roading network to determine lane widths, and identify potential ‘pinch-points’ relating to swept width and other potentially dangerous stretches of road that may require re-engineering.

Better regulation

Extending the maximum width to 2.55m could provide a general category standard that better reflects the dimensions of many vehicles in the current heavy vehicle fleet. A move to 2.55m would also align New Zealand standards with international standards, therefore improving access to international supply markets, and encouraging uptake of the latest vehicles with better technologies.

[37] Transport Agency advice, 3 November 2014. From TERNZ’s Static Roll Threshold relative crash risk curve.

Maximum width options

Option 1: Maintain width limit at 2.50m

Option 1: Status Quo – retain current maximum width of 2.50m	
Benefits • Current limits are well-understood by manufacturers, importers, and RCAs • Reasonable balance between productivity, safety, road infrastructure design, and road user amenity • Fits with a defined lane being at least 2.50m wide.[38]	**Potential Risks and Implications** • Possible under-utilisation of road 'footprint' • Limited choice of imported vehicles (e.g. buses) • Limit to import choices also means less take-up of newer safety, efficiency and emissions technologies.

Option 2: Extend width limit to 2.55m

Option 2 extends the maximum allowable body width of vehicles from 2.50m to 2.55m. Securing devices (e.g. ropes, lashings, j-hook assemblies) that previously brought the total width of a vehicle to 2.55m would remain included in the 2.55m maximum width (i.e. no additional allowance for securing devices).

Option 2: Increase maximum width to 2.55m (including securing devices)	
Potential Gains • Potentially significant productivity improvements for enclosed body sector • Improved access to international vehicle supply markets • Adoption of newer vehicles with better safety and emissions technology • Reduction in crash risk from fewer VKT and adoption of better technology and reduced exposure • More choices for bus operators accessing international markets.	**Potential Risks and Implications** • Increase in number of European motorhomes that open on the right side (safety issue) • May place pressure to New Zealand-based bus body fabricators, due to increased import competitiveness • A greater number of vehicles operating at 2.55m width would result in an increased crash risk involving those vehicles.[39]

[38] Traffic Control Devices Rule 2004.
[39] Transport Agency data does not identify the number of heavy vehicles operating at 2.50m width, compared to 2.55m width (including securing devices).

Option 3: Extend width limit to 2.55m (+50mm for securing devices)

Option 3 extends the maximum allowable width of vehicles from 2.50m to 2.55m (as with Option 2). The current 50mm allowance for securing devices is added in this option, extending the total width for loads requiring these devices to 2.60m.

Option 3: Increase maximum width to 2.55m (plus 50mm for securing devices)	
Potential Gains	**Potential Risks and Implications**
• 2.60m total width for secured loads provides additional width for chain twitches that are in excess of 50mm • Provides an additional 50mm width to the flat-top vehicle industry (where securing devices are within 50mm) • Logging vehicles would have a lower load, improving road handling and safety • Improved stability for vehicles using 2.60m-wide axle sets.	• An increased crash risk when two 2.60m vehicles pass each other[40] • Road designers would need to consider the impact of a 2.60m width on roading infrastructure • Unless specified otherwise, vehicles could utilise the 2.60m width (increasing crash risk), without using the compensating effect of more stable 2.60m-wide axle sets.

Option 4: Extend width limit to 2.6m (+ 50mm for securing devices)

Option 4 further extends the maximum allowable width to 2.60m (an additional 50mm more than Option 3). As with Option 3, a further 50mm for securing devices is provided for under this Option.

Option 4: Increase maximum width to 2.60mm (plus 50mm for securing devices)	
Potential Gains	**Potential Risks and Implications**
• Potentially greater productivity benefits, for all heavy vehicle sectors • Improved stability through wider axle sets and lower centre-of-gravity • Greater imported vehicle choices.	• An increased crash risk, particularly when two 2.65m vehicles pass each other[41] • Expected that improvements to roading infrastructure would be required, in relation to lane width, swept path, and separation controls.

[40] From iRAP data. Transport Agency advice, November 2014.
[41] From iRAP data. Transport Agency advice, November 2014.

Summary of Options

Option	Max. Body Width	With securing devices	Hubo-dometer	CTIS[42]	Mirrors
1	2.50	2.55	2.575	2.65	2.98
2	2.55	2.55	2.575	2.65	2.98
3	2.55	2.60	2.575	2.65	3.03
4	2.60	2.65	2.675	2.75	3.08

Preferred Option – Extend maximum width to 2.55m

The preferred option is Option 2, as this allows vehicles to fully use the air space above the currently allowable 2.55m road width foot-print (when securing devices are taken into account). This option encourages increased productivity for vehicles with enclosed loads that have no need for external securing devices. Productivity gains are estimated to be approximately $93m NPV over thirty years. This option is expected to result in a maintenance of, or improvement in, current road safety levels. Community well-being is also expected to be improved through fewer heavy vehicle trips. This option also standardises total width between enclosed and open loads, and makes this available for all vehicle types on all parts of the roading network.

Unlike Option 2, which utilises the current allowable 2.55m road width footprint, Options 3 and 4 extend the allowable width footprint, increasing crash risk to levels that could be considered disproportionate to the productivity benefits that may be gained.

2. Width – questions for your submission

a) Select your preferred option in relation to the current maximum width of 2.50m:

- ☐ Option 1: Status Quo – retain current maximum width of 2.50m.
- ☐ Option 2: Increase maximum width to 2.55m (including securing devices).
- ☐ Option 3: Increase maximum width to 2.55m (plus 50mm for securing devices).
- ☐ Option 4: Increase maximum width to 2.60m (plus 50mm for securing devices).

b) Why have you chosen this option?

c) Are there any potential gains, risks or implications of these options you think have not been presented?

d) Do you have another option that has not been presented?

[42] Central tyre inflation system.

Height

Current height standard

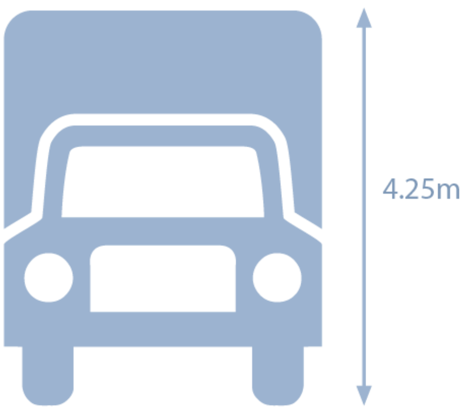
The VDAM Rule prescribes a general access height limit of 4.25m for all vehicles. The Rule also provides for certain items to be exempted when determining the height of the vehicle. These items include:

- load restraining devices such as ropes, straps, chains and covers, provided they do not exceed 25mm above the body or load of the vehicle (bringing the total height to 4.275m); and
- trolley bus poles when extended to collect power from overhead wires.

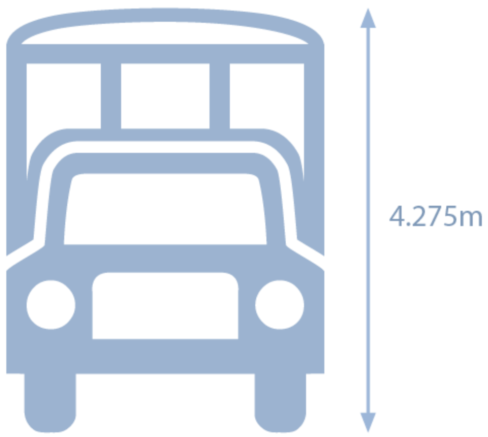
Issues with the current height standard

Discrepancy between the limits

The current Rule creates different height standards between fully enclosed vehicles and vehicles with external load restraints. Fully enclosed vehicles do not require the use of load restraining devices and the body of the vehicle can only go up to 4.25m. On the other hand, vehicles with external load restraints are able to go to a total height of 4.275m.



Fully enclosed vehicle



Vehicle with external load restraints

Current height limit not compatible with vehicle use

The transport industry has expressed concerns that the current general access height limit is not adapting to changes in the vehicle fleet. For example, Euro 5 vehicles are fitted with extra environmental technology, which is attached to the chassis of the vehicle. This raises the body of the vehicle and results in a loss of load capacity.

Another example is livestock vehicles which currently require an over height exemption in order to install add-ons that improve occupational safety and health (OSH) outcomes and animal welfare.

Impact of increased height limit

Productivity

Increasing the general access height limit for all vehicles could result in an improvement in volume capacity. An increase in the height limit could also provide additional benefits to certain industries. For example, livestock vehicles could install add-ons (as described above), to assist in livestock handling and improved productivity.

Safety and community well-being

An increase in the height limit could increase the risk of overhead strikes with the increase in risk dependent on the level of increase in height.

KiwiRail has reported between 15-30 rail overbridge hits by heavy vehicles a year. Strikes on rail bridges pose a significant safety risk to both rail passengers and operators. Furthermore, they cause disruption to both road and rail services, and can be costly to remedy. All bridge owners would be notified in advance of any increase to the height limit.

On the State highway network, five structures have been identified as susceptible to an increase in the maximum allowable height for general access:

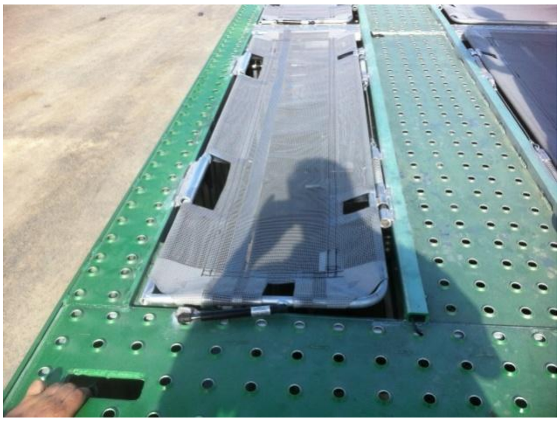
- SH94, Homer Tunnel – 3.81m (already 0.44m below the existing allowable height)
- SH1, Dall St pedestrian overpass – 4.22m clearance on kerb edge (lower than the existing allowable height, clearance rises to 4.65m at the middle of the two eastbound lanes)
- SH74, Lyttelton Tunnel – 4.27m
- SH6, Karangarua River Bridge – 4.29m
- SH1, Raramai Tunnel (northbound), Kaikoura – 4.30m.

A small number of structures on State highways, with clearances marginally higher than the proposed 4.30m, would also come under increased risk of strikes. For example, the Parititahi northbound tunnel on SH1 (Kaikoura) has a clearance of 4.38m, but is strongly arched, with evidence of multiple strikes.

A greater number of tunnels, bridges and underpasses on the local road network could be susceptible to an increase in vehicles' maximum allowable height, but data on the exact number is not currently available.

An increase in the height limit could allow livestock vehicles to have better designs to improve OSH and animal welfare. For example, operators can place a longitudinal walkway near the centre of the livestock crate and use hinged frames that swing up and close down on the top of the crate when in use. The hinged frames have three purposes:

- provides fastening for nets/covers to provide cover for livestock when being transported
- creates a barrier to reduce the possibility of a driver falling over the side of the vehicle
- provides a platform to assist livestock handling.



Better regulation

Aligning the height limit between fully enclosed vehicles and vehicles with external load restraints has the potential to improve standardisation of the vehicle fleet. Increasing the general access height limit to align with overseas jurisdictions could provide greater vehicle choice to operators. An increase in the general access height limit could encourage vehicle innovation in certain industries (e.g. livestock vehicles).

Maximum height options

Option 1: Maintain height limit at 4.25m

Option 1: Status Quo – General access height limit of 4.25m	
Benefit • Maintains operator familiarity with the Rule.	**Potential Risks and Implications** • Does not address the height limit discrepancy between fully enclosed vehicles and vehicles with external load restraints • Exemptions required for installing safety add-ons to livestock vehicles • Limits standardisation of the vehicle fleet • Limits innovation in certain industry sectors.

Option 2: Extend height limit to 4.275m

This option proposes to increase the general access height limit to 4.275m for all vehicles. Items that are currently exempt would be included when determining the height of the vehicle. Under this option, all vehicle types would have a general access height limit of 4.275m, irrespective of the use of external load constraints.

Option 2: Increase the general access height limit to 4.275m inclusive of load restraints	
Potential Gains • Provides consistency of height limits for fully enclosed vehicles and vehicles with external load restraints • Increase in height for fully enclosed vehicles could provide productivity benefits to operators of fully enclosed vehicles (e.g. safety add-ons for livestock vehicles) • No increased risk to overhead strikes as no change to the current height limit.	**Potential Risks and Implications** • Does not provide any additional benefits to vehicles with external load restraints.

Option 3: Increase height limit to 4.30m

This option proposes to increase the general access height limit to 4.30m for all vehicles. Items that are currently exempt would be included when determining the height of the vehicle. Under this option, there would be an increase of 50mm to the current height limit (or 25mm when the current allowance for external load constraints is included).

Option 3: Increase the general access height limit to 4.30m (inclusive of load restraints)	
Potential Gains • Similar to Option 2, this option addresses the height discrepancy between different vehicle types • Provides for productivity gains for all vehicle types • Allows livestock vehicles to install safety add-ons without the need for an exemption (these vehicles are currently exempted and operate at a height of up to 4.3m) • Provides for more vehicle choices to operators • Estimated 30 year NPV of $75.3 million by increasing the height limit to 4.30m.	**Potential Risks and Implications** • Possible increased risk of overhead strikes.

Summary of height limit options

Option	Description
1	Retain existing limit of 4.25m
2	Extend height limit to 4.275m
3	Extend height to 4.30m

Preferred Option

The preferred option is Option 3 – to extend height limit to 4.30m. This will standardise the height limit, and provide for productivity gains (through increased load capacity) for all vehicle types. While increasing the height limit could have an effect on vehicle stability, the risk is considered minimal, as vehicles would still have to meet static roll threshold (SRT) requirements regardless of the prescribed height limit.

Increasing the general access height limit to 4.30m could increase the risk of overhead strikes, but this is unclear, as it is not known how many, if any, overhead bridges have clearances that are between the existing and proposed limits.

3. Height – questions for your submission

a) Select your preferred option in relation to the general access height limit:

- ☐ Option 1: Status Quo – maintain current height limit of 4.25m, plus 25mm for load restraining devices.
- ☐ Option 2: Increase the general access height limit to 4.275m, inclusive of load restraining devices.
- ☐ Option 3: Increase the general access height limit to 4.30m, inclusive of load restraining devices.

b) Why have you chosen this option?

c) Are there any potential gains, risks or implications of these options you think have not been discussed?

d) Do you have another option that has not been presented?

e) Are you aware of clearance issues on local roads where an increase from 4.25m to 4.275m or 4.30m would be problematic?

Car transporter gross mass

Current situation with car transporters

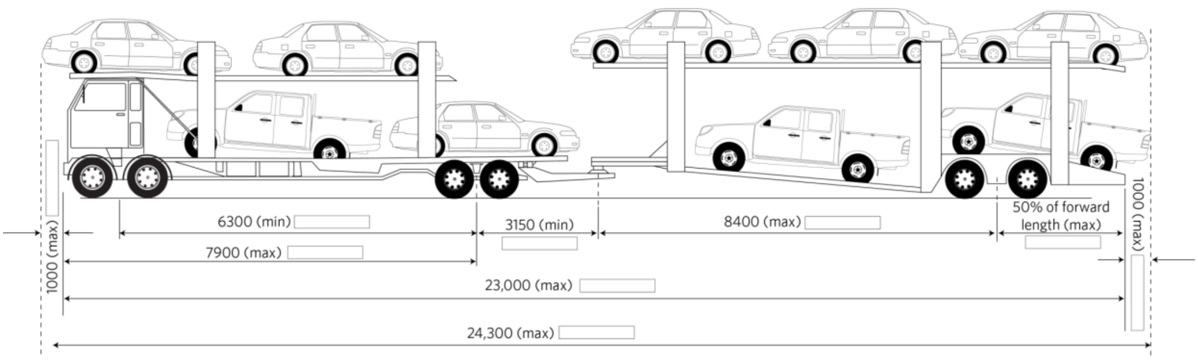
The VDAM Rule classifies car transporters as simple trailer combinations. These combinations have a prescribed gross combination mass limit of 36,000kg. There are currently around 100 car transporters operating on the roading network.

Car transporters are specialised vehicles with features significantly different to other truck and simple trailer combinations, which generally enhance their safety performance characteristics. For example, car transporters are usually equipped with a roll-coupled hitch, and there is significant down force on the hitch. This reduces the risk of the trailer overturning the vehicle.

Issues with current mass limit on simple trailer combinations

Since the introduction of HPMV permits, pro-forma car transport designs[43] have lengthened, up to 23m (see example in Diagram 3). The current gross combination mass limit of 36,000kg for simple trailer combinations does not allow newer design car transporters to carry the same number of cars as standard car transporters (nine cars reduced to seven). This is due to the longer vehicles having a greater tare weight. In addition the weights of some cars are increasing (e.g. hybrid cars with heavy batteries), placing an additional constraint on the number of cars a longer combination can carry. The new pro-forma vehicles, however, are more stable and safer to operate than standard car transporters. For the pro-forma designs to carry the same number of cars as older transporters, an increase to the gross mass limit is required.

Diagram 3 – Pro-forma car transporter design



[43] The pro-forma designs are produced by the Transport Agency.

Impact of changing the Rule

Productivity

An increase in the mass limit would compensate for the increase in chassis weight and enable operators of pro-forma car transporter designs to maintain the same level of payload (nine cars).

Safety and community well-being

Increasing the mass limit for car transporters could encourage the uptake of longer pro-forma car transporter designs. This would improve safety, as a 38-tonne combination at 23m is more stable than a 36-tonne combination at 20m.

Allowing pro-forma designs to carry the same number of cars (through allowing an additional 2,000kg) could reduce the number of trips required for the same freight task. This could result in reduced exposure to crash risk due to fewer VKTs, but may increase the consequences when crashes occur.

Better regulation

Enabling the pro-forma designs to maintain the same level of payload as standard designs would update the Rule to reflect changes in the vehicle fleet.

Proposal to amend gross mass limits for car transporters

Option 1: Retain the gross mass limit of 36,000kg for all car transporters

Option 1: Status Quo – Retain the gross mass limit of 36,000kg for all car transporters	
Benefit • Maintains operator familiarity with the Rule.	**Potential Risks and Implications** • Operators of pro-forma car transporter designs have to reduce their payload (nine cars reduced to seven).

Option 2: Increase the gross mass limit for pro-forma car transporters to 38,000kg

This option would increase the gross mass limit for pro-forma car transporters to 38,000kg. The 38,000kg limit was assessed as an appropriate limit using current performance based standards, with the pro-forma vehicle performance considered satisfactory in all respects.

The analysis has also shown that the increase in gross mass limit should only be available for trailers carrying cars. This is because characteristics that make the car transporter safe at higher mass limits might not necessarily apply when transporting other loads. For example, when the car transporter is loaded, this causes significant down-force on the roll-coupled hitch, giving greater stability. In effect, this makes the load distribution more like a semi-trailer than a simple-trailer. However, this might not be the case with non-car loads.

Option 2: Increase the gross mass limit for pro-forma car transporters to 38,000kg	
Potential Gains • Allows newer, safer pro-forma car transporters to maintain the same level of payload as standard models • Provides more vehicle choices to operators.	**Potential Risks and Implications** • Potential increased risk to safety if pro-forma car transporter designs used for other applications.

Preferred option

The preferred option is Option 2 as it enables the longer pro-forma car transporters to carry the same number of cars as standard designs. This could improve safety as longer vehicles are generally safer to operate than standard vehicles.

4. Car transporter gross mass – questions for your submission

a) Select your preferred option in relation to mass limits for pro-forma car transporters:

☐ Option 1: Status Quo – maintain current mass limit for pro-forma car transporters at 36,000kg.

☐ Option 2: Increase the gross combination mass limit for pro-forma car transporters to 38,000kg.

b) Why have you chosen this option?

c) Are there any potential gains, risks or implications of these options you think have not been discussed?

d) Do you have another option that has not been presented?

e) Are there other applications for the pro-forma car transporters design (i.e. not transporting cars) where the additional 2,000kg would be useful?

Permitting

This section proposes improvements to the VDAM Rule's permitting regime to reduce operator costs and improve productivity. It also deals with conditions that can apply to overweight/overdimension vehicles.

The purpose of permitting

Permitting ensures that when vehicles are operating beyond general access limits, they use the roads safely and their impact on the roading infrastructure is minimised.

For overweight/overdimension indivisible loads,[44] permits recognise such loads may need to use the roading network, but must do so in a controlled way. This protects public safety as well as minimising impacts on the roading network.

HPMV permits are intended to improve the productivity of the transport vehicle fleet and the roading network. HPMVs allow greater loads to be carried with fewer trips.

The Transport Agency estimates that in the two years since the first 50MAX permits were issued, between 20 million and 25 million kilometres of travel have been avoided with an estimated commercial saving of between $30 million and $50 million.

The HPMV roading network currently comprises 5,265 kilometres. A class of HPMV (known as 50MAX), may operate up to 50,000kg and is able to use most parts of the State highway network and the roads of most local RCAs.

How permitting currently works

There are different permits for indivisible and divisible loads. For indivisible loads, an overdimension permit is required if a vehicle or load:

- exceeds certain specified dimension limits or
- is within the limits but is unable to comply with the operating requirements in the Rule.

An overweight permit is required for a vehicle that transports an indivisible load if it exceeds the mass limits in the Rule.

For divisible loads, permits can be given for HPMVs. These are heavy motor vehicles or heavy combination vehicles that carry a divisible load and, with or without a load:

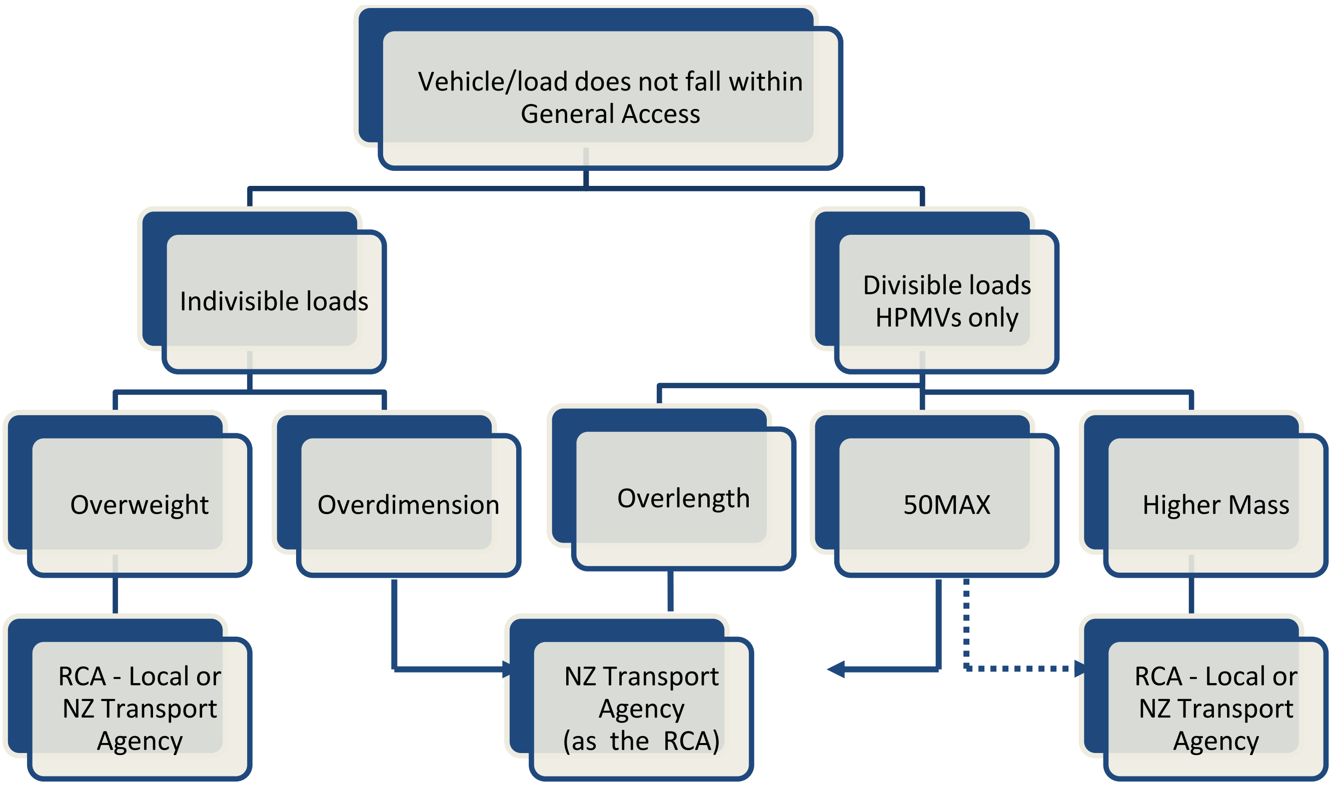
- exceed a gross mass of 44,000kg and/or
- vary from a dimension requirement in the Rule, or
- both exceed a gross mass of 44,000kg and vary from a dimension requirement.

[44] An indivisible load is a load that cannot reasonably (without disproportionate effort, expense, or risk of damage to the load) have its size reduced or be divided into two or more sections for road transport.

There are two types of HPMV permit – overlength, and higher mass. The Transport Agency has developed a range of pro-forma designs for overdimension HPMVs and the 50MAX class. If a vehicle conforms to one of the pro-forma designs, permit applications can be processed and approved more quickly. The Transport Agency has also issued a set of common vehicle designs valid for HPMV higher mass and pro-forma overlength permits.

Both the Transport Agency, in its role as the RCA for State highways, and local RCAs have responsibilities for issuing permits as set out in Diagram 4 below. Most local RCAs have delegated decision-making authority for 50MAX permits to the Transport Agency.

Diagram 4: The VDAM permitting regime



Issues with permitting

Permits impose costs on those who require them. These include the cost of the permit, the cost of obtaining the necessary information and the opportunity cost of delays in approval.

Unnecessary costs in the permitting regime represent a loss in overall economic efficiency in the transport sector and to the wider economy.

Based on a report[45] prepared for the Ministry of Transport and Transport Agency the estimated average time-related cost to customers for all permit types was $203 per permit. This is in addition to the actual cost of the permit, which ranges from approximately $9-$55, and any applicable RUC costs.

Feedback from permit users is that, while permits have an important place in the VDAM system, they would like more flexibility, faster approval times and generally improved processes. The following sections set out a range of proposals to do this.

Proposal related to divisible loads

Proposal – Give Road Controlling Authorities greater flexibility to permit overweight vehicles

Under the Rule, RCAs cannot grant permits for overweight vehicles that carry divisible loads, except for HPMVs and high capacity urban buses. However, permitting some non-HPMV vehicles to carry divisible loads using heavier axle mass could enable greater productivity. Such vehicles include those designed for a specific purpose that often carry a heavy load on their rear axles and cannot easily be designed or adapted to comply with the Rule. Examples include concrete mixers, fertiliser spreaders, and rubbish trucks.

It is proposed that RCAs be given greater flexibility in the range of overweight permits they can grant for divisible loads. This recognises RCAs understand the conditions of their own roading networks so can judge the levels of acceptable road wear and consequent increased maintenance, and can identify which roads can safely carry the increased weight.

The normal requirements on RCAs when granting permits would still apply. That is, they must consider the safety of the vehicle, the safety of users and the durability of roads and bridges.

Under this proposal, RCAs could include permit conditions similar to those for indivisible overweight vehicles, such as granting single trips, multiple trips, continuous and area permits. Where an operator needs to travel in more than one RCA area it would need to obtain a permit from each of the affected RCAs.

The ability of RCAs to use greater flexibility in permitting will vary, depending on the state and understanding of their roading network and the level of demand from transport operators.

A factor in assessing this proposal is balancing the desire for RCAs to be able to respond better to local conditions and priorities, against the advantages of having commonly understood approaches to permitting applying across the entire roading network.

[45] Stimpson and Co. 2014. *Monitoring, Evaluation and Review of the Vehicle Dimensions and Mass Rule Implementation: May 2011 to April 2013*, 6 May 2014, v5.0, p.54, at https://www.nzta.govt.nz/assets/Commercial-Driving/docs/Monitoring-evaluation-and-review-of-the-Vehicle-Dimensions-and-Mass-Rule-30-April-2013.pdf.

5. Divisible loads – questions for your submission

a) Should RCAs be allowed to grant permits for overweight divisible loads for non-HPMVs?
b) If yes, are there any conditions RCAs should follow when considering such permits?

Proposals related to indivisible loads

Proposal – Formalising the current working list of indivisible loads

Except for custom-sealed import/export ISO containers, the definition of indivisible load does not list specific types of loads as indivisible. The Axle Weights and Loadings Advisory Group (an informal group established by the Transport Agency) identified 10 types of loads it considered met the definition of indivisible load. These are transformer oil, building removals, platform trailers, construction equipment, load dividers, ballast, towing of disabled vehicles, fire fighting vehicles carrying water, slurry sealing, and towing of trailers. These loads are well accepted as indivisible but do not have formal status in the Rule.[46]

It is therefore proposed to give these loads formal status.

It has also been suggested other equipment, such as load dividers or dollies, or attachments related to the machinery being moved, be able to be carried as part of an indivisible load to reduce the number of vehicles required to move loads.

6. Indivisible loads – questions for your submission

a) Should the items noted above be formally included as part of a definition of “indivisible load”?
b) Should ancillary components of indivisible loads be allowed to be carried with an indivisible load?
c) If yes, which parts?

Proposal – More efficient transportation of crane parts

Currently, dismantled crane boom sections are considered a divisible load, and so not able to be transported on an overdimension permit or within Category 1 or 2 limits in Table 6.1 of the Rule.

It has been suggested boom sections less than 1.5m wide could be transported more efficiently if stacked. An example given in preliminary consultation showed a 32m boom (1425mm wide x 1500mm high) broken into 8m lengths requires four vehicles or vehicle trips to transport. If a width exception was provided (up to 3.1m) and height allowance (up to 4.5m) the boom could be moved in

[46] These loads however are listed in the Transport Agency’s Overweight Permit Manual as indivisible.

one trip, with the boom sections loaded in a two-by-two arrangement. This would provide efficiency gains for the operator and, by reducing the number of trips required, also increase road user safety.

It is therefore proposed that crane booms which can be disassembled be allowed to be carried to the equivalent dimensions of a Category 1 overdimension vehicle (maximum width of 3.1 m) and to a maximum height of 4.5m. They would be required to conform to the provisions for Category 1 vehicles in Table 6.1 of the Rule (relating to operating requirements) and of the first row of Table 6.2 (which has conditions about height).

Option 1: Status quo – do not provide width or height exceptions for crane boom sections	
Potential Gains • No increase in the number of wide load vehicles on the roads.	**Potential Risks and Implications** • Removes the potential to substantially reduce the number of vehicle movements in crane relocations.

Option 2: Provide exceptions for crane boom sections, up to 3.1m in width and 4.5m in height	
Potential Gains • Significant productivity gains, with a 75 percent reduction in VKT, when combined with a height exception.	**Potential Risks and Implications** • Increased crash risk from wider loads, although mitigated by fewer vehicle movements • Increased use of non-general access dimensions.

Preferred Option

Option 2 is the preferred option. This is because of the increased vehicle productivity and potential safety benefits gained by reducing the number of vehicle trips needed to move cranes.

7. Crane boom sections – questions for your submission

a) Select your preferred option in relation to an exception for crane boom sections:

- ☐ Option 1: Status Quo – do not provide width or height exceptions for crane boom sections.
- ☐ Option 2: Provide exceptions for crane boom sections, up to 3.1m in width and 4.5m in height.

b) Why have you chosen this option?

Improving the administration of the regime

Bulk Fleet Permits for High Productivity Motor Vehicles

Current Status

HPMV permits currently issued by the Transport Agency can be for up to five identical trailers associated with one prime mover. The rationale for this limit is that it supports reasonable timeframes for assessment, matches demand with volume, and is manageable from an enforcement perspective.[47]

By the end of July 2015, 4,881 50MAX permits (including more than 1,978 prime movers) had been issued to around 550 operators. Based on November 2014 statistics, 76.5 percent of permits were for single trailers and 5.3 percent were for five-trailer combinations.

Problem Definition

While the significant majority of HPMV operators seek permits for combinations for up to five trailers only, for larger fleet operators obtaining multiple permits for more than five trailers creates costs. These costs include:

- needing to hold several permits for one prime mover
- having more than five 'identical' trailers associated with one prime mover but needing to hold separate permits to cover the trailer fleet
- shifting between different permits for different legs of a trip as the configuration changes
- lack of flexibility for unforeseen circumstances (e.g. breakdowns)
- a more complex and time-consuming application process.

Proposal for HPMV bulk fleet permits

It is proposed that permits issued by the Transport Agency allow identified prime movers to be able to be mixed and matched from a set of pro-forma trailer designs published by the Agency. Currently there are pro-forma designs for 50MAX vehicles and over-length HPMV vehicles. The trailers in an operator's fleet conforming to the pro-forma specifications could be used with any of its prime movers.

Trailer units would be assessed, recorded and identified as conforming to the pro-forma design envelope. This could occur at the point of the certifiers' vehicle attribute check, as is currently the case when applying for a HPMV permit.

Vehicle combinations outside of Transport Agency approved pro-forma designs and combinations would still require individual permitting to ensure they meet the requirements. It would be a decision

[47] The Transport Agency does on a case-by-case basis provide for greater numbers of trailers for larger operations, but this is an exception.

for local RCAs that have not delegated decisions on HPMV permits to the Transport Agency, to decide if they grant permits for multiple trailers.

While this proposal does not go as far as providing operators the ability to run HPMV fleets on a single permit, it does, in effect, allow bulk permitting for each prime mover within a fleet.

As noted previously in this discussion document, it is proposed that 50MAX vehicles no longer require permits, but be subject to conditions set out in the Rule. If implemented this would eliminate the need for larger operators to obtain multiple permits for this class of vehicle using the 50MAX network.

8. HPMV bulk fleet permits – questions for your submission

a) As a transport operator, do you think this proposal offers significant benefits to your business?

b) If yes, please describe the benefits.

Future proofing the Rule for use of new technologies

Developments in on-line mapping services and information technologies may create opportunities to improve the permit process or in some cases to remove the need for permits altogether. The Rule however uses some terms that potentially limit the uptake of new technologies. For example, minimum lighting output is specified in watts, which is no longer relevant for energy efficient LED lighting.

In re-writing the Rule, it is proposed that processes and terms will, as far as possible, accommodate the uptake of new technologies.

Management of overdimension loads

(especially overwidth vehicles)

Current status

Under the VDAM Rule the standard maximum width (with some exceptions) for general access to the roading network is 2.50m. The Rule allows, with conditions, the transport of indivisible loads of widths greater than 2.50m and other dimensions, such as length and overhangs, exceeding those required for general access. The conditions include travel times, lighting requirements, the use of warning flags and warning panels, and piloting requirements.

Loads up to 4.50m wide can be carried without a permit, subject to conditions set out in the Rule. Loads greater than 4.50m wide, in addition to conditions in the Rule, require a permit issued by the Transport Agency. For the year ended September 2015, 6,576 overdimension permits were issued.

Issues with the movement of overdimension loads

The movement of overdimension vehicles can be hazardous to other motorists who may not be aware of the risks they pose or what to do when encountering such vehicles. This is particularly so for vehicles occupying a significant part of the road.

The following sections include consideration of recommendations from a recent Coroner's inquest into a fatality involving a car and a house being transported. The Coroner identified load sizes, speed, number and position of pilots, signage, sound warnings, hours of travel, and public education as relevant matters. Any changes made to the ways in which over-dimension warnings are given will be incorporated into subsequent public education for general motorists along with any refreshing of key safety messages for motorists in dealing with overdimension vehicles.

While the following discussion deals with each element of the current requirements for moving overdimension loads separately, the elements interact with each other as part of an overall approach to reducing safety risks. Safety risks can therefore be reduced in different ways depending on the emphasis given to some elements in relation to others.

Clarification of 'operator' on overweight/overdimension permits

The Rule states a person operating a vehicle under a permit has to comply with the requirements of the permit. The definitions of 'operate' and 'operator' in the Rule apply to several entities and are used for a variety of vehicle responsibilities including load security and the transport of dangerous goods.

It was noted in preliminary consultation that there have been cases of infringement fines being issued to people who were not named on the permit (e.g. pilots) but have been held responsible.

One approach is to have the permit name a single person (or entity) to have primary responsibility for compliance. If there is no permit, then the legal entity in charge of the vehicle at the time it is operated would be held responsible. Another approach could be to have the load pilot being primarily responsible, given their role in managing traffic safety. Views are sought on how operator responsibilities should be described in the Rule.

Hazard panels and flags on overdimension loads

The Rule sets requirements for using hazard warning panels and lighting to mark the edges of a load.[48] It also allows the Transport Agency to issue alternative designs for hazard warning panels. The requirements are detailed, including setting minimum dimensions and placement. There are no separate minimum sizes for differing sizes of loads.

Limiting the use of flags to mark edges of overdimension loads

The Rule allows the use of flags or warning panels to mark the edges of loads. Industry practice is to use hazard panels as these are considered a safer method of signalling edges. It is proposed the provision (in Table 6.1 of the Rule) allowing the use of flags instead of warning panels to mark the width edges of overdimension loads be deleted. The ability to use flags to indicate length would remain.

Use of hazard panels on tractors

Currently tractors greater than 2.50m wide are required to mark their widest points with a hazard panel (as for other overdimension vehicles). Industry representatives have advised the danger from tractors comes not from their width but their generally slow travelling speed. They report motorists often do not realise tractors are travelling much slower than they appear which can lead to vehicles striking them in the rear or the side as they turn.

It was suggested that instead of requiring hazard panels, tractors be able to use a flashing light, as this was considered more likely to draw attention to their slower speed.[49] It was noted that magnetically attached LED lighting is now reasonably inexpensive.

It is proposed, therefore, that all tractors between 2.50m and 3.10m wide be required to use a warning light or hazard panels to signify width. The normal provisions for any tractors wider than 3.10m would still apply.

Load pilot vehicles

Load pilot vehicles have a key role in the safe movement of overdimension and overweight vehicles by warning road users of their potential hazard. The Rule contains provisions relating to pilot vehicles, when pilots are required, and the number of load pilot vehicles required. It also makes the Transport Agency responsible for approving courses for Class 1 and Class 2 pilots.[50]

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[48] Section 6.7.
[49] Agricultural tractors and machines first registered from 1st July 2013 must now be fitted with an amber beacon.
[50] The Transport Agency has also produced a Load Pilot Driver Code, available at http://www.nzta.govt.nz/resources/load-pilot-driver-code/.

Use of sound devices to warn of overdimension vehicles

As a further tool for load pilots to warn road users of an on-coming overdimensioned vehicle it is proposed that the Rule allow pilots to use sound devices to alert on-coming drivers who may not have taken notice of other warning signs.

Placement of local pilots on the road

The Rule requires load pilots to take all practicable steps to warn approaching drivers or pedestrians of the likely hazard so they have sufficient time to comply with the warning. There is also a general road rule that vehicles travelling on a public road cannot cross over the centreline unless they are passing another vehicle.

The Coroner asked consideration be given for the Rule to provide that the pilot vehicle encountered by oncoming motorists immediately before an over-dimension load be positioned in line with the extremity of the load. A similar suggestion was made in preliminary discussions with interested groups that pilots be able to cross the centre line if it was considered necessary to alert on-coming vehicles. This was seen as providing better opportunity to warn on-coming vehicles of the load.

While this proposal would place pilots into the line of oncoming traffic, the dangers of this could be mitigated by an experienced pilot. The Coroner notes the pilot vehicle has more opportunity (than the main load) to stop before any head-on collision, especially so if the maximum load speed is 45kph.

The use of such a procedure would need to be incorporated into pilot training as well as the Transport Agency's Load Pilot Driver Code.

Broader questions relating to the management of overdimension loads

The following section deals with a range of aspects of the management of overdimension loads for which specific proposals are to be to be developed. Any specific proposals will be included in the draft Rule, which will also be released for public submissions.

Maximum dimensions of loads

There are no maximum dimensions for which an indivisible load can be given a permit. This recognises that from time to time there will be a need to move overdimension loads that cannot be made smaller or moved other than by road. In considering whether to grant a permit, an assessment is made on the ability of the vehicle to move practically and safely on the intended route and any conditions the operator should follow to ensure public safety.

The Coroner has recommended consideration be given to houses being transported on roads being regarded as divisible loads if they exceed 5.0m in width. Accordingly, houses greater than 5.0m would be required to be cut into parts 5.0m wide or less, and the parts transported separately.

Under the Rule all parts of a house transported with a width greater than 3.10m would still require pilots and to meet the other requirements for the transport of overdimension loads.

Issues to consider include the advantages and disadvantages of moving one very large wide load compared with two or more relatively large loads.

Speed limits for overdimension vehicles

The Rule does not contain speed limits for overdimension vehicles. The open road speed limit for heavy vehicles of 90kph applies if there are no limiting conditions in the permit. The general requirement on all drivers to travel at a speed safe for the conditions also applies.

Speed was raised by the Coroner as a matter that should be considered in any review of the management of overdimension loads. He recommended that, for very wide loads, the limit be lowered to 45kph.

In considering whether to specify in the Rule a lower speed limit for overdimension vehicles, two competing factors need to be considered. One factor is the load moving at a speed that allows the transporting vehicle and on-coming traffic sufficient time to take actions to avoid collision. The other factor is ensuring traffic flows smoothly so drivers following the transporting vehicle do not become frustrated and undertake risky overtaking manoeuvres.

Hours of travel for overdimension loads

As part of ensuring the safe travel of overdimension vehicles, the Rule sets times when various categories of vehicles cannot be operated. These times vary depending on the day and where the load is moving.[51]

The Coroner recommended that the hours during which overdimension loads are moved should be considered. No specific recommendations were made as to whether daylight or nighttime was preferable. Instead, the most appropriate times should be determined after research and submissions from interested organisations.

The current travel times for the overdimension categories contain some inconsistent travel times. For example, smaller loads cannot travel on weekends between 10:00 and 13:00 hours and between 16:00 and 19:00 hours. Larger loads, however, can travel at some of these times (e.g. between 05:00 and 12:00 hours) but not others. Any revision of travel times will include a more consistent approach.

The Rule will be amended to reflect the recent ‘Mondayisation’ of ANZAC Day. This would require that when ANZAC Day falls on a Saturday, this would be treated as a public holiday for the purposes of overdimension travel, to avoid commemorations held on that day.

Travel zones for overdimension loads

Schedules 6 and 7 of the Rule describe zones for restricted travel for over-dimension vehicles. The descriptions of a number of routes are no longer current. Changing road use patterns and new roads, especially in Auckland, make it necessary to revise these schedules to ensure they remain appropriate.

[51] These are specified in Schedules 5 and 6 of the VDAM Rule.

It is proposed that in respect of the Auckland motorway loads exceeding 3.10m in width or 4.25m in height be permitted to travel on SH18 between the SH16 and SH18 interchange and the Old Albany Highway.

It is also proposed the section of the Auckland Northern Motorway on SH1 between the Silverdale Interchange and Titfords Bridge be permitted for use by overdimension loads.

Warning signs on pilot vehicles

Motorists need clear instructions about what they must do to avoid an on-coming overdimension vehicle. This is especially the case where the load is very wide. A sign saying 'Slow Down' or even 'Wide Load' may not provide sufficient information for the on-coming driver of the nature of the risks they face. Lighting and hazard panels play an important part in signalling to road users the edges of the load.

The requirements for warnings and hazard signs, and lighting for overdimension vehicles and load pilots accompanying them have been in place since 1998. It is proposed to amend the Rule to allow new layouts and wording, which would be approved by the Transport Agency.

It is also proposed to consider new signs such as "Stop on request" which can provide more active information to on-coming drivers about what actions they need to take. Views are also sought on the extent and positioning of lighting that should be required to mark the edges of large loads.

Number of load pilot vehicles required

The Rule sets the minimum number of pilots to accompany overdimension loads. It also provides a general requirement on operators of overdimension vehicles to ensure there are adequate numbers of pilot vehicles to warn approaching traffic.

For loads over 5.0m wide, two Class 2 pilots plus one Class 1 pilot are required as a minimum. For vehicles between 4.5m and 5.0m, one Class 2 pilot plus one Class 1 pilot are required with an additional Class 2 pilot if the rear overhang exceeds 7.0m.

The Coroner has asked consideration be given for loads imposing an extreme hazard to oncoming vehicles (e.g. taking up a significant width of a road) for three pilots to be required to travel in advance of the load.

Summary of proposals

The following proposals and questions seek your views on how best to ensure the safe movement of overdimension loads. In considering your response, it should be remembered that safe movement would depend on the interaction of a range of measures as a whole. Different approaches can be taken for reducing safety risks depending on the emphasis given the various elements discussed in this section.

9. Management of overdimension loads – proposals for your submission

Select your preferred proposal or proposals in relation to the management of overweight/ overdimension vehicles. Supporting arguments for your selections are also encouraged.

- ☐ Proposal 1: Clarify in the Rule the responsibilities of 'operator' for overweight and overdimension permits.
- ☐ Proposal 2: Flags should no longer be permitted to signal the edge of overwidth loads (but still be required to mark the end of long loads).
- ☐ Proposal 3: All tractors between 2.5m and 3.1m wide should be required to use a warning light or hazard panels signifying width.
- ☐ Proposal 4: Pilots should be able to use sound warnings to warn oncoming vehicles of an approaching overdimension load.
- ☐ Proposal 5: Pilots should be allowed (or be required) to be positioned on the road in line with the outer extremity of an overwidth load.
  ☐ Allowed ☐ Required

Following are a set of broader questions about aspects of the management of overdimension loads for which specific proposals are to be developed. Any adopted proposals will be included in the draft Rule, which will be released in mid-2016 for public submissions.

10. Management of overdimension loads – questions for your submission

a) If there were to be a maximum width for transporting houses, what should that limit be, and why?
b) Should there be a speed limit for very wide loads? If yes, what should that limit be?
c) If the current hours of travel for moving overdimension vehicles are revised, what hours do you consider appropriate for what size of load?
d) If the travel zones for overdimension vehicles are revised to ensure they reflect changing road use patterns, are there any specific changes you recommend?
e) Do you have a preference as to signage on pilot vehicles warning oncoming vehicles of an approaching overdimension load? If yes, what is your preference?
f) Do you have a preference as to the positioning and extent of hazard panels, including reflective and illuminating signs/lights on overdimension loads? If yes, what is your preference?
g) Do you support increasing the number of pilots for very wide vehicles to three pilots?

Minor amendments to the Rule

The following are proposed minor changes to improve the operation of the VDAM Rule.

Using overweight/overdimension vehicles in emergencies

The Rule does not give RCAs discretion to waive the requirement for a permit for a vehicle that exceeds the general access limits. In some emergencies, it may be helpful to make immediate use of a vehicle that would normally require a permit, or whose use would contravene the conditions of an existing permit, e.g. travelling on a non-specified route.

To ensure a rapid response in such circumstances, it is proposed RCAs have the discretion to allow vehicles to be used without a permit or beyond existing permit conditions. The provisions would also indemnify the operators of the vehicles used in this way.

Allowing temporary increase in vehicle height for ground clearance

It is proposed that suitably equipped vehicles be allowed to temporarily raise their height above the limit in the Rule for the purposes of ground clearance, for example going over railways tracks and speed humps. Newer European vehicles are often fitted with technology that enables them to temporarily raise their suspension to clear ground obstructions, and then automatically lower once underway at speed (10–25kph).

Requirement for certain pilot signs to be frangible

It is proposed the requirement for overdimension hazard signs to be frangible (i.e. breakable or readily deformable) when mounted onto solid objects or the roof of pilot vehicles, be deleted. The requirement to be frangible would remain when such signs are not fully fixed to a solid object.

Pilot vehicle tyre size

The Rule currently requires Class 2 pilot vehicles to have a wheel rim diameter not exceeding 17 inches. As many vehicles with a gross vehicle mass of 7,000kg can now safely have wheels exceeding 17 inches, it is proposed this requirement be deleted.

Glossary

50MAX – 50MAX is a new generation of high productivity motor vehicle (HPMV) truck and trailer combination that allows for safe and more efficient transport of freight goods. 50MAX trucks are slightly longer than standard 44 tonne vehicles, have additional axles (9 in total) and can have a total weight of up to 50 tonnes. The Transport Agency has approved a set of designs for 50MAX vehicles.

Exception – explicit circumstance specified in the VDAM Rule where maximum dimensions and mass limits may be exceeded (for example, allowing an additional 50mm width for securing devices).

Exemption – granted by the Transport Agency under section 166 of the Land Transport Act 1998. Where the Agency considers it appropriate, an operator or vehicle may be exempted from a specified requirement in the Rule.

HPMV – High Productivity Motor Vehicles – a special class of vehicles designed to carry more freight. HPMV vehicles must carry divisible loads, exceed a mass of 44,000kg and/or the maximum length for standard vehicles. They must operate within higher individual axle and axle group limits set out in the Rule and be no wider or higher than general access vehicles. They operate under specific HPMV permits for roads/bridges that are able to accommodate the additional mass and/or length.

Indivisible load – a load that cannot reasonably (without disproportionate effort, expense, or risk of damage to the load) have its size reduced or be divided into two or more sections for road transport.

NZ Transport Agency – the Government organisation established under section 93 of the Land Transport Management Act 2003. It is the road controlling authority for State highways.

Overdimension – a vehicle and/or load that has one or more dimensions in excess of what is allowed for general access in the Rule.

Pavement – refers to the road surface and layers making up the road.

Prime mover – motor-driven towing vehicle used to tow trailers.

Pro-forma design – a blueprint design issued by the Transport Agency that meets the performance requirements of a particular vehicle category, for example 50MAX. Permit applications for vehicles that meet a pro-forma design can be processed more quickly.

Road Controlling Authority (RCA) – an organisation that has been given responsibility to control a road. For State highways the Transport Agency is the road controlling authority. For local roads, the RCA is the relevant city or district council or unitary authority, and includes Auckland Transport.

Roading network – all roads controlled by the Transport Agency and other RCAs. It includes bridges, tunnels, and associated signs.

Acronyms

GVM	Gross Vehicle Mass	The maximum manufacturer-specified weight that a vehicle is designed for. The GVM may be in excess of what is allowed by the VDAM Rule mass limits.
HCUB	High Capacity Urban Bus	Bus with at least 60 passenger seats; allowed to apply for overweight permits under 2015 VDAM amendment.
IRAP	International Road Assessment Programme	A system of rating roads for their safety performance.
NPV	Net Present Value	A measurement of economic benefits over a specified timeframe, at present-day values.
PBS	Performance Based Standards	A series of performance requirements that a vehicle must meet, while allowing operators and manufactures to determine how to configure a vehicle to meet those requirements.
RUC	Road User Charges	Charges applying to all heavy vehicles, and light vehicles with power sources other than petrol, CNG or LPG. Based on gross mass and axle configuration.
SRT	Static Roll Threshold	A measure of the resistance of a heavy vehicle to rollover.
VDAM	Vehicle Dimensions and Mass	Land Transport Rule: Vehicle Dimensions and Mass 2002 (the VDAM Rule).
VKT	Vehicle Kilometres Travelled	Used as a measurement of overall vehicle use of the road network, and the required heavy vehicle movements to complete a transport task.

Appendix

Proposed amendments (in red) to Schedule 2 Limits

PART A GENERAL MASS LIMITS

Table 1 — Maximum mass on individual axles

Type of axle	Mass (kg)
1. Single standard tyres:	
(a) in a twin-steer axle set, or in a tandem axle set with a twin- or single large-tyred axle	5500 ~~5400~~
(b) in any other axle set	6000
2. Single large-tyred:	
(a) in a twin-steer axle or quad-axle set	5500 ~~5400~~
~~(b) in a quad-axle set~~	~~5500~~
(c) in a tandem axle set with two single large-tyred axles or in a tandem axle set with a single standard-tyred axle or in a tri-axle set	6600
(d) in any other axle set	7200
3. Twin-tyred:	
(a) in a quad-axle set	5500
(b) in a tri-axle set	6600
(c) in any other axle set	8200
4. Oscillating axle, in any axle set	9500

Table 2 — Maximum sum of axle mass on two axles in a tandem axle set

Type of axle	Mass (kg)
1. Two single standard tyres~~:~~	11,000
~~in a twin-steer set~~	~~10,800~~
~~not in a twin-steer set~~	~~11,000~~
2. Two single large-tyred axles:	
(a) in a twin-steer set	11,000 ~~10,800~~
(b) not in a twin-steer set	13,000
3. Two twin-tyred axles:	
(a) spaced less than 1.3m from the first axle to the last axle	14,500
(b) spaced 1.3m or more but less than 1.8m from the first axle to the last axle	15,000
(c) spaced 1.8m or more from the first axle to the last axle	15,500
4. Twin-tyred axle:	
(a) with a single large-tyred axle and 60/40 load share	13,600
(b) with a single large-tyred axle and 55/45 load share	14,500
5. Single standard-tyred axle with an oscillating axle	13,000
6. Single standard-tyred axle with a single large-tyred axle or a twin-tyred axle	12,000
7. Two oscillating axles	15,000

Table 3 — Maximum sum of axle mass in a tri-axle set

Type of axle	Mass (kg)
Three oscillating axles, three twin-tyred axles, or three large-tyred axles:	
(a) spaced 2.5m or more from the first axle to the last axle	18,000
(b) spaced 2.4m or more and less than 2.5m from the first axle to the last axle	17,500
(c) spaced 2m or more and less than 2.4m from the first axle to the last axle	15,500

Table 4 — Maximum sum of axle mass in a quad-axle set

Type of axle	Mass (kg)
Quad-axle set with twin-tyred axles, or single large-tyred axles, or oscillating axles, with two steering axles	20,000
~~Four twin-tyred axles, or four~~ Quad-axle set with twin-tyred axles, or single large-tyred axles, or oscillating axles, with one steering axle	20,000

Table 5 — Maximum sum of mass on any two or more axles that together do not constitute a single tandem axle set, single tri-axle set or single quad-axle set, where the distance from the centre of the first axle to the centre of the last axle is 1m or more but less than 1.8m (including maximum gross mass)

Type of axle	Mass (kg)
1 Two single standard-tyred axles	11,000 ~~10,800~~
2 Two single large-tyred axles	12,000
3 A single standard-tyred axle with a single large-tyred axle or a twin-tyred axle	12,000
4 Any other two or more axles	14,500

Table 6 — Maximum sum of mass on any two or more axles that together do not constitute a single tandem axle set, single tri-axle set or single quad-axle set, ~~where the distance from the centre of the first axle to the centre of the last axle is 1.8 m or more~~ at the specified distances (including maximum gross mass)

Type of axle		Mass (kg)
Where the distance from the centre of the first axle to the centre of the last axle is:		
1.8m but less than 2.5m		15,500
2.5m but less than 3.0m		17,500
3.0m but less than 3.3m		19,000
3.3m but less than 3.6m		20,000
3.6m but less than 4.0m		21,000
4.0m but less than 4.4m		22,000
4.4m but less than 4.7m		23,000
4.7m but less than 5.1m		24,000
5.1m but less than 5.4m		25,000
5.4m but less than 5.8m		26,000
5.8m but less than 6.4m		27,000
6.4m but less than 7.0m		28,000
7.0m but less than 7.6m		29,000
7.6m but less than 8.2m		30,000
8.2m but less than 8.8m		31,000
8.8m but less than 9.4m		32,000
9.4m but less than 10.0m		33,000
10.0m but less than 10.8m		34,000
10.8m but less than 11.6m		35,000
11.6m but less than 12.0m		36,000
12.0m but less than 12.5m		37,000
12.5m but less than 13.2m		38,000
13.2m but less than 14.0m		39,000
14.0m but less than 14.8m		40,000
14.8m but less than 15.2m		41,000
15.2m but less than 15.6m		42,000
15.6m but less than 16.0m		43,000
16.0m ~~or more~~ but less than 17.4m	minimum 7 axles	44,000
16.0m ~~or more~~ but less than 17.4m	minimum 8 axles	45,000
17.4m but less than 18.0m	minimum 9 axles	46,000*
18.0m but less than 18.6m	minimum 9 axles	47,000*
18.6m but less than 19.4m	minimum 9 axles	48,000*
19.4m but less than 20.0m	minimum 9 axles	49,000*
20.0m or more	minimum 9 axles	50,000*

*Conditional access – may be placed in a separate ‘50MAX’ table

PART B MASS LIMITS FOR HIGH-PRODUCTIVITY MOTOR VEHICLES

Table 1 — Maximum mass on individual axles

Type of axle	Mass (kg)
1. Single standard tyres:	
(a) in a twin-steer axle set, or in a tandem axle set with a twin or single large-tyred axle	5,500 ~~5,400~~
(b) in any other axle set	6,000
2. Single large-tyred:	
(a) in a twin-steer axle set	5,500 ~~5,400~~
(b) in a quad-axle set	6,000
(c) in a tandem axle set with two single large-tyred axles or in a tandem axle set with a single standard-tyred axle or in a tri-axle set	6,600
(d) in any other axle set	7,200
3. Twin-tyred:	
(a) in a quad-axle set	6,000
(b) in a tri-axle set	7,000
(c) in any other axle set	8,800
4. Oscillating axle, in any axle set	9,500

Table 2 — Maximum sum of axle mass on two axles in a tandem axle set

Type of axle	Mass (kg)
1 Two single standard-tyred axles:	11,000
~~(a) in a twin-steer set~~	~~10,800~~
~~(b) not in a twin-steer set~~	~~11,000~~
2 Two single large-tyred axles:	
(a) in a twin-steer set	11,000 ~~10,800~~
(b) not in a twin-steer set	13,000
3 Two twin-tyred axles:	
(a) spaced less than 1.3m from the first axle to the last axle	15,000
(b) spaced 1.3m or more from the first axle to the last axle	16,000
4 Twin-tyred axle:	
(a) with a single large-tyred axle and 60/40 load share	13,600
(b) with a single large-tyred axle and 55/45 load share	14,500
5 Single standard-tyred axle with an oscillating axle	13,000
6 Single standard-tyred axle with a single large-tyred axle	12,000
7 Single standard-tyred axle with a twin-tyred axle	13,300
8 Two oscillating axles	15,000

Table 3 — Maximum sum of axle mass in a tri-axle set

Type of axle set	Mass (kg)
Three oscillating axles, three twin-tyred axles, or three single large-tyred axles:	
(a) spaced 2.0m or more but less than 2.4m from the first axle to the last axle	16,000
(b) spaced 2.4m or more but less than 2.5m from the first axle to the last axle	18,000
(c) spaced 2.5m or more from the first axle to the last axle	19,000

Table 4 — Maximum sum of axle mass in a quad-axle set

Type of axle	Mass (kg)
Quad-axle set with twin-tyred axles, or single large-tyred axles, or oscillating axles, with one steering axle	22,000

Table 5 — Maximum sum of mass on any two or more axles that together do not constitute a single tandem axle set, single tri-axle set or single quad-axle set, where distance from centre of first axle to centre of the last axle is 1.0m or more but less than 1.8m (including maximum gross mass)

Type of axle		Mass (kg)
1	Two single standard-tyred axles	11,000 ~~10,800~~
2	Two single large-tyred axles	12,000
3	A single standard-tyred axle with a single large-tyred axle or a twin-tyred axle	12,000
4	Any other two or more axles	14,500

Table 6 — Maximum sum of mass on any two or more axles that together do not constitute a single tandem axle set, single tri-axle set or single quad-axle set, at the specified distances (including maximum gross mass)

Distance from the centre of the first axle to the centre of the last axle	Mass (kg)
1.8m but less than 2.0m	15,500
2.0m but less than 2.5m	16,000
2.5m but less than 3.0m	17,500
3.0m but less than 3.3m	19,000
3.3m but less than 3.6m	20,000
3.6m but less than 4.0m	21,000
4.0m but less than 4.4m	22,000
4.4m but less than 4.5m	23,000
4.5m but less than 4.7m	23,500
4.7m but less than 5.0m	24,000
5.0m but less than 5.4m	25,000

Distance from the centre of the first axle to the centre of the last axle	Mass (kg)
5.4m but less than 5.5m	26,000
5.5m but less than 5.8m	26,500
5.8m but less than 6.0m	27,000
6.0m but less than 6.5m	28,000
6.5m but less than 7.0m	29,500
7.0m but less than 7.5m	31,000
7.5m but less than 8.0m	32,500
8.0m but less than 8.5m	34,000
8.5m but less than 9.0m	35,000
9.0m but less than 9.5m	36,000
9.5m but less than 10.0m	37,000
10.0m but less than 10.5m	38,000
10.5m but less than 11.0m	39,000
11.0m but less than 11.5m	40,000
11.5m but less than 12.0m	41,000
12.0m but less than 12.5m	42,000
12.5m but less than 13.0m	43,000
13.0m but less than 13.5m	44,000
13.5m but less than 14.0m	45,000
14.0m but less than 14.5m	46,000
14.5m but less than 15.0m	47,000
15.0m but less than 15.5m	48,000
15.5m but less than 16.0m	49,000
16.0m but less than 16.5m	50,000
16.5m but less than 17.0m	51,000
17.0m but less than 17.5m	52,000
17.5m but less than 18.0m	53,000
18.0m but less than 18.5m	54,000
18.5m but less than 19.0m	55,000
19.0m but less than 19.5m	56,000
19.5m but less than 20.0m	57,000
20.0m but less than 20.5m	58,000
20.5m but less than 21.0m	59,000
21.0m but less than 21.5m	60,000
21.5m but less than 22.0m	61,000
22.0m or more	62,000 or more

PART C MAXIMUM AXLE LOADINGS FOR HIGH CAPACITY URBAN BUSES

Type of axle	Mass (kg)
1. Twin-tyred axle in any axle set	8,800
2. Two axles in a tandem axle set comprising:	
(a) Twin-tyred axle with a single large-tyred axle and a 60/40 load share	14,600
(b) Twin-tyred axle with a single large-tyred axle and a 55/45 load share	16,000