Review of the Land Transport Rule: Vehicle Dimensions & Mass 2002

Regulatory Impact Statement

June 2016

New Zealand Government

Regulatory Impact Statement

Amendments to Land Transport Rule: Vehicle Dimensions and Mass 2002

Agency Disclosure Statement

This regulatory impact statement (RIS) has been prepared by the Ministry of Transport.

It provides an analysis of options to improve the productivity of New Zealand road transport, especially through the contribution of heavy vehicles, while maintaining the safety of other road users.

As the Rule gives little flexibility in how to meet its requirements, changes are necessary to ensure the heavy vehicle fleet can respond efficiently to current and expected changes in demand for road transport services.

Evidence to inform the proposals in this RIS was collated from a range of sources. These included:

- Aggregated data from registers and sources held by the New Zealand Transport Agency. This included the Crash Analysis System (to assess the safety aspects of heavy vehicle use), road user charges (to assess the distances travelled by various types of vehicles), weigh in motion data (to assess the level of vehicle overloading), and information on the number and types of permits and exemptions issued by the Transport Agency to allow certain kinds of vehicles access to the road network.
- The National Freight Demand Study 2014 commissioned by the Ministry of Transport - on which the expectations of future demand for land transport was largely based.
- Analysis of proposals by external organisations with experience in the transport industry and/or economic modelling.
- Other government sources such as Statistics New Zealand and various overseas research.
- Submissions made to a discussion document on proposals to amend the Rule issued by the Associate Minister of Transport in December 2015.

The complex nature of the transport system, especially decisions on the use of the road network by operators of heavy vehicles, limits a complete analysis. Operators and users of heavy vehicle and passenger transport services must consider a wide range of variables, (most of which are not covered by the Rule), in making their investment and other business decisions.

In many cases, the RIS assesses parts of the package of changes without considering how they interact with other proposals and the Rule more broadly. Similarly, it was not possible to provide a detailed economic assessment for all sectors that may be affected by the changes. Where this has not been possible, a description of the likely possible impacts has been provided.

A full cost benefit analysis of the initial package of proposals was undertaken. Given the complexities of modelling the road transport sector and its wider economic and social impacts, the estimate of total benefit can only be approximate. However, there is a high degree of confidence the proposals can provide a net increase in productivity for the heavy vehicle fleet without compromising the safety of other road users.

The proposals are not expected to impair existing property rights, restrict market competition, reduce investment or override fundamental legal principles.

The proposed changes will be incorporated into a revised draft Rule which, as required by the Land Transport Act 1998, will be made available for public consultation.

I have reviewed the RIS prepared by the Ministry of Transport and consider the information and analysis summarised in it meets the quality assurance criteria.

Jonathan Petterson, Principal Adviser

9 June 2016

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Glossary

50MAX – 50MAX is a new generation of high productivity motor vehicle truck and trailer combination. 50MAX trucks are slightly longer than standard 44,000kg vehicles, have additional axles (9 in total) and can have a total weight of up to 50,000kg. The Transport Agency has approved a set of designs for 50MAX vehicles.

Exception – explicit circumstance specified in the Vehicle Dimensions and Mass Rule where maximum dimension 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 Transport Agency considers it appropriate, an operator or vehicle may be exempted from a specified requirement in the Rule.

Gross Vehicle Mass (GVM) – the maximum manufacturer-specified weight that a vehicle is designed for. The GVM may be in excess of what is allowed by the Rule mass limits.

High Productivity Motor Vehicles (HPMV) – a special class of vehicles designed to carry more freight. HPMVs 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 permits for routes 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.

New Zealand Transport Agency (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.

Net Present Value – a measure of economic benefits over a specified timeframe, stated in present-day values.

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.

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 which has been given responsibility to control a road. For State highways the Transport Agency is the road controlling authority. For local roads it is the relevant city or district council or unitary authority, and includes Auckland Transport, collectively referred to in the RIS as ‘local road controlling authorities’.

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

Road User Charges (RUC) – 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.

Rule (also the Rule) – Land Transport Rule: Vehicle Dimensions and Mass 2002.

Static Roll Threshold – a measure of the resistance of a heavy vehicle to rollover.

Vehicle Kilometres Travelled (VKT) – used as a measurement of overall vehicle use of the road network, and the required heavy vehicle movements to complete a transport task.

Wheelbase – the distance from the centre of a vehicle's rear wheel axis to the centre of its wheel front axis. The Rule has more detailed descriptions about the definitions of front and rear wheel axis.

Executive summary

Much of the economy, especially the export sector, depends on a productive, safe transport system to move goods and freight and carry people. The Land Transport Rule: Vehicle Dimensions and Mass 2002 (the Rule) is a significant part of the system controlling the use of roads by regulating how heavy and how large vehicles can be when using New Zealand's road network.

In 2010 the Government delivered the first phase of productivity improvements for freight transport with the introduction of High Productivity Motor Vehicles into the Rule. These are expected to continue to deliver productivity increases without compromising the road transport system and the safety of other road users.

The current review of the Rule identified that further changes are needed to promote the uptake of new vehicle technologies that offer improved safety for other road users. Changes are also needed to improve transport fleet productivity more generally to meet an expected 58 percent increase in road freight demand over the next 30 years. Without increasing productivity, meeting this increased demand will mean more trucks on the roads, reducing safety and increasing costs for businesses, exporters, and consumers.

Following initial consultation with transport sector stakeholders, a discussion document setting out proposed changes to the Rule was released in December 2015. This was supported by a series of regional public workshops with interested stakeholders. The changes assessed in this RIS are the result of that previous work and further analysis.

The most significant proposed changes to the Rule occur in three areas:

- Some increases in allowable axle mass (for heavy vehicles generally and further increases for buses and other specialist vehicles) and increases in gross mass limits for 7 and 8-axle vehicle combinations.
- Small increases in width and height limits for all vehicles, with additional exceptions to these limits for devices that improve safety to other road users and vehicle efficiency.
- Improvements to the controls for transporting very large vehicles/loads.

There are further minor proposed changes for specific vehicle types or particular aspects of the Rule.

The proposals in the discussion document were assessed as having an expected net present value of $634 million over 30 years. This is in addition to the expected benefits from the changes made in 2010. This assessment is expected to be comparable to proposals considered in this RIS.

The benefits of increases in mass and dimensions limits vary depending on the type of vehicle, load and route. Overall they are expected to create opportunities to improve productivity across New Zealand's freight transport and passenger fleet. This in turn may reduce the increased risk to public safety that is expected to occur if nothing else is done to meet the additional transport demands over the next 30 years.

Status quo

The nature of the road transport industry in New Zealand and its regulation

1. A range of users compete for limited road space; vehicles can be a hazard to other roads users, including pedestrians, as well as being potentially damaging to the pavement, bridges and tunnels. Some control on who gets to use the roads and on what basis is therefore needed. A clear regulatory framework can help maximise the contribution road transport makes to the economy in a safe and efficient manner.

2. The road network exists to serve New Zealand's social and commercial needs to move people and freight around the country. New Zealand's transport task is substantial, with the equivalent of about 50,000kg per person moved each year.

3. Productivity improvements in the transport sector are keenly sought in order to improve services and lower costs to transport customers. This is particularly so for export goods where competition is higher and so the cost and quality of transport services are critical.

4. In 2015, there were about 160,000 registered heavy freight vehicles. A National Freight Demand Study was completed in 2014 looking at the freight task for the next 30 years. Commissioned by the Ministry of Transport it looked at 'freight' in the wider sense (including people, livestock, materials, goods and other freight). The study:

    - Estimated heavy vehicles made up 7 percent of all road travel taken and moved 91 percent of total road freight tonnage.

    - Conservatively estimated the transport task to increase by 58 percent over the next 30 years.

    - Forecasted the rate of growth for the movement of 29 identified types of commodities would vary widely, which impacts on parts of the transport sector differently and requires a variety of transport options for end users. For example, the forecast rate of growth in:

        - Building materials and dairy products is expected to be substantial, reflecting productivity growth.

        - Logs and timber products is expected to increase and then decline as the log harvest reaches its maximum and then starts to fall.

        - Livestock meat and wool is expected to have a limited increase relative to the overall forecast position.

        - Manufactured and retail goods will be average, with a balance between limited growth in manufacturing and food retailing offset by strong growth in other retail flows.

5. In terms of moving people, the bus sector contributes significantly to tourism and public transport. For instance:

   - 3.2 million tourists visited New Zealand to the year ending March 2016 with most visitors coming from Australia, China, US and UK.[1]
   - Last year the number of Chinese and American tourists rose by 28 percent and 12 percent respectively.[2]
   - China is the second highest visitor source country (after Australia), with almost 80 percent using tour buses as their main form of transport.[3]
   - Visitor arrivals to New Zealand are expected to grow 4 percent a year, reaching 3.8 million visitors in 2021 from 2.9 million in 2014.[4]
   - Around 90 percent of public transport services are in Auckland, Wellington and Canterbury. While each market has slightly different features, most passengers travel on buses in all three regions.[5]

6. While rail, coastal shipping and air will pick up some of the increase in the transport task, these modes are unlikely to carry higher shares.[6] This is because there are often specific requirements for the way people, livestock, materials, goods and other freight are carried, such as delivery time sensitivity, freight type (bulk vs light packages), route preference (e.g. point to point vs point to hub) and transport distance. For instance, coastal shipping works well for bulk freight moved over longer distances, rail works well for less time sensitive bulk freight over longer distances and air works well for smaller lighter freight.

7. Without significant changes in the way people and things are carried, the transport task will continue to largely rely on road transport.

Key features of the Land Transport Rule: Vehicle Dimensions and Mass 2002

8. Tight control and limited flexibility in how to comply with its provisions characterise the Rule. The level of control and detail reflects the complex environment in which road transport operates. There are many types of vehicles, freight and passenger tasks, an essentially infinite number of departure and destination points, and a variable roading network in terms of its capacity to deal with differing mass and dimension limits.

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1 *Key Tourism Statistics April 2016*, Ministry of Business, Innovation and Employment.

2 *Key Tourism Statistics April 2016*, Ministry of Business, Innovation and Employment.

3 *China Market Snapshot* June 2015, Tourism New Zealand.

4 *New Zealand Tourism Forecasts 2015-2021* May 2015, Ministry of Business, Innovation and Employment.

5 *Public Transport: New Zealand Household Travel Survey 2011-2014* October 2015, Ministry of Transport.

6 Other modes were out of scope for the VDAM Rule review as the Rule relates to road transport. Alternative transport modes are dealt with by system reform under the Government Policy Statement on Land Transport.

9. The Rule is a significant component of the system governing access to and use of New Zealand's roads. The Rule's objective is to:

> "manage the risk to road safety resulting from the dimensions and mass of vehicles, and in particular, to achieve a reasonable balance between the risks that heavy motor vehicle present to the public safety, the efficient operation of the heavy vehicle fleet with the constraints imposed by the road network."[7]

10. The Rule broadly controls access to the road network in two ways:

- Determines the requirements for vehicles which can use any part of the road network[8] – referred to in this RIS as 'general access'
- For vehicles which do not meet general access requirements, sets out the conditions on which they may access the road network or parts of the road network – referred to in this RIS as 'conditional access'.

11. Table 1 sets out the most significant provisions of the Rule. A summary list of each of the proposals is set out in Annex 1.

Table 1: Key matters covered by the VDAM Rule

What applies to	Requirements
General access	• Establishes the allowable axle and gross mass limits for general access. Axle mass refers to the maximum weight carried by an axle or groups of axles. Gross mass is the weight of a vehicle and its load • Establishes the maximum gross mass of a vehicle for general access at 44,000kg (this is only available to vehicles of a minimum length and set axle configurations) • Establishes the maximum dimensions for a vehicle to be allowed general access. Key dimensions prescribed include width, height, and length
Conditional access	• Allows permits to be given for vehicles with a gross mass of more than 44,000kg carrying indivisible loads[9] or for specialist vehicles, such as certain types of cranes • Allows permits to be given for vehicles that exceed the Rule's dimension limits and which carry indivisible loads (such vehicles/loads are referred to in the Rule as 'overdimension'). Examples of these include wind turbine poles and buildings. Often an overweight and an overdimension permit are required for moving large indivisible loads • Establishes a range of axle mass and gross mass limits for what the Rule calls 'High Productivity Motor Vehicles' (HPMVs). These are heavy vehicles that carry divisible loads of more than 44,000kg and/or vary from the dimension limits • Requires permits to be obtained from road controlling authorities for the use of HPMVs[10]

7 Land Transport Rule: Vehicle Dimensions and Mass 2002, section 1.5(1).

8 Access to the road network is never universal. At any given time there will be a small number of structures such as bridges and tunnels where for safety reasons access is limited for heavier or larger vehicles.

9 An indivisible load is one 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. Divisible loads by contrast are loads that can readily be reduced in size or divided into sections.

10 Road controlling authorities are principally territorial authorities for local roads and the New Zealand Transport Agency for the state highway network.

	• Provides a separate mass category to allow buses to carry heavier loads than allowed for under general access (This was added to the Rule in 2016) • Specifies requirements applying to the movement of overdimension vehicles/loads. These include the use of hazard panels, lighting requirements, allowable travel times and for some, the use of accompanying pilot vehicles
Matters applying to all vehicles	• A vehicle must be manoeuvrable, and fit safely on a road and interact safely with road users • The distribution of the gross mass of a vehicle over its axles and the position of the centre of gravity of the vehicle must ensure its dynamic handling remains safe • Requires vehicles to meet specific stability performance requirements, (referred to in the Rule as the 'static roll threshold')

12. The New Zealand Police, principally through its Commercial Vehicle Investigation Unit, enforces the Rule.

13. The Rule does not deal with the funding of roads.

Significant changes to the Rule since it was made

14. The most significant recent change to the Rule was made in 2010. This introduced a new class of vehicles referred in the Rule as 'High Productivity Motor Vehicles' (HPMVs).

15. HPMVs were introduced to improve the productivity of the transport fleet. This was to help mitigate the effects of forecast freight growth, while not adversely affecting the environment or the safety of road users.

16. HPMVs are allowed to carry more mass and/or operate outside the dimension limits (except width or height) set for general access under the Rule. HPMVs must operate under a permit to ensure they use only parts of the network able to accommodate their increased weight or dimensions.

17. The Transport Agency has developed a special type of HPMV called 50MAX. These vehicles can weigh up to 50,000kg (vehicle plus load) and have a similar effect on the road as a standard 44,000kg 8-axle vehicle. Most local road controlling authorities have delegated to the Transport Agency the ability to grant permits for 50MAX vehicles. This creates in effect a one-stop shop for permitting and a near national network for these vehicles.

18. The HPMV regime, particularly the 50MAX class, has improved heavy vehicle productivity. For instance:

    - Figures for the year ended April 2013 estimate $60 – 80 million in operator cost savings.[11] These gains are within range for the estimates made in the 2010 regulatory impact statement supporting the HPMV Rule change.

[11] *Monitoring, Evaluation and Review of the Vehicle Dimensions and Mass Rule implementation May 2011 to April 2013*, Stimpson & Co.

- Figures for 2013 to 2015 on first registration of trucks and trailers show an upward trend in the purchase of HPMVs (with newer safety, emissions and performance technologies) and more New Zealand-manufactured trailers are being purchased, creating jobs for New Zealanders.
- HPMV figures for the second quarter of 2015/16 show for that quarter:
    - Average productivity gains of 14-20 percent, avoiding 10-15 million kilometres of standard heavy truck trips and providing commercial savings of $20-30 million.
    - Travel for standard heavy trucks (i.e. not HPMVs) is down 50 million kilometres compared with the same time 2 years ago. This is despite the fact that the economy has grown over the past 2 years with more freight moved.

19. In 2015 the Rule was amended to allow, under permit, greater axle mass for buses on designated urban passenger transport networks. This lets buses carry more passengers, so improving productivity. In April 2016 the higher axle limits were made available to buses on any route but still subject to obtaining a permit.

Relevant decisions relating to the review that have already been taken

20. Apart from a commitment to review the Rule no specific proposals have yet been agreed to by the Government. In December 2015 the Associate Minister of Transport released a discussion document seeking comments on a range of proposals to amend the Rule.

21. A Land Transport Amendment Bill, intended to be introduced to Parliament later in 2016, will include changes to reduce weighing tolerances (discussed later at paragraph 78) and increase the ability of the Police to redirect vehicles to be weighed.[12]

Problem definition

General description of the problem

22. The detailed nature of the Rule and the inflexibility of many of its provisions limits the ability of the heavy vehicle transport industry to adjust to the changing nature of the transport task, and to make use of new technologies to improve productivity and safety.

23. If the Rule is not changed, meeting the expected increased transport demand would require more trips to be taken by an older heavy vehicle fleet lacking many modern safety, emissions and performance features. This in turn would decrease safety for other road users and mean the transport sector and wider economy would be less productive than it otherwise could be.

[12] Enforcement of the Rule is subject to provisions in the Land Transport Act 1998 and the Land Transport (Offences and Penalties) Regulations 1999.

24. Similarly, if the Rule is not changed, opportunities to improve productivity and safety more generally could be missed.

25. Even in the absence of a significant increase in expected transport task, the detailed nature of the Rule still limits how the vehicle transport industry can adjust to smaller changes in the nature of the transport task. It also limits opportunities to improve the productivity and safety of the overall vehicle fleet, including constraining the ability of operators to access newer, safer vehicles from a wider range of suppliers, hence at a potentially lower cost.

Objectives

Statutory basis of review and any constraints

26. The review of the Rule is not being undertaken to meet a specific statutory requirement. Rather it is considered timely to do so given its potential contribution to the Government's broader objective to build a productive economy.

27. The Land Transport Act 1998 sets out process requirements before a transport rule can be amended. This includes public consultation on a draft rule. The Act, however, does not specify criteria to be considered when reviewing a rule.

Desired government objectives

28. The principal objective of the review is encouraging innovation in New Zealand's vehicle fleet, especially heavy commercial vehicles, and through increases in vehicle productivity, allow the fleet to efficiently and safely respond to increases in demand for road freight and passenger services.

29. This objective supports the Government's commitment to better regulation and open and efficient transport markets.

30. In considering the proposals, a supporting objective is road transport operators being left no worse off commercially than at present. This ensures that existing transport assets can continue to be productively used following the changes to the Rule.

31. The criteria used to assess the proposals were:

    (a) Safety – Does the option improve, maintain or diminish safety outcomes?

    (b) Productivity – Does the option have the potential to enhance, or reduce current productivity levels?

    (c) Infrastructure – What impact does this option have on New Zealand's roading network?

    (d) Community well-being – Is community well-being enhanced, maintained, or diminished by this option?

    (e) Better regulation – Does the option reduce compliance, transaction, administration, and/or enforcement costs, or affect compliance rates, and enforceability? This also applies to the overall structure and presentation of the Rule, making sure it is as easy as possible to understand.

32. Within each criterion a range of sub-criteria was considered, although not all applicable to each option. The sub-criteria contain a mix of quantitative and qualitative assessments. Annex 2 sets out the full criteria.

33. The criteria were developed to test whether the key objective is met (i.e. improving productivity) with wider implications also considered. Safety (especially for the movement of very large loads), infrastructure and community well-being were seen as providing an appropriate range of other factors to be considered consistent with the scale of the proposals. Testing the proposals against the broader Government objective to consistently improve the quality of regulation was also considered important. No separate consultation was undertaken on the criteria.

34. A general discussion on the interaction of the proposed changes as they relate to road user safety is set out in Annex 3. This is in addition to the specific discussion of safety impacts for the proposals in the main body of the RIS.

Options and impact analysis

Alternative approaches to regulating access and use of the road network

35. As part of the review, work had been undertaken on the application of performance based standards to the operation of the Rule. This was, in part, a response to the detailed and inflexible nature of most of the Rule's provisions.

36. A performance based approach establishes a set of performance parameters which vehicles must meet but does specify how they should be met. There are a number of performance based standards[13] used in the current Rule but these are exceptions to the more detailed approach.

37. There are, however, a range of technical issues to be worked through before a performance based approach could form a major part of the regulatory approach to the access and use of the road network.[14] For example, it is not clear whether suitable standards could in practice be established for key limits such as mass, width, height and length. Accordingly, options for a more standards-based approach to the Rule was not taken further in the review.

38. Another approach to regulating access to the road network could be to do away with most or possibly all of the dimension and mass limits. Reliance instead would be placed on general duties of care of operators to ensure their vehicles/loads do not cause damage to road infrastructure such as bridges and tunnels and are operated in ways not posing safety risks to others. Where damage or crashes do occur, costs and liability could be established through the courts.

39. Relying on 'after the event' actions to recover damages would be inefficient and create uncertain outcomes as well as costs. Without widespread surveillance the likelihood of those causing damage or driving unsafely being identified would be limited. Together

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13 These are the Static Roll Threshold (a measure of the resistance of a vehicle to rollover) and the swept path requirement (a measure of how much room a turning vehicle takes outside the lane it is travelling in)

14 The technical issues include completing a New Zealand specific set of performance based measures and determining how they could be integrated into the Rule.

these considerations defeat the objective of creating an efficient and safe road network. Accordingly, this approach was not considered in identifying feasible options.

Analysis of package of proposals to amend the Rule

40. The following sections of this RIS provide an analysis of the package of changes proposed to be made to the Rule. It is presented in three parts:

    A. Proposals for mass (with a focus on productivity)

    B. Proposals for dimensions (with a focus on productivity)

    C. Proposals for the management of overdimension loads (with a focus on safety)

Opportunities to increase productivity through changes to allowable axle and gross mass limits

Status quo

41. The Rule regulates two types of mass; axle mass and gross mass.[15] In general terms, changes in axle mass affect pavement wear; the more axles a vehicle has the less damage a given load will do to the pavement. Axle mass limits vary depending on the size and/or number of tyres per axle and whether the axles are spaced or are in sets.

42. The effects of axle mass on a given stretch of pavement depends on the characteristics of the pavement. While roads, especially local roads vary in the rate they deteriorate with a given axle load, to be practical the axle mass limits are set on an average basis. The HPMV limits are set higher than for general access reflecting the stronger pavement making up the HPMV network.

43. Gross mass affects the ability of bridges to support the weight of a vehicle. The current maximum gross mass limit for a vehicle for general access is 44,000kg.

44. Gross mass also affects road safety. For two vehicles differing only in gross mass, the heavier vehicle will take longer to stop and create greater force in any crash. However, modern heavier vehicles often have safety features to help avoid vehicles getting into crash situations.

45. The Rule provides for mass limits in three categories; general access, HPMVs, and high capacity buses. Access to the higher mass limits provided for HPMVs and high capacity buses requires a permit from the relevant road controlling authority.

46. While the Rule sets axle and gross mass limits, tolerances above these limits are applied before enforcement action is taken. Tolerances reflect that some loads may gain weight in transit, for example due to the effects of rain, as well as the difficultly of accurately weighing some loads.

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[15] Axle mass refers to the maximum weight carried by an axle or groups of axles. Gross mass refers to the weight of the vehicle plus its load.

47. The maximum current weighing tolerances for axle and gross mass (excepting HPMV) are:[16]

- 500kg – for weights up to 11,000kg
- 1,000kg – weights from 11,000kg - 33,000kg
- 1,500kg – weights heavier than 33,000kg
- 300kg – for front steer axles

48. For example, where the prescribed maximum vehicle gross mass is 44,000kg, the weight (of the vehicle and load combined) that can be carried before an infringement fee applies is 45,500kg.

49. The tolerances are not intended to establish additional legal limits above those in the Rule. In practice, however, many operators, especially of larger vehicles do incorporate much of the tolerances when loading their vehicles. The Transport Agency's weigh in motion data[17] shows that approximately 11 percent of heavy vehicles are overloaded. Assuming that return trips are empty this suggests that of laden heavy vehicles approximately 20 percent are overloaded. Within this average the incidence of overloading will vary depending on vehicle type and load.

50. Loading to the tolerance gives operators a competitive advantage over those who choose to stay within the Rule's limits. Not only are they carrying more load but they are paying road user charges at a lesser rate than they should for their loads.

51. Proposals to reduce the weighing tolerances to discourage intentional overloading are discussed at paragraph 78.

Other proposals to discourage intentional overloading

52. Two other proposals are being separately progressed to discourage operators from deliberately overloading their vehicles. The proposals are:

- Placing a 2,000kg limit on the maximum extent of overloading permitted before a vehicle must off-load some of its weight. The existing off-loading limit is expressed as a percentage (10 percent) of the vehicle's weight limit. The change will mean heavy vehicles with weight limits of more than 20,000kg will face a lower weight limit before being required to off-load.[18]
- Making it possible for the Police to redirect vehicles for up to 10 kilometres in order to be weighed in circumstances where roadside weighing is unsafe or impractical. This may help to reduce the ability of vehicles to deliberately take alternative routes to avoid weighing.

53. The proposals will be included in a Bill currently being prepared to amend the Land Transport Act 1998.

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[16] These are set out in the Land Transport (Offences and Penalties) Regulations 1999. HPMV tolerances are separately set out in the Section 5.8 of the Rule and are generally lower.

[17] Weigh in motion (WiM), devices measure the weight of and determine the number of axles a vehicles has as it passes a checkpoint without the vehicle having to stop. The Transport Agency has a number of WiM devices at key sites on the state highway network. Data from WiM sites is used, among other things, to assess the rate of overloading of the heavy vehicle fleet.

[18] For vehicles up to 20,000kg the existing 10 percent offloading threshold will remain.

Package of proposals to increase productivity through increased mass

54. Table 2 outlines the package of proposals to increase mass allowance. These are discussed in more detail following the table.

Table 2: Outline of proposals to improve productivity through increasing mass limits

Applies to	Proposal
General access	• Small increases to a number of axle limits • Increasing the maximum gross mass for 7-axle vehicles with a wheelbase of at least 16.8m to 45,000kg • Increasing the maximum gross mass for 8-axle vehicles with a wheelbase of at least 17.4m to 46,000kg
Specialist vehicles	• Additional axle mass limits for buses operating under permit • Additional axle mass limits for defined specialist vehicles and certain simple trailer combinations operating under permit
All vehicles	• Reducing the maximum tolerances for weighing to 500kg (and increasing tolerance on front-steering axles from 300kg to 500kg) • Providing for a larger tyre size

High Productivity Motor Vehicles

55. No increases in axle or gross mass limits are proposed for HPMVs. This is because gains in productivity for these vehicles were provided for in the changes made to the Rule in 2010. There is considerable flexibility within the HPMV limits for operators to carry additional weight under a permit.

Further detail on proposals to increase mass limits

Additional axle mass for general access

56. It is proposed to make a number of small increases to axle mass limits for general access, the full list of which is set out in Annex 4. These changes provide for a more accurate matching of axle mass limits to the impact vehicles have on the roading infrastructure.

57. Larger increases in axle mass were considered, in particular making the limits currently set for HPMV vehicles available for general access. Analysis of this proposal showed it would put at risk a significant number of bridges both on State highways and the local road network. Mitigation of this would require a rapid assessment of at-risk bridges, estimated to take 6 months for State highway bridges and a further 12 months for local network bridges.

58. Very preliminary estimates of possible strengthening work indicated a cost of $50 million for bridges on State highways and $250 million for bridges on local roads. A more accurate estimate would need completion of the assessments as would estimating the time needed to complete strengthening work.

Additional gross mass for 7 and 8-axle vehicles for general access

59. The current maximum allowable gross mass for general access is 44,000kg. To make use of the 44,000kg limit a vehicle must be at least 16.0m, in effect requiring a vehicle of at least 6 axles. It is proposed 7-axle vehicles with a wheelbase of 16.8m be allowed an additional 1,000kg gross mass to a maximum of 45,000kg and 8-axle vehicles with

a wheelbase of at least 17.4m an additional 2,000kg, to a maximum gross mass of 46,000kg.

60. The required lengths to use the additional gross mass ensures the heavier weight is distributed in a way that mitigates the risk of damage to bridges. Some trailers will need extended drawbars to use the increased weight at an estimated one-off cost of $4,000 per trailer.

61. Additional gross mass limits above 44,000kg for 6-axle vehicles are not proposed because it is considered they would cause much more pavement damage at weights above 44,000kg than 7 and 8-axle vehicles at 45,000kg and 46,000kg respectively.

62. The proposed limits for axle and gross mass have been assessed by the Transport Agency as not creating any increased risk for bridges on State highways or local roads compared to present limits. The increased mass limits will not be available for use on bridges posted with weight restrictions.

Buses and other specialist vehicles

63. The Rule provides separate higher axle mass limits for buses under permit. The limits provide an additional 1,000kg or 1,500kg for the rear axle sets above that provided for HPMVs. This recognises modern buses often carry more weight on their rear axles than other heavy vehicles and there is no practical way to redistribute this load. This may help with the uptake of electric buses which due to their heavy batteries can have a greater unladen weight than similar sized diesel buses.

64. It is also proposed higher axle limits be available, under permit, for other vehicles which typically have heavy rear axle loads and where the load cannot be easily redistributed. The higher limits would be available to rubbish trucks, dump trucks, concrete mixers and ground-spread fertiliser trucks.

65. The decision on whether or not to approve a specific vehicle on a specific route will continue to stay with the relevant road controlling authority. The authority may also provide for lower limits (but not below general access limits) where access to weaker roads is sought.

66. New specific road user charges rates would apply to vehicles using these increased axle loads. The vehicles will still need to meet all other requirements of the Rule such as operating within their manufacturer's gross vehicle mass and the static roll threshold requirement.

67. Tables 3 and 4 summarise the consideration of the proposed increases in axle and gross mass against the assessment criteria in Annex 2. The proposed increases for the maximum axle weights available for buses and specialist vehicles under permit are set out in Table 5.

Table 3: Analysis of proposals to increase axle mass for general access

	Increasing axle mass for general access	Increasing axle mass under permit for defined specialist vehicles
Safety	• The modest changes are not anticipated to create any additional safety risks	• This option would allow affected operators to load vehicles up to the limits specified by the vehicle's manufacturers but will not allow those limits to be exceeded • Provides for reduced vehicle movements while managing safety risks around the increased weight through permitting
Productivity	• No significant productivity gain from the change in axle masses alone – see tables for specialist and 7 and 8-axle vehicles for opportunities for increased productivity	• Represents a productivity increase in weight of at least 20 percent if all the additional weight is used • Productivity improvements available to specified vehicles will depend on approval of road controlling authorities • For buses an extra 1,000kg payload is equivalent to 12 passengers (based on an average passenger weight of 80kg)
Infrastructure	• The changes are not expected to make any significant change to the rate of pavement wear	• Significantly higher axle mass imposes significantly higher road damage • This can be mitigated through the road user charges system which can provide for specific rates to be set for weight categories above the standard limits • The permit system enables road controlling authorities to limit routes and vehicle numbers
Community well-being	• Expected to be relatively minor given the modest nature of the increases. Any consequent reduction in VKT[19] may also decrease exposure to noise and reduce CO_2 emissions and diesel particulates • Reduced prices for goods assuming the cost savings from increased productivity are passed on to end consumers	• Any reduction in VKT may also decrease exposure to noise and reduce CO_2 emissions and diesel particulates • Reduced prices for goods assuming the cost savings from increased productivity are passed on to end consumers
Better Regulation	• No change	• No change

[19] VKT = Vehicle kilometres travelled. A measure of the overall vehicle use of the road network, and the required heavy vehicle movements to complete a transport task.

Table 4: Analysis of proposal to increase maximum gross vehicle mass

	Increasing maximum gross mass to 45,000kg for 7-axle vehicles with at least 16.6m wheelbase	**Increasing maximum gross mass to 46,000kg for 8-axle vehicles with at least 17.4m wheelbase**
Safety	• Little change to safety risks through reduced heavy vehicle movements, as many such vehicles are already carrying 45,000kg, either by overloading, under permit or by exemption	• The extra weight has not been identified as having any additional safety effect as many such vehicles already operate safely on HPMV permits at this weight • There may be a safety benefit in the added incentive to use 8-axle instead of 7-axle vehicles • There is a potential reduction in heavy vehicle movements for a given freight task leading to reduced safety risk
Productivity	• Provides a 1,000kg payload benefit for operators who load to the gross mass limits only • Provides no increase in payload benefit for those operators already incorporating the threshold in their loading • Some existing trailers would need to have their drawbars extended, estimated one-off cost of $4,000 • No implications for road user charges	• Provides a 2,000kg net payload benefit for operators who load to the gross mass limits only • Provides a 1,000kg net payload benefit for operators, who load to existing tolerances • Some existing trailers will need to have their drawbars extended, estimated one-off cost of $4,000 • No implications for road user charges
Infrastructure	• Nil or negligible risk to bridges • The effect on pavement wear is likely to be negligible as many vehicles already operate at 45,000kg	• Nil or negligible risk to bridges • Small increase in pavement wear assuming average payloads increase. Any extra cost can be met through road user charges adjustments in later years • The effects on pavement wear are likely to be negligible as axle loadings similar to standard 8-axle vehicle at 44,000kg
Community well-being	• Any reduction in VKT[20] may also decrease exposure to noise and reduced CO_2 emissions and diesel particulates • Reduced prices for goods assuming the cost savings from increased productivity are passed on to end consumers	• Any reduction in VKT may also decrease exposure to noise and reduced CO2 emissions and diesel particulates • Reduced prices for goods assuming the cost savings from increased productivity are passed on to end consumers
Better Regulation	• No need to obtain an HPMV permit (cost $54.55 + GST) which is currently required to carry loads over 44,000kg (although many operators overload up to 45,000kg and so do not obtain a permit)	• No need to obtain an HPMV permit (cost $54.55 + GST) which is currently required to carry loads over 44,000kg (although some operators will be overloading and so not obtaining a permit)

[20] Vehicle kilometres travelled. A measure of the overall vehicle use of the road network, and the required heavy vehicle movements to complete a transport task.

Table 5: Buses and specialist vehicles – axle mass current and proposed limits

Buses

Access type	Axle Set	Current limit	Proposed limit
2-axle – general access	Single standard tyre in other axle set	6,000kg	6,000kg
	Twin-tyred in individual axle	8,200kg	8,200kg
2-axle – under permit	Twin-tyred in individual axle	8,800kg	12,000kg
3-axle – general access	Twin-tyred axle with a single large-tyred axle and a 60/40 load share	13,600kg	14,500kg - Twin-tyred axle with a single standard-tyred axle or large-tyred axle and a load share between 60/40 and 55/45
	Twin-tyred axle with a single large-tyred axle and a 55/45 load share	14,500kg	
	Single standard-tyred axle with a twin-tyred axle	12,000kg	
3-axle – under permit	Twin-tyred axle with a single large-tyred axle and a 60/40 load share	14,600kg	16,000kg
	Twin-tyred axle with a single large-tyred axle and a 55/45 load share	16,000kg	18,000kg

Specialist vehicles

• Rubbish trucks • Dump trucks • Concrete mixers • Ground-spread fertiliser trucks	Two twin-tyred axles - spaced less than 1.3 m from the first axle to the last axles - spaced 1.3m or more from the first axle to the last axle	14,500kg (general access) 15,000kg[21] (general access)	17,000kg (under permit) 18,000kg (under permit)

[21] For axles spaced more than 1.8m, the limit is 15,500kg. Weights in these configurations are also available for buses, but rarely used.

Pro-forma simple trailer combinations

68. The discussion document proposed to increase the gross mass limits for approved over-length car transporters from 36,000kg to 38,000kg. Currently, these designs are limited by the 36,000kg gross mass limit on simple trailer combinations.

69. The 36,000kg gross mass limit prohibits operators using these over-length car transporters from transporting the same number of cars as standard car transporters. This is because the longer car transporters are heavier, and therefore their available payload is reduced. In addition, the weight of certain categories of car (e.g. hybrid vehicles) are also increasing, further reducing overall payload.

70. When assessing this proposal, it was identified that simple trailer combinations equipped with a roll-coupled hitch, met higher safety requirements when compared with other simple trailer combinations. Furthermore, simple trailer combinations with higher tare weight and longer wheelbase also have better dynamic handling at speed, while maintaining superior tracking at low speed.

71. Taking this into consideration, it is proposed that the gross mass limits for approved over-length simple trailer combinations be increased, under permit, from 36,000kg to 40,000kg. The 40,000kg gross mass limit has been assessed as safe for simple trailer combinations that meet certain performance and design standards (roll-coupled hitch, length).[22]

72. This would enable the productivity benefits from this proposal to extend from car transporters to other applications of simple trailer combinations.

73. While this is a significant increase in gross mass limits, the individual axle mass limits are still within current limits and are not expected to have significant impacts on road infrastructure.

74. For safety purposes, the 36,000kg gross mass limit would still be the default mass limit for simple trailer combinations that do not meet the performance and design standards required to obtain an over-length permit.

Real-time location and weight verification

75. It is proposed the Rule allow operators of heavy vehicles to use real-time monitoring systems to verify their location and weight for permit and other Rule related purposes. This will allow the Transport Agency to consider how it deals with the uptake of this technology, and could lead in future to heavier vehicles with this technology carrying weights above existing limits. In the longer term, if the technology becomes more widely used, this may lead to more vehicles being able to be operated without a permit.

Changes to tyre size categories, including a new mega tyre category

76. It is proposed the Rule allow a new tyre size category (444mm or wider) to complement the current single and large size tyres. The new ‘mega’ tyre will allow a maximum axle mass on a single tyred axle of 7,600kg. This can be achieved as the mega tyre distributes the axle mass over a wider area so reducing pavement impact. This will benefit some operators by giving a greater choice in tyre sizes.

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[22] Doug Latto, Transport and Mechanical Consulting (2014), *Stinger Steer Combinations – Higher Mass*

77. The existing definition for standard tyres will also be changed to remove the reference to rim diameter size which is no longer considered necessary. Standard tyres would now be defined as all tyres narrower than 355mm.

Reducing weighing tolerances

78. It is proposed to reduce the weighing tolerances to 500kg for all individual axle and gross mass limits. Front-steering axle tolerances would be standardised at 500kg. The tolerance for non-steer axle sets and groups would be set at 1,000kg. The new tolerance levels better reflect the accuracy of modern weighing techniques.

79. As noted previously, tolerances are not intended to establish additional legal limits above those in the Rule. Instead they reflect that some loads may gain weight in transit and the technical limits of weighing devices.

80. For operators that load within the limits set by the Rule, the proposed changes in tolerances will not reduce the maximum loads they can carry. Operators that incorporate some or all of the existing tolerances into their loading will need to reduce their loads or risk an infringement fee.

81. For 7 and 8-axle truck and trailer units there will be the opportunity to access greater weights if they extend their vehicle's wheelbases to 16.8m or 17.4m respectively. Depending on the type of load, some smaller vehicles that do carry heavy loads may be able to access higher limits through permits.

82. Table 6 sets out the percentage of each type of vehicle that is at risk from the lower tolerances due to apparent patterns of overweight movement. If it is assumed that a vehicle's return journey is empty, then doubling the overloaded percentage gives an approximate indication of the proportion of loaded vehicles that are overweight.

Table 6: Net impacts of changes to mass and tolerances[23]

Vehicle category (not including buses or specialist vehicles)	Estimated % overloaded on average	Range
2 axle	0%	0%
3 axle	12%	0%-14%
4 axle	0%	0%-11%
5 axle	2%	1%-30%
6 axle	5%	2%-6%
7 axle	16%	1%-20%
8 axle	17%	11%-22%

[23] *Annual weigh-in-motion (WiM) report 2014*, New Zealand Transport Agency.

Proposal in the discussion document not taken forward

50MAX permitting

83. The discussion document proposed that 50MAX vehicles no longer require permits. This was on the basis that following bridge strengthening and other works, 50MAX vehicles would be able to access almost all of the roading network.

84. While this objective remains for the long-term the network is not yet ready for unrestricted 50MAX access. While this remains the case a key part of the acceptability of 50MAX, especially by local road controlling authorities, is confidence such vehicles are used responsibly and stay within the 50MAX network. The permit process is considered key to maintaining this confidence. It ensures the Transport Agency has contact with operators and the possibility of having a permit revoked or not renewed may act to encourage compliance.

85. In the longer term the use of telematics technology, such as on–board location and weighing verification, could provide greater assurance than the permit system can provide. It may allow 50MAX access for the road network without a formal permit.

Regulatory impact analysis of package

86. Much of the following analysis on safety and productivity is based on the concept of gains made for a fixed or equivalent freight task. As with any industry, improvements in productivity are likely to create increased output. In the case of freight transport this may mean more vehicles on roads.

87. Not reducing input costs for freight transport because it may lead to an increase in outputs is not considered sustainable. It would in effect mean no opportunities are taken to improve productivity. For the transport sector, this would lead to a loss of overall competitiveness for the end consumers of transport services, particularly exporters.

Cost and benefits of the proposed package

88. A cost benefit analysis was prepared to consider options to amend the Rule contained in the discussion document.[24] This included an assessment of the economic benefits expected to occur under the current Rule if no changes were made.

89. The analysis showed, for existing policy settings, there was an expected benefit of $502 million net present value over 30 years. This was based principally on the expected increased proportion of the transport task carried by HPMVs and especially 50MAX vehicles. This analysis was based on 50MAX growing to carry 20 percent of the freight task by 2025.

90. The additional benefits of the proposals in the discussion document were assessed as having an expected net present value of $634 million over 30 years. This is on top of the $502 million for the existing policy settings.

91. A detailed cost-benefit assessment has not been done on the final proposed package as the basic assumptions of the initial analysis particularly the uptake of 50MAX

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[24] *Vehicle Dimensions and Mass Review: Framework for Options Assessment & Draft Rule Change Cost Benefit Analysis*, Report to the Ministry of Transport November 2015, by Castalia Ltd.

vehicles, which has been consistent with initial assumptions, remain. This gives confidence the expected benefits of the revised package will be within a similar range as indicated by the initial analysis.

Economic Impacts

92. A separate cost benefit analysis of the proposed gross mass increases has not been undertaken. However, a cost benefit analysis undertaken of the proposal in the discussion document to increase gross mass from 44,000kg to 45,000kg for 8-axle vehicles of at least 16.0m, estimated its net present value over 30 years as $350 million.[25]

93. In general, operators using the heaviest combinations carrying rural-related freight are expected to have greater potential benefit from the proposed increased mass for general access. This is especially the case for truck and trailer combinations. This includes primary products such as logs, grain, milk and stock, as well as goods such as gravel and other bulk materials.

94. Operators serving farms, quarries and forestry on local roads are assumed to face an inability to fully take up the proposal given more restrictions on rural routes.

95. Line haul operations (freight distribution or plant-to-plant transport on arterial routes) are assumed to face cubic capacity constraints and be less likely to benefit.

96. The proposed increase in gross mass for 8-axle vehicles will not be available to all 8-axle vehicles as some will not have a wheelbase of the required length and cannot be modified to do so. The main configuration not able to take advantage of the increased mass will be 8-axle articulated vehicles.

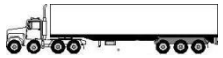
97. Based on WiM data 8-axle articulated vehicles make up approximately 4.3 percent of the heavy vehicle fleet. The heaviest of these vehicles carry bulk liquid or solid products, such a fuel or cement. Refrigerated goods are also often carried with these types of vehicles but tend to be limited by volume rather than weight.

98. Table 7 sets out the keys types of vehicles affected by the proposal and their typical freight loads.

[25] *Vehicle Dimensions and Mass Review: Framework for Options Assessment & Draft Rule Change Cost Benefit Analysis*, Report to the Ministry of Transport November 2015, by Castalia Ltd, page 14

Table 7: Gross mass increases – application 7 and 8-axle vehicle configurations and typical freight loads[26]

7-axle combination (minimum 16.8m wheelbase) 45,000kg to 46,000kg

Configuration	Estimated % used State highways[27]	Typical loads likely to use extra mass
	7%	Logs, gravel, grain, stock, milk tankers
		Line haul freight
	0.8%	ISO containers Not able to make use of increased gross mass due to insufficient wheelbase length

8-axle combinations (minimum 17.4m wheelbase) 44,000kg to 46,000kg

Configuration	Estimated % used on State highways	Typical loads likely to use extra mass
	20%	Logs, gravel, grain, stock, milk tankers
	4.6%	Line haul freight
	4.3%	Fuel, other liquid products, cement Curtain-siders, refrigerated assumed to reach dimension limits before mass limits in any case

HVKT = heavy vehicle kilometres travelled

[26] Based on a report prepared for the Transport Agency, *Vehicle dimension and mass rule amendment proposal 2016 Operator costs and benefits*, 11 April 2016

[27] *Annual weigh-in-motion (WiM) report 2014*, New Zealand Transport Agency

Fiscal impacts

99. The main fiscal impact would be a reduction in hospital, emergency services, and ACC costs arising from reduction in deaths and injuries that come from any consequent reduction in heavy vehicle kilometres travelled from increased productivity.

100. The proposals are not expected to create any significant risk with increasing mass that would require additional enforcement efforts, and it is therefore assumed there would be no additional costs for the Police. However, if additional enforcement is required then the financial impacts of these changes for the Police would need to be clearly identified.

Social/cultural

101. Any reduction in the number of vehicle trips compared to the status quo for an equivalent freight task may have a number of positive community benefits. These include a reduction in noise and localised congestion as well as increased safety to road users. The economic impact of this has not been costed due to the range of variables involved and the difficulty of giving an economic value to subjective experiences, such as noise reduction.

Environmental impacts

102. The environmental impacts largely arise from the reduction in vehicle kilometres travelled. This is expected to lead to a reduction in undesirable vehicle emissions such as CO_2 and particulates. The reduction in vehicle trips may also have other benefits such as reduced tyre residue run-off into waterways.

Regulatory impacts, including compliance costs

103. Under the current Rule, vehicles weighing more than 44,000kg are required to obtain an over-weight permit. It is acknowledged many operators do not do this but instead use the tolerances to carry additional weight (generally up to 1,000kg). For compliant operators, increasing the gross mass limits will avoid the cost of having to obtain a permit (currently $54.55 excl GST).

Incidence and magnitude of impacts

Vehicle operators

104. In general increased mass is more relevant to operators of larger vehicles than those operating smaller vehicles. This is because for many smaller vehicles the limiting factor is dimension rather than weight, i.e. they run out of carrying space before they reach the weight limits. In addition smaller vehicles often carry freight which is not especially heavy.

105. Larger vehicles generally are not limited by axle mass but rather gross mass. The proposals therefore offer the opportunity for greater productivity gain, especially for those that currently load to the limits in the Rule. Although some vehicles will require a slight modification to the drawbar to reach the required length this is not considered to pose a significant issue for operators.

Example of impact on changes to gross mass

Fonterra, which pays the largest amount of road user charges of any single purchaser, in its submission to the discussion document said the proposed increased in the gross mass limit to 45,000kg would:

- Reduce the number of tanker loads by an estimated 100 per day, the equivalent of 11,170 km (or 1.5 to 2.0 million km per year)
- Reduce carbon emissions by a significant factor due to the reduction in kilometres travelled across the fleet
- Generate approximately $5.3 million in cost savings per annum to the benefit of Fonterra farmer shareholders

The proposed increase in gross mass limit to 46,000kg would mean greater savings.

Vehicle importers and domestic vehicle fabricators

106. Changes to vehicles themselves (not counting the drawbar) will not be needed in order to access the additional mass limits. Accordingly the changes in mass on their own will not impose any additional costs or create benefits for importers or fabricators.

Road controlling authorities

107. The principal interest of road controlling authorities in changes to axle and gross mass are the possible impacts on pavements and bridges.

108. The proposed changes for axle mass, which are relatively modest, will not create significant additional pavement wear. The changes to gross mass for 7 and 8-axle vehicles is expected to only have minimal effect on pavement wear as many vehicles already operate at 45,000kg and 46,000kgs. A 2013 study on HPMVs and pavement wear[28] found HPMVs were most likely to use the more highly trafficked stronger pavements (i.e. State highways), which are less susceptible to changes in loading. Feeder roads to these routes also tend to have stronger pavements.

109. This assessment can be applied to the current changes because the higher weight limits relate to heavy vehicles weighing 44,000kg or more, which generally travel on the same routes.

110. Any increase in pavement or bridge maintenance costs will be recovered through the road user charges system. As noted for specialist vehicles operating under permit, specific road user charges rates would apply under a vehicle type category.

111. The proposed increases in gross mass for 7 and 8-axle vehicles will also not create additional significant damage to bridges. This is because the length that will be required to carry the additional weight helps to safely distribute the additional load.

112. The proposals to create stronger disincentives for operators to overload vehicles, if successful, will help reduce road wear and possible damage to bridges. While

[28] *Analysis of Pavement Impacts of HPMVs 2013* commissioned by the New Zealand Transport Agency.

estimates are available on rates of overloading, it is not possible to accurately forecast the effects of the proposals on operator loading behaviour. This will be assessed as part of the monitoring and evaluation of the changes made to the Rule.

New Zealand Transport Agency's initiatives with local road controlling authorities

Data on the overall condition of the local road network is limited. To aid better understanding of the maintenance needs of the local road network, the Transport Agency is working with local road controlling authorities as a member of the Road Efficiency Group.[29]

The Road Efficiency Group is pushing strongly to improve data quality and analysis to achieve better customer outcomes. The Group has a number of workstreams with the potential to address issues for future VDAM Rule reform. For instance, the Group has adopted a network classification system (known as the One Network Road Classification) which the sector will apply to achieve a consistent approach to the strategic management of roading networks.

Other road users

113. It has been assumed there will be a net overall improvement in safety from the proposed changes to mass, especially gross mass. This comes from an expected reduction in the number of vehicle trips required to move a given freight task.

114. The net present value of the safety gains arising from increases to gross mass has been estimated at $12,810,348 over 30 years (this analysis is based on increasing gross mass to 45,000kg only). This calculation was based on estimating the total number of vehicle kilometres avoided, the ratio of fatal crashes to vehicle kilometres travelled, and standardised cost per life and cost per injury dollar values. No calculation has been done for the safety impact for the changes to axle mass as these alone are not expected to have any significant effect.

Consumers of transport services

115. It is assumed, given the transport sector is very competitive in New Zealand, improvements in productivity will largely be passed on to the end customer of the services through reduced charges.

Summary of Risk Assessment

116. Table 8 provides a summary of the above assessments along with a description of the key variables affecting the assessments.

[29] The Road Efficiency Group (REG) is a collaborative initiative by the road controlling authorities of New Zealand. Its goals are to drive value for money and improve performance in maintenance, operations and renewals throughout the country.

Table 8: Summary of benefits and costs of increasing mass and sensitivity of assessments

Party	Benefits	Costs	Sensitivity of cost/benefits being experienced
Vehicle operators (general access for increase in axle mass)	No significant change	No change	Given small scale of increases outcomes expected to be accurate
Vehicle operators (+44,000kg general access)	Increased productivity, for some no permit cost	May require extension to drawbar – one-off cost estimated at $4,000	Depends on type of vehicle, load and whether already using tolerances in loading
Vehicle operators (buses)	Increased productivity for general access and opportunity for greater mass on specified routes	To use higher axle limits will require permit and routes likely to be restricted Higher road user charges to apply	Use of additional weight above general access will depend on routes sought (and therefore ability to be granted a permit)
Vehicle operators (specialist vehicles)	Increased productivity	Higher axle limits will require permit and routes likely to be restricted Higher road user charges to apply	Use of additional weight above general access will depend on routes sought (and therefore ability to be granted a granted a permit)
Vehicle importers and domestic fabricators	No change	Cost of small increase to drawbar – minimal	Depend on number of vehicles wanting to take advantage of increased gross mass
Road controlling authorities	No change	Possible increased road wear	Depends on level of loading of vehicles routes taken for increases in gross mass Permit process allows control over routes taken for buses and specialist vehicles
Other road users	Increased safety Reduced congestion	Where crashes occur more serious consequences likely	Depends on local circumstances, such as traffic density, other safety mitigations in place, experience of drivers etc
Consumer of transport services	Reduced cost of services	No change	Level will depend on type of services

Opportunities to increase productivity through changes to dimension limits

117. This section is presented in two parts; proposals to increase width limits and proposals to increase height limits.

Increasing the allowable width of vehicles for general access

Status quo

118. Under the Rule, the maximum width of a vehicle for general access is 2.50m. The Rule specifies a number of items not included in this limit. These include:

- Load securing devices, e.g. ropes and chains (may be no more than 25mm from either side of the vehicle).
- Central tyre inflation hoses (may be no more than 75mm beyond the outside of the tyre on the drive axles).
- Collapsible mirrors extending not more than 240mm beyond the side of the vehicle or trailer.

119. In practice this means there is an effective width for open body vehicles, such as logging trucks, of 2.55m (i.e. 2.50m width plus the 25mm allowed each side for load securing devices). For enclosed vehicles, such as refrigerated vehicles, not using restraining devices the maximum width is 2.50m.

Opportunities for increased productivity

120. Increasing allowable vehicle width will generally increase vehicle productivity as it increases the volume a vehicle can carry. The ability of a vehicle to make practical use of any additional volume depends in part on the nature of the load carried.

121. The key consideration for increasing width is the increased safety risk it may create for other road users, and to a lesser extent the risk of damage to infrastructure such as bridges, and road signs. As vehicle width increases, the risk of head-on and sideswipe crashes may increase from the reduced lane separation.

122. The magnitude of risk in any given situation depends on a range of factors. These include lane width, the existence of mitigation devices such as separation barriers and the size and number of other vehicles using the road. The overall safety risk may also be mitigated if the increased width results in fewer vehicle kilometres travelled needed to transport an equivalent transport task.

Options considered

123. The options considered to improve productivity through increasing allowable general width were:

1. Status quo – i.e. 2.50m with an additional 25mm either side for securing devices
2. Setting the width limit at 2.55m, inclusive of securing devices (preferred option)
3. Setting the width limit at 2.55m plus 25mm either side for securing devices
4. Setting the width limit at 2.60m plus 25mm either side for securing devices

124. Under Option 2, fully enclosed vehicles would be able to make use of an additional width of 50mm. There would be no additional benefit for open-body vehicles.

125. For all options, the list of other excepted items listed in the Rule not included in the maximum width limit would remain. The new Rule would also allow for close proximity monitoring systems up to 50mm mounted each side on top of a vehicle to be excluded from the width limit.[30] It will also allow for aerodynamic tabs[31] of up to 25mm on each side of a vehicle. The edge to edge limit for mirrors will be set at 2.98m to ensure that the maximum width of a vehicle plus mirrors is no wider than at present. This means for vehicles using the wider limit their mirrors will need to be narrower than at present.

126. Table 9 summarises the considerations of options against the criteria in Annex 2.

Regulatory impact analysis of preferred option

127. The following discussion only relates to the preferred option as the initial safety analysis of Options 3 and 4 showed unacceptable safety concerns and did not justify further detailed assessment.

Economic impacts

128. The cost benefit analysis conducted for Option 2 indicated a total NPV over 30 years of $189.5 million.[32] This comprised:

- Productivity $147.2 million (benefit)
- CO_2 emissions $1.7 million (benefit)
- Health $34.7 million (benefit)
- Safety $6.2 million (benefit)
- Road related $0.4 million (cost)

129. The increase in width will also likely increase the range of available vehicles for fully enclosed vehicles and buses, as 2.55m is the maximum width used by many overseas jurisdictions. This additional choice could be expected to result in reduced capital costs of such vehicles, but given the uncertainty involved in setting assumptions this has not been modelled.

130. Given the competitive nature of the New Zealand transport market, any increases in vehicle productivity can be expected to lead to lower transport costs to users of the services of such vehicles. The expected economic outcome of this, however, has not been assessed given the difficulty of accurately modelling the interaction of the wide number of variables required to do so.

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30 Close proximity monitoring systems are camera or sensor systems mounted outside a vehicle that monitor how close objects or people are to the vehicle. This is discussed further in Annex 3.

31 Devices fitted to the side and tops of vehicle which reduce drag so increasing fuel efficiency.

32 *Vehicle Dimensions and Mass Review: Framework for Options Assessment & Draft Rule Change Cost Benefit Analysis*, Report to the Ministry of Transport November 2015, by Castalia Ltd, page 19.

Table 9: Analysis of options relating to increasing vehicle width for general access

	Option 1: Status Quo **2.50m wide + 25mm each side for securing devices**	**Option 2: (Preferred option)** **2.55m wide including securing devices**	**Option 3: 2.55m wide** **Options 4: 2.60m wide – both including securing devices**
Safety	• Limits operators accessing international vehicle markets that use 2.55m standard • Could slow uptake of newer vehicles with modern safety technology	• Data indicates increased risk from reduced separation is off-set by decreased exposure due to fewer VKT[33] required for equivalent transport task • Improving access to international markets could increase uptake of newer vehicles with better safety technologies	• Additional width would reduce VKT and therefore also some safety risk but was considered not to outweigh the overall adverse safety outcomes
Productivity	• Possible under-utilisation of road 'footprint' by enclosed solid-sided box trailers and buses • Bus operators unable to use newer Euro 5 and 6 buses that could be more fuel-efficient as they are built to a 2.55m wide standard	• 2.55m total width equates to a 2% volume increase for enclosed vehicles and buses, refrigerated trailers would be able to extend payloads from 27 pallets to 30 pallets (11% increase) due to pallets being able to be stacked side by side • Estimated NPV of $189.5m over 30 years; take up of 2.55m wide vehicles expected to increase from current estimated 3% of heavy fleet to 7.5% after 10 years • Increase in passengers/payload carried is expected to have positive impact on cost per passenger/tonne km and reduction of VKT per unit of task	• Increased width would provide additional productivity benefits to operators • However extent of benefit has not been calculated as safety risk was considered too high to warrant further analysis
Infrastructure	Nil or negligible impact on infrastructure	• Reduction in VKT from this proposal may reduce pavement wear, though this may be negated to some degree by a small increase in mass. Due to the unknown uptake of this option the outcome has not been modelled • Larger number of vehicles at 2.55m could result in constraints on narrow parts of the network, could result in increased risks to road signage • Increase in width together with proposed increase in height limits could have an impact on heavily arched tunnels	• Vehicles increasing width to 2.60m or 2.65m would put pressure on roading network, especially tunnels and bridges • Would be a significant cost to upgrade roading network to accommodate vehicles at width limit proposed under this option • The costs of the above have not been calculated as safety risk was considered too high to warrant further analysis
Community well-being	No change	• Any reduction in VKT may also decrease exposure to noise and reduced CO_2 emissions (Economic value included in the $189.5m noted under Productivity row) • Minor price reductions for transported goods if productivity savings passed on (Economic value included in the $189.5m noted under Productivity row)	• Any reduction in VKT may also decrease exposure to noise, and reduced CO_2 emissions • Minor price reductions for transported goods if productivity savings passed on
Better Regulation	No change	No change	• Not expected to have material impact

[33] VKT = Vehicle Kilometres Travelled. A measure of the overall vehicle use of the road network, and the required heavy vehicle movements to complete a transport task.

Fiscal impacts

131. The expected enforcement and monitoring costs are assumed to be unchanged from the status quo. This is because the preferred option simply replaces one limit with another and introduces no greater enforcement or measurement complexity (and arguably by having only a single limit marginally lessens the complexity).

132. The anticipated road costs arising from the slightly increased road wear due to the heavier loads carried by affected vehicles was estimated at $0.4 million net present value over 30 years.

133. The proposed changes will not require roads to be widened as a consequence. This is because the proposal does not increase the maximum effective width but rather allows more vehicles to make use of the maximum effective width.

134. Any reduction in crashes arising from there being fewer vehicle kilometres travelled may also lead to possible fiscal savings from reduced hospital and emergency services costs and ACC payments.

Social/cultural

135. The expected reduction in number of vehicle trips compared to the status quo for an equivalent transport task may have a number of positive community benefits, including reduction in noise and localised congestion. The economic benefit of this has not been modelled due to the range of variables involved and the difficulty of giving an economic value to subjective experiences, such as noise reduction.

Environmental impacts

136. The environmental benefits occur from the reduction in vehicle trips for the equivalent freight task. Reduction in CO_2 emissions costs have been estimated at $1.7 million NPV over 30 years.[34] The reduction in vehicle trips may also have other benefits such as reduced particulate emissions and tyre residue run-off into waterways.

Regulatory impacts, including compliance costs

137. Vehicles in the current fleet whose width currently comply with the limits for general access will not face additional regulatory impact or compliance costs. Similarly, vehicles which meet the requirements of the new limit will not face additional compliance costs, for example, registration costs will not change.

Incidence and magnitude of impacts

138. The following groups were considered to be affected by or have a significant interest in the proposals.

Current operators/owners of enclosed vehicles

139. There is no direct benefit to the current fleet of fully enclosed vehicles, except to the extent they can be modified and modification costs are less than the benefits gained from any increase in productivity.

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[34] *Vehicle Dimensions and Mass Review: Framework for Options Assessment & Draft Rule Change Cost Benefit Analysis*, Report to the Ministry of Transport November 2015, by Castalia Ltd, page 19.

140. Over time as wider fully enclosed vehicles come into the fleet, the value of existing 2.50m fully enclosed vehicles may diminish at a greater rate than would have been the case under the status quo. This loss of value results from the competitive benefits the wider vehicles can offer and any reduction in capital cost of the newer vehicles arising from access to a wider market.

141. The magnitude of the greater loss in value depends on the relative demand for narrow vehicles compared to the wider vehicles and the rate of turnover of the fleet.

Current and future operators/owners of open body vehicles

142. There will be no direct benefit to the owners of open body vehicles.

143. The increased width, and therefore volume, able to be carried by fully enclosed vehicles will in theory alter the relative productivity of the two types of vehicles slightly in favour of the enclosed body types. It is assumed, however, this will have minimal effect as it is also assumed there is limited opportunity for substitution of vehicle type due to the different types of loads the respective types of vehicle carry.

Future operators of enclosed vehicles

144. Future owners and operators of enclosed vehicles are expected to be the prime beneficiaries of the preferred option. They will have access to a greater range of vehicles, both new and used, giving lower cost and potentially more modern features.

145. The magnitude of this depends on the relative sizes of the markets for 2.50m and 2.55m vehicles and whether there are significant price differences between the two.

Worked example: Cubic capacity gains for refrigerated transport[35]

The proposed 50mm increase in vehicle width from 2.50m to 2.55m is estimated to provide a 6.7 percent decrease on freight heavy VKT needed to service an assumed fixed freight tasks. This gain is based conservatively on the assumption existing operations are achieving 28 pallets at 2.50m and increasing to 30 pallets if 2.55m. The 50mm increase in height is not expected to provide any further material benefits to the refrigerated fleet.

The gain may be greater if current operations are achieving only 26 or 27 pallets. Based on uptake of the new wide dimensions of 606 vehicles (of an estimated 850 vehicles) within 5 years was estimated to save approximately 1.0 million heavy VKT to service a fixed freight task growing to 3.4 million heavy VKT by year 15. Operating costs avoided were estimated at $3.0 million in year 5 and $10 million by year 15.

Owners of freight typically moved in enclosed vehicles

146. In the short-term, there will be no immediate benefit to these owners. However, as the number of wider vehicles in the fleet increases it is expected benefits will pass to transport customers through lower charges. This is based on the assumption that the part of the transport sector dealing with such goods is sufficiently competitive that the benefits of increased productivity are not fully captured by the road transport operators.

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35 Report '*Vehicle Dimensions and Mass rule amendment proposals 2016 Operator costs and benefits*' report to the New Zealand Transport Agency 11 April 2016, Stimpson and Co.

147. As the change in productivity is relatively small, however, it is assumed the reduction in transport costs will not be significant, even if all the productivity savings are passed on to the end users.

Importers of enclosed vehicles

148. Importers will have similar benefits to future owner/operators of enclosed vehicles as they will have access to a greater range of vehicles, both new and used, giving lower cost and potentially more modern features.

149. The magnitude of this depends on the relative sizes of markets for 2.50m and 2.55m vehicles and whether significant price differences exist between the two.

Local vehicle fabricators

150. Local vehicle fabricators may face increased competition from the wider and cheaper range of vehicles able to be imported. However, this will be potentially mitigated by advantages such as lower shipping costs for locally built vehicles and local vehicle fabricators having access to a wider market for chassis (as all use imported chassis). As an example if truck capital costs declined by $5,000 as a consequence this would represent a 1 percent saving on a vehicle costing $0.5 million.

Other road users

151. It is assumed there will be a net improvement in safety given the reduced number of vehicles trips. The cost benefit analysis for the preferred option identified NPV of $6.2 million over 30 years.

Road Controlling Authorities

152. It is anticipated there will be some minor increase in pavement wear due to the increased loads not fully offset by the reduced vehicle kilometres travelled. The cost benefit analysis estimated this cost to be $400,000 NPV over 30 years. This is a cost borne across all of New Zealand rather than for each road controlling authority.

153. However, the costs of pavement wear will be recovered mainly through road user charges. This is designed to ensure maintenance spending to repair pavement damage is recovered from heavy vehicle operators.

154. Any significant demand for maintenance of the local road network can be taken into account in investment planning by being elevated as a system level concern under the Government Policy Statement on Land Transport.

Summary of Risk Assessment

155. Table 10 provides a summary of the above assessments along with a description of the key variables affecting the assessments.

Table 10: Summary of benefits and costs of Option 2 and sensitivity of assessments

Party	Benefits	Costs	Sensitivity of costs/benefits being experienced
Current operators of enclosed bodies	No change	Accelerated reduced value of vehicle	Depends on the relative differences in prices of 2.50m and 2.55m vehicles
Current/future operators of open body vehicles	No change	Very marginal loss of competitiveness to enclosed bodies	Depends on substitutability of transport tasks between enclosed and open body types Costs expected to be very low in practice
Future operators of enclosed vehicles	Reduced costs of vehicles Increased productivity	No change	Depends on extent to which increased volume arising from the additional width can be used
Importers of enclosed bodies	Reduced costs of vehicles Increased productivity	No change	Depends on relative differences in prices of 2.50m and 2.55m vehicles
NZ fabricators of enclosed bodies	Increased competition from larger overseas markets Reduced cost of imported chassis	No change	Depends on relative differences in prices of 2.50m and 2.55m vehicles
Road Controlling Authorities	No change	Cost of increased pavement wear	Depends on actual reduction of reduced vehicle trips
Other road users	Reduced crash risk Less congestion	No change	Depends on actual reduction of reduced vehicle trips

Changes to the allowable height of vehicles for general access

Status quo

156. Under the Rule, the maximum height for a vehicle is 4.25m, with an additional 25mm allowed for load securing devices.[36]

Opportunity for increased productivity

157. Increasing allowable height generally increases the productivity of the overall vehicle fleet. Whether individual vehicles make use of any additional height, depends on the nature of the load.

158. In contrast to consideration of width where safety was the primary consideration, in assessing options for height the principal concern is the potential impact on road infrastructure, mainly tunnels and bridges with underpasses.

[36] Trolley bus poles when extended are not included in assessing height.

Options considered

159. The options considered to improve productivity through increasing allowable height were:

    1. Status quo – i.e. maintain the height limit at 4.25m with an additional 0.025m (25mm) for securing devices

    2. Setting the height limit at 4.275m, inclusive of load securing devices i.e. maintaining the current effective maximum height (4.25m + 0.025m – the same approach as the preferred option for width)

    3. Setting the height limit at 4.30m inclusive of securing load devices, an additional 25mm above the current effective maximum height (preferred option)

160. Under Option 3, fully enclosed vehicles will have a greater potential productivity gain than open body vehicles using load restraining devices. However, open body vehicles would still benefit from a potential productivity gain from an additional 25mm provided to the current height limit.

161. In all options, the requirement for vehicles to meet the static roll threshold (a measure of the resistance of a heavy vehicle to rollover) in the Rule would remain.

162. Option 3 is the preferred option as it provides productivity benefits over Options 1 and 2 while adding only minimal costs for road controlling authorities. It also has the advantage of being a simpler measure to read than 4.25m or 4.275m.

163. Heights above 4.3m for general access were not considered in detail. This is because an informal assessment indicated there would likely be too many overhead obstacles endangered.

164. Table 11 summarises the considerations of options against the criteria in Annex 2.

Ground clearance devices

165. It is proposed to allow vehicles, where specified equipment criteria are met, to temporarily raise their height above the limit in order to clear ground obstructions. Technology that temporarily raises vehicles is becoming increasingly available in newer vehicles. It is designed to allow them to clear small obstacles on the road surface such as railways tracks and speed humps without causing damage to the vehicle.

166. While an increase in height may affect vehicle stability, this is expected to be minimal as the increase in height is temporary, the speed at which the lifting device is used is low (typically less than 20 kilometres per hour) and the device automatically de-activates when the vehicle regains speed.

Table 11: Analysis of options relating to increasing vehicle height for general access

	Option 1: Status Quo **4.25m + 25mm for securing devices**	**Option 2: 4.275m including load securing devices**	**Option 3: Preferred option** **4.30m including load securing devices**
Safety	Current limit prevents livestock operators from operating vehicles with additional add-ons to improve OSH outcomes and animal welfare	• Reduction in VKT[37] may reduce crash risk • Additional height will not affect road safety – vehicles still required to meet the vehicle stability standard (Static Roll Threshold)	• Road safety not impacted – vehicles still required to meet the Static Roll Threshold • Allows livestock operators to use vehicles with additional safety add-ons, which improve OSH and animal welfare • Reduced VKT due to increased payload can reduce crash risk exposure. (Greater than 4.275 as is an additional 25mm and some available for vehicles using load-securing devices) • Increased height limit could increase overhead strike risk
Productivity	Possible under-utilisation of existing envelope by fully enclosed vehicles	• Increase to 4.275m is a 0.6% volume increase for fully enclosed vehicle. Actual productivity gains will depend on type of load and vehicle's gross mass • Increase in payload for enclosed bodies expected to reduce cost per tonne km and VKT per unit of task • No benefits for vehicles currently using load securing devices	• Increase to 4.30m is a 1.2% volume increase for fully enclosed vehicles and minor productivity gain for vehicles using load securing devices (depending on type of load) • Estimated productivity benefits $49.6 million NPV over 30 years. A number of contributing benefits to this are described below
Infrastructure	No change to current risks from strikes on low clearance tunnels bridges or under-passes	• Possible increased number of vehicles able to be 4.275m high creates increased opportunities for impact on current vulnerable points (e.g. tunnels and bridges with underpasses) • Risks to overhead rail structures addressed through KiwiRail's rail bridge risk assessment	• Structures lower than the current limit, or between the current limit and 4.3m should currently be posted, so no additional action required of RCAs. • Risks to overhead rail structures addressed through KiwiRail's rail bridge risk assessment
Community well-being	No change	• VKT reduction may reduce noise exposure and emissions • Minor price reductions for transported goods if productivity savings passed on	• VKT reduction may reduce noise exposure and emissions • Minor price reductions for transported goods if productivity savings passed on
Better regulation	Livestock operators require exemption for installing safety add-ons	• 4.275m limit may be confused by drivers at speed (i.e. could confuse 4.275m with 4.725m) • Livestock operators do not need an exemption	• Volume increase for vehicles with load securing devices (but only half as much for fully enclosed vehicles) • 4.30m height limit allows double-decker bus imports more comfortable for passengers • Livestock operators do not need an exemption

[37] VKT = Vehicle Kilometres Travelled. A measure of the overall vehicle use of the road network, and the required heavy vehicle movements to complete a transport task.

Regulatory impact of preferred option

Economic impacts

167. The cost benefit analysis referred to above, included an assessment of the preferred option - Option 3. This comprised (all benefits, net present value over 30 years):

- Productivity $49.6 million
- Road costs $9.3 million
- CO_2 emissions $0.6 million
- Health costs $12.2 million
- Safety costs $3.6 million
- Infrastructure upgrades -
- Compliance costs -

168. No assessment was undertaken of Option 2. Given Option 3 provides for greater productivity opportunities, and the cost benefit analysis indicates no item creating additional costs, it is assumed in the following discussion the respective benefits of Option 2 will be less than Option 3. The exception is a minor difference in fiscal impacts.

Fiscal impacts – benefits

Reduction in pavement wear

169. For Option 3 there is an anticipated reduction in road costs due to the net benefit of the reduced number of trips off-setting an increased number of heavier loads. This has been calculated at a net present value of $9.3 million over 30 years.

170. Any reduction in crashes arising from fewer vehicle kilometres travelled would also lead to possible fiscal savings from reduced hospital and emergency services costs and ACC payments.

Fiscal impacts – costs

Increased likelihood of overhead strikes

171. The proposed increased height for Option 3 is expected to increase the risk of strikes on low tunnels and bridges with underpasses. However, those structures at risk will be at risk under the current height limit and accordingly should already be posted with warnings.

172. As Option 2 does not propose any increase to the maximum height already allowed under the Rule, existing infrastructure is only at marginal increased risk in strikes. This is because while the maximum height would not change, it is assumed there would be a greater number of vehicles operating at the maximum height, so increasing the possibility of strikes on low clearance structures.

173. There are two main approaches for road controlling authorities to address the risk of increased strikes. The first is remediation, such as lowering the road or raising the tunnel ceiling. The second is to post a warning sign advising of the height limit of the structure. This is done for structures which are already below or near the current height limit.

174. An assessment has been undertaken of the effects of Option 3 for the State highway network and the likely response to the increased risk. This is set out in Table 12 below.

Table 12: Low clearance sites for the State highway network impacts by preferred option

Site	Possible mitigation	Cost
SH 1 Raramai Tunnel (near Kaikoura) Height: 4.25m	Increase tunnel height through lowering the road level	Initial Transport Agency estimate less than $1m
SH 74 Lyttelton Tunnel Height: 4.27m	No viable options to remediate. Existing deluge system above tunnel and concrete below. Most current heavy vehicle traffic is ISO containers which fit within the existing clearance	Minimal cost for re-signing
SH 1, Dall Street pedestrian overpass Dunedin Height 4.22m on kerb edge, rising to 4.65m.	Limited clearance is only an issue in the breakdown lane. Warning stripes can be added to the overpass breakdown lane	Minimal cost
SH 94, Homer Tunnel Height: 3.81m	No additional mitigation – is already well below the existing limit	No cost
SH 6, Karangaru River Bridge, South Westland Height: 4.29m	No viable option due to bridge design. Existing or enhanced signage	Minimal cost
SH 2, Overbridge, Petone Height: 4.30m This is a curved overpass with the minimum clearance at the extreme outside edges of the lanes	Warning stripes can be added to outside lanes	Minimal cost

Social/cultural impacts

Crash risk

175. Analysis of 84 overhead crashes over 2005-2015[38] examining the relationship between vehicle height and crash occurrence showed most crash reports do not include height of the vehicle involved. This is because the load/vehicle is often badly damaged in the crash (only 16 out of 84 recorded vehicle height). However, of the 16 incidents where height is recorded:

- The most common cause of overhead strikes was excavator booms/Hiab cranes not being fully folded back.
- A moderate proportion (6 out of 16) of overhead strikes occur at structures with clearances less than the current vehicle height limit (i.e. clearance less than 4.25m).
- For structures with clearances higher than the vehicle height limit, crashes usually involved overdimension loads with a total height of 4.45m or more (range from 4.45m to 5.20m).

[38] Using New Zealand Transport Agency Crash Analysis System (CAS) data.

176. The expected reduction in number of vehicle trips compared to the status quo for an equivalent transport task may have a number of positive community benefits. These include a reduction in noise and localised congestion as well as increased safety to road users. The economic benefit of this has not been costed due to the range of variables involved and the difficulty of giving an economic value to subjective experiences, such as noise reduction.

177. The impact due solely to the increased height however is expected to be modest, given the relatively small increase in volume provided for this option.

Environmental impacts

178. The environmental benefits largely occur from the reduction in vehicle trips for the equivalent freight task. Reduction in CO_2 emissions costs have been estimated at $0.6 million net present value over 30 years. The reduction in vehicle trips may also have other benefits such as reduced particulates and tyre residue run-off into waterways.

Regulatory impacts, including compliance costs

179. From a compliance perspective, having a height limit which is more easily recognised at speed (i.e. 4.3m vs 4.25m or 4.275m) may, at the margins, help improve compliance.

180. Vehicles making use of the increased height limit still need to meet the static roll threshold.

Incidence and magnitude of impacts

Current operators of enclosed body types and buses

181. There would be no direct benefit to the current fleet of fully enclosed vehicles (including buses), except to the extent they can be modified and the cost of modification is less than the benefits gained from any increase in productivity.

182. As the fleet of higher fully enclosed vehicles enters the fleet, the value of the existing 4.25m high fully enclosed vehicles could be expected to diminish at a greater rate than would have been the case under the status quo. In contrast to increases in width, there would not be the additional impact of vehicles being acquired at a lesser capital cost, because of greater choice being available from a larger overseas market as most overseas jurisdictions have a maximum height of less than 4.3m.

183. The magnitude of the faster loss in value will depend on the relative demand for lower vehicles compared to the taller vehicles and the rate of turnover of the fleet.

Current and future operators/owners of open body vehicles

184. Current and future operators of open body vehicles will be able to access the additional height immediately, unless the additional height exceeds the vehicle's static roll threshold.

185. The increased height, and therefore volume, able to be carried by fully enclosed vehicles will, in theory alter the relative productivity of the two types of vehicle, in favour of the enclosed body types. It is assumed, however, the effect is minimal as it is also

assumed there is limited opportunity for substitution of freight given the different loads the respective types of vehicle carry.

Worked example of cubic capacity gains for bulk transport from increased width and height [39]

The increase in both width and height would provide a 3.2 percent increase in cubic capacity and an anticipated a 3.1 percent decrease in heavy VKT required to service a fixed freight task. The increased cubic capacity is assumed to be of use to carriers of lower density bulk cargo such as wood chips, rubbish, and manufactured products such as insulation. Based on an assumed fleet of 210 bulk fleet vehicles, with a 75 percent take up (158 vehicles), this would give an estimated heavy VKT avoided of service a fixed freight task of 123,000km at year 5 and 425,000km at year 15. Operating costs avoided would be $370,000 at year 5 and $1,277 million at year 15.

Domestic vehicle fabricators

186. Unlike width, most overseas jurisdictions do not have a maximum height above 4.25m and so fabricators will not face significant additional competition arising from importers being able to access larger markets.

Road Controlling Authorities

187. There will likely be reduced road maintenance costs for road controlling authorities. This comes from the reduced number of vehicle trips arising from the increased productivity offsetting the increased load carried by the fewer vehicles. The net present value over 30 years of this saving has been estimated at $9.3 million.

188. As noted above, there is an increased risk of tunnel and underpass strikes with the preferred proposal. There are many structures which are lower than the current 4.275m total limit, or between the current limit and the proposed 4.3m limit. All of these structures should currently be posted with warning signs, so no new action is required of road controlling authorities from the proposed change in height limit.

Other road users

189. It is assumed there will be a net overall improvement in safety from the preferred proposal given the reduced number of vehicle trips required to move a given freight tasks arising from the increased vehicle productivity.

Summary of risk assessment

190. Table 13 provides a summary of the above assessments along with a description of the key variables affecting the assessments.

[39] Report '*Vehicle Dimensions and Mass rule amendment proposals 2016 Operator costs and benefits*' report to the New Zealand Transport Agency 11 April 2016, Stimpson and Co.

Table 13: Summary of benefits and costs of Option 3 and sensitivity of assessments

Party	Benefits	Costs	Sensitivity of cost/benefits being experienced
Operators of current fully enclosed vehicles - body/buses	Nil	Longer term loss of value in current vehicle compared to status quo Reduced competitiveness as larger vehicles enter market	Depends on value of load and how increased productivity gain of increased volume compares with other operating costs
Future fully enclosed vehicles operators	Greater productivity	No change	Depends on access to wider range of vehicles, which is expected to reduce cost. Scale of possible reduction however uncertain as not modelled
Open body vehicles	Greater productivity	No change	Ability to make use of additional height will depend on type of load (may reach max weight before volume limits) and vehicle stability
Importers	No change	No change	Depends on whether there is a wider international market for higher vehicles sufficient to give opportunity for lower purchase prices
Domestic vehicle fabricators	No change	No change	Depends on whether there is an international market for higher vehicles sufficient to give opportunity for lower purchase prices
Road Controlling Authorities	Reduced pavement wear from reduced VKT	Repair costs from overhead strikes	Depends on uptake of higher vehicles sufficient to reduce VKT. Even at full possible uptake effect expected to be moderate
Other road users	Increased net safety from reduced VKT	No change	Depends on uptake of the higher vehicles sufficient to reduce VKT. Even at full possible uptake effect expected to be moderate

Management of overdimension loads

191. This section deals with measures to improve the safety of the movement of overdimension loads. A separate section follows dealing with transporting crane booms more efficiently and safely by allowing them to use provisions applying to the smallest of the overdimension load categories.

Opportunities to improve safety outcomes from the movement of overdimension loads

Status quo

192. The Rule recognises that many vehicles and loads which exceed the mass and dimension limits have a legitimate need to access the road network. Accordingly, the Rule contains provisions for vehicles whose mass exceeds that allowed for general access (known as 'overweight vehicles') and vehicles whose dimensions (e.g. height, width or length) are outside that allowed for general access (known as 'overdimension vehicles'). This section deals with the regulation of overdimension vehicles and loads.

193. Overdimension vehicles, especially very wide and/or very long vehicles pose particular risks to other vehicle users and at times road infrastructure such as tunnels, bridges and road signs.

194. The Rule takes a graduated approach to the conditions it imposes on those using overdimension vehicles/loads on the roads.[40] As the vehicles and loads become larger the conditions become more stringent. The conditions include requirements to use warning panels and lights, restrictions on when and where loads can travel, requirements for the use of and number of accompanying pilot vehicles. For larger vehicles/loads permits are required which are issued by the Transport Agency.

195. Despite the potential risk overdimension vehicles pose to other road users, the number of crashes where overdimension vehicles or load was a factor is very small. The Transport Agency data for 2010-2014 shows there was one fatal accident and seven minor injuries resulting from such vehicles. Two further fatal crashes were reported in 2015.

196. The total number of overdimension permits live in 2015 was 6032, of which 2861 were recorded as for moving buildings. Of those 2711 were for buildings/houses over 5m wide.

Problem definition

197. 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.

198. While the number of fatal crashes and injuries is low, there are still opportunities to improve the safe management of overdimension loads.

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[40] The Rule specifies categories of overdimension loads; Category 1 to Category 4, with Category 1 being the smallest.

199. This was highlighted in a report following a coroner's inquest into a fatality involving a car and a house being transported.[41] The coroner expressed concern about the management of overdimension loads especially as it related to moving houses. He made a number of specific suggestions and indicated other areas for consideration.

200. The most significant was for houses to be treated as divisible loads and have a maximum width of 5m and a reduced maximum speed limit to apply (with the suggestion this be 45 kph). It was also suggested that very wide loads be preceded by three pilot vehicles. For houses wider than 5m when transported this would require they be cut into two or more parts and transported separately. The coroner identified signage and lighting, sound warnings, hours of travel, and public education as matters affecting the safe movement of large loads that should also be considered.

201. The following analysis is presented in two parts. This first part deals with the treatment of houses and buildings. The second part looks at a package of proposals intended to reduce the risks associated with transporting large loads, especially very large loads. The package is also intended to improve the efficiency of some of the regulatory controls relating to overdimension loads/vehicles.

Treatment of the movement of houses/buildings

202. In considering ways to improve the safe movement of overdimension loads and regulatory efficiency, specific consideration was given to the treatment of houses and buildings, in particular whether they should be treated as divisible or indivisible loads.

203. Unlike many other indivisible loads such as large scale transformers, wind turbine poles and boats, houses and buildings can in theory be cut in parts, transported and reassembled. This used to be an earlier practice and still is the case today in some circumstances, particularly for extremely wide buildings.

204. The key issue is whether safety is improved by limiting buildings to be transported to a maximum width. The safety risks associated with moving any large load are a result of a range of factors. The significance of these vary from load to load and can change during the course of a load movement.

205. A key safety risk presented in having houses and buildings divided for travel is there would be two overdimension loads whose interactions with on-coming and following traffic need to be managed. Reducing widths for buildings to a 5m maximum will result in two reasonably wide loads. A load of 5m would still take up a significant space of the opposing lane on many roads.

206. While the widths would be less than if the building moved undivided, these are still reasonably wide loads for which considerable care is needed to manage the safety risk to other road users.

207. Also to be considered is the movement of houses/buildings is now a significant part of the building sector with established services designed around the current regulatory regime. This includes classrooms relocated to new sites for changing school roles or following fires. Newly built relocatable dwellings are normally between 7m and 9m in width and are designed to be moved in one piece.

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41 CSU-2013-CCH-000668 Findings of Coroner CJ Devonport, Coroners Court Timaru, 30 October 2015

208. Given the very low number of crashes involving cars and houses being moved, and the possible increase in risk from having additional wide loads being moved, the preferred approach therefore is not to specify a minimum width for houses/buildings, establish specific speed limits or require three leading pilots for very wide loads. As discussed in paragraph 242, it is not intended, however, that houses/buildings be deemed indivisible for the purposes of obtaining permits. This recognises that dividing a building into parts can, at times, be the most appropriate way to manage risk and may be required as a condition of receiving a permit.

209. Improvements to managing risks associated with overdimension houses/buildings (and other significant overdimension loads) is to be achieved by a package of changes as set out below.

Package of measures to reduce risks of moving large loads and improve regulatory efficiency

210. The package of measures continues the philosophy of a graduated approach to the management of overdimension loads; that is as loads become larger the level of risk mitigation required increases.

211. The key changes proposed are:

(a) Establish in the Rule obligations on the Transport Agency, when issuing a permit, to give due consideration to the safety of the vehicle and the safety of road users. This is modelled on similar provisions currently applying for issuing overweight permits.

(b) In considering whether a permit should be issued, the Transport Agency be able to have regard to the traffic offending history of the person who applied for the permit including breaches of condition of any permit issued under the Rule. This is currently done by the Transport Agency when assessing permits for HPMVs.

(c) Create critical conditions for overdimension permits. Breaching a critical condition would create a liability for a greater fine than a standard breach of permit condition ($2,000 compared with $350). This is also modelled on the current overweight permit regime. Critical conditions would include the vehicle or its load exceeding the width stated in the permit and failing to provide piloting that meets the requirements of the Rule or permit.

(d) Make explicit in the Rule the matters that may be included as permit conditions, e.g. width, speed, number of pilots. While this can be done now under more generally described provisions, the preference is make this ability clearer.

(e) Applicants for Category 4 loads to include a statement that the intended route has been assessed and either the load can be safely managed within the piloting requirements set out in the Rule or additional mitigation is necessary for defined sections of the route. The Transport Agency's current informal guidance to those moving such loads is to encourage them to undertake a pre-movement assessment of the proposed route in a normal sized vehicle to assess potential risks. For loads wider than 11m, the Transport Agency currently requires an engineering assessment to be undertaken of the route and it is proposed this be included as part of the Rule.

212. In addition to the above a number of smaller additional changes to improve the overall operation of the movement of overdimension loads are also proposed. These are set out in Table 14 below.

Table 14: Other proposed changes to the Rule relating to overdimension loads

Area	Proposal
Responsibilities of permit holders and lead pilots	• Clarify the respective responsibilities in the Rule
Travel zones	• Changes in routes allowed for Category 3 and 4 loads to reflect changes in roads and road use patterns. These are set out in Annex 5
Travel times	• Apply travel restrictions when ANZAC Day falls on a Saturday • Allow dedicated fertiliser spreaders to be exempt from the time restrictions in Clause 6.6(11) to be certified they meet a swept path test. This is on the basis such vehicles easily meet the swept path test
Signs and warning devices	• Remove the option for the use of flags to mark edges in Category 4 loads but leave in place for Category 1 loads (the flag reference in Category 4 appears to have been a drafting mistake) • All tractors between 2.5m and 3.1m to be required to use a warning light or hazard panels to signify width (a flashing light can provide better indication of low speed than panels) • Provide for pilots to use sound warning devices to warn on-coming traffic • Provide for the Transport Agency to be able to establish alternative warning signs and layouts for hazard panels. This to be done by notice on the Transport Agency's website (a similar provision currently exists for alternative hazard panels in the Rule) • Delete the requirement for sign/panels fixed to solid objects or carried on top of vehicles to be able to be deformed or break easily when struck (referred to in the Rule as 'frangible') – any signs extending beyond solid edges still required to be frangible • Define, where appropriate, lighting by effect rather than watts
Vehicles travelling together	• Allow two or more (the Rule currently only allows two) specialised overdimension vehicles to travel together subject to piloting requirements
Pilot vehicle wheel diameter	• Remove the requirement for a maximum vehicle rim diameter size for a Class 2 pilot vehicle leading an overdimension vehicle (currently specified at 17 inches)
Vehicles not yet certified	• Allow overlength HPMVs up to 23m long to temporarily operate unladen without a permit when moving between the manufacturer and customer and/or vehicle compliance assessment pending registration and permitting
Vehicles used as replacements	• Allow where a vehicle has broken down or met with a mishap for another vehicle to be used temporarily to move the trailer without permit
Use of overdimension vehicles in emergencies	• Allow overdimension and overweight vehicles to be used without permit or outside the conditions of an existing permit in defined emergencies at the direction of a road controlling authority, Police or civil defence controller, whether or not a state of emergency is declared

Regulatory impact analysis of preferred package

213. There has not been a national cost benefit analysis undertaken of these proposals. This is because of the very small number of crashes where overdimension is a factor and the proposals will not change the kinds of overdimension vehicles or loads used on the road network. This makes establishing a meaningful base of current and anticipated future costs problematic.

Economic impacts

214. The economic impacts are assumed to be very small as the changes do not alter relative productivities between vehicles and impose no significant compliance costs.

Fiscal impacts

215. There are no immediate fiscal impacts. The improvements in safety are likely to mean a reduction in health and ACC related costs. However as the number of crashes due to overdimension loads is already very low, the resulting fiscal impacts will be marginal.

Social/cultural impacts

216. No direct improvement but there may be increased public confidence in the management of large overdimension loads through improved management.

Environmental impacts

217. There are no direct environmental impacts as a result of the package.

Regulatory impacts, including compliance costs

218. For those managing loads over 5m, there would be a requirement to attest the proposed route has been surveyed. However, this is current industry good practice and is also part of guidance issued by the Transport Agency. For loads wider than 11m a formal route assessment is currently a requirement for obtaining a permit so there should be no additional cost for these vehicles.

219. The introduction of critical conditions will pose an increased cost on those breaching such permit conditions compared to the current situation.

220. The removal of the requirement for frangible signs on solid edges or on top of pilot vehicles will have a very small cost benefit for pilots and vehicle owners.

Incidence and magnitude of impacts

Overdimension movers

221. Those involved in the movement of large loads following good practice are not expected to be significantly impacted by the proposed changes. Those who do not undertake route planning and apply appropriate mitigations will face increased costs to do so. As the nature of these costs can vary considerably depending on the load and route, a monetary estimate of this has not been calculated.

222. Similarly the establishment of critical conditions creates potential increased costs for those breaching such conditions.

223. Those moving smaller loads are not expected to be significantly affected by the package of proposed changes.

224. Operators of fertiliser spreaders will no longer have to meet the cost of having their vehicles certified as meeting a swept path test for use outside the restricted hours for Category 1 vehicles.

Users of overdimension transport services

225. As the focus of these measures is to increase safety rather than improve productivity there is not expected to be cost-savings passed on to the users of overdimension services. There may be some additional costs to some users of services of operators of larger loads that do not currently undertake route assessments and so are able to charge less as a consequence. As noted above, the wide variety of variables in assessing the costs of pre-route planning and its significance as part of the overall cost of moving a vehicle make it very difficult to assess the likely impact.

(Local) road controlling authorities

226. The package will not directly affect local road controlling authorities, except to the extent better managed trips lead to less damage to road-side infrastructure such as signs and other warning devices.

Load vehicle pilots

227. Load pilots will have some additional responsibilities to ensure the load they are piloting meets the requirements issued for it. The removal of the maximum rim requirement for Class 2 pilot vehicles leading loads will give a greater range of vehicles to choose from so potentially reducing costs for new and replacement vehicles.

Other road users

228. Better planning for certain types of loads will benefit motorists encountering such loads, although in some cases improving the safety aspects of a load's movement may create additional waiting time for motorists.

Summary of risk assessment

229. Table 15 provides a summary of the above assessments along with a description of the key variables affecting the assessments.

Table 15: Summary of benefits and costs of package to improve the management of overdimension loads

Party	Benefits	Costs	Sensitivity of cost/benefits being experienced
Overdimension movers	Slight reduction in signage costs Fertiliser spreaders – no certification cost to travel outside restricted times	Cost of route survey for those not doing this currently when required	Costs will depend on length and complexity of the of the route Benefits will accrue to operators of fertiliser spreaders that currently seek certification. For those currently driving without certification no change
Users of overdimension movement services	Some marginal reduction in cost of engaging services	Possible additional costs for those using services where route examination not undertaken but now required	Costs will depend on length and complexity of the route Will depend if fertiliser operator has sought certification
(Local) road controlling authorities	Possibly some benefits from better managed loads due to less damage to road signs etc	No change	Very dependent on load type, route and placement of road signs
Load vehicle pilots	Some marginal reduction in costs due to change in signage requirements and wider choice of Class 2 pilot vehicles	Very minor time costs to ensure the load is that specified in the permit	Very dependent on load type and route
Other road users	Improved safety for loads where route assessment would not have been carried out but for the Rule change	Possibly some time cost if load management leads to greater traffic control	Very dependent on type of load and route conditions

Increasing the efficiency and safety of the movement of crane booms

Status quo

230. Long crane booms need to be dismantled into sections for moving from one job to the next. As the booms can be broken into separate parts they are considered divisible loads. The booms generally cannot be transported side by side because their combined width is greater than allowed under general access.

231. This means a number of trips or vehicles are required to move long booms. For example a 32m crane boom (typically 1.425m wide by 1.5m high) broken into 8m lengths for movement requires four vehicles or vehicle trips to be transported.

The proposal

232. It is proposed crane booms which can be disassembled be allowed to be carried to the equivalent dimensions of a Category 1 overdimension load. Such loads do not require permits but must meet specific requirements in the Rule.

233. It is not proposed that crane booms be required to be carried in a stacked formation, in part because not all routes will be able to accommodate the additional height.

234. The fleet to which this proposal applies are currently estimated at 170 crawler cranes and 84 tower cranes.

235. Transport Agency analysis, using International Road Assessment Programme (iRAP) road attribute risk factors as a basis, indicates an overall reduction in crash risk from crane booms travelling in reduced loads of 60 percent.

Impact assessment

Crane boom operators

236. Operators would benefit from reduced cost in transporting cranes as it is assumed the market offering transportation services (no specialised vehicle is required to move crane booms) is competitive.

Crane transport operators

237. This proposal would reduce demand from those who provide services to transport crane booms. However, as specialised vehicles are not required to transport crane boom sections this should not lead to a consequent reduction in value of these vehicles.

Other motorists

238. Based on the reduction in the number of vehicle trips resulting from the proposals, there it is expected there will be a reduced safety risk for motorists. As the number of crane boom movements is relatively few, however, this would contribute only a small improvement to overall road safety outcomes.

Other minor proposals to improve productivity or operation of the Rule

239. The following sets out a number of proposals which do not fit neatly within the above analysis.

Overweight loads deemed indivisible and transporting ancillary items on indivisible overweight loads

240. The Rule provides a general definition of 'indivisible load'. The only items specifically identified as being indivisible are customs-sealed import/export containers. The Transport Agency's permit manual lists 10 types of load[42] which it notes that the Axle

[42] The loads 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.

Weights and Loading Group (an informal industry group convened by the Transport Agency) has determined should be considered as indivisible.

241. It is proposed that these loads, excepting building removals, be formally included or referred to as indivisible in the Rule. The reason for wanting to formalise the list is that, while their treatment as indivisible is accepted practice, there remains a legal risk for operators in that the practice does not have formal legal standing.

242. The reason that building removals is not to be added to the Rule is that the current guidance in the Transport Agency's permit manual for building removals notes that, in theory, buildings may be reduced to individual components but judgement is required in determining what is a disproportionate effort. It would not be appropriate therefore to establish a general principle of indivisibility for building removals in the Rule.

243. The permit manual also allows vehicles carrying unspecified construction equipment on certain types of permit to also carry two minor items used as attachments for that equipment.

244. It is proposed to formalise this approach to allow ancillary items to be carried with indivisible overweight loads, without specifying the number or type of items.

245. Allowing ancillary items would reduce the number of trips and might be expected to yield productivity and safety gains (from the reduced number of trips). The specific levels of productivity and safety cannot be readily assessed given the wide variety of possible load configurations and distances travelled.

246. It should be noted formalising items as being within the meaning of indivisible load and allowing ancillary items to be carried does not automatically grant them access to the network. Such loads, where they exceed the mass limits for general access, will still require a permit as they do at present.

Bulk permitting of High Productivity Motor Vehicles

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

248. It is proposed that permits issued by the Transport Agency allow identified prime movers to be able to be mixed and matched with trailers from a set of pro-forma designs published by the Transport Agency. The trailers in an operator's fleet conforming to the pro-forma specifications could be used with any of its prime movers. Vehicle combinations outside the pro-forma designs would still require individual permitting.

249. It would be for local road controlling authorities that have not delegated HPMV permit decisions to the Transport Agency to decide if they grant permits for multiple trailers.

250. The Rule does not limit the number of vehicle combinations that can be issued under a single permit. Whether, specific provisions are required in the Rule to make this work effectively, will be assessed as part of the preparation of the draft Rule.

Summary of consultation

251. In developing proposals to amend the Rule, the Ministry of Transport and Transport Agency held preliminary discussions with industry/sector organisations and convened a special workshop in September 2015.

252. In December 2015, the Associate Minister of Transport released a discussion document, *Review of the Vehicle Dimensions and Mass (VDAM) Rule,* for public consultation. Submissions were open from 9 December 2015 to 17 February 2016. During the submissions period the Ministry and the Transport Agency held seven public workshops – in Wellington (3), Auckland, Tauranga, Christchurch and Dunedin to explain and receive feedback on the proposals.

253. There were 198 submissions received. Organisations making submissions included the Automobile Association, Bus and Coach Association NZ, Campaign for Better Transport Inc, Citizens Environmental Advocacy Centre Inc, Crane Association of New Zealand, Cycling Action Network, Friends of the Earth, Heavy Haulage Association, Insurance Council of New Zealand, KiwiRail, Living Streets Aotearoa, Motor Industry Association, Road Transport Forum, and the Road Transport Association of New Zealand.

254. The categories and numbers of submission received are set out in Table 16.

Table 16: Submissions received on the VDAM Rule discussion document by categories

Submitter type	Number
Individuals	53
Individuals (form submissions)	38
Road transport companies	28
Local government (including road controlling authorities)	24
Transport sector advocacy groups	24
Transport-related businesses	10
Community advocacy groups	8
Miscellaneous	8
Bus sector	5

The main themes raised by submitters on the discussion document

255. The main themes raised in submissions were:

- Increasing mass: Proposals to increase mass limits were broadly supported by the road freight transport and bus sectors. The main reasons given for supporting included perceived improved productivity benefits and greater use of existing and future vehicle capacity.

  Those who felt mass limits should not be increased tended to give one or more of the following reasons; concern that increased mass will increase pavement damage, concern that safety of other road users will be decreased (along with scepticism that increased vehicle productivity would lead to a reduced number of trips), and that

more emphasis should be given to alternative modes of transport, in particular rail and coastal shipping.

In terms of possible increased road damage, many local road controlling authorities argued heavier trucks would cause more damage to pavements and a new cost recovery mechanism would be required to maintain the local road network.

There was a range of views on reducing the weighing tolerance from 1,500kg to 500kg for the higher masses. Several transport industry operators submitted that 45,500kg is now the 'default standard' upper weight for gross mass general access for many operators. Decreasing the tolerance was seen as decreasing vehicle productivity.

A different view was expressed by other operators who said they loaded to legal limits, and considered the reduced tolerance manageable. They also said they would support reduced tolerance if this led to an increase in legal mass limits.

- Changes to height and width: Submissions from road and bus transport related organisations generally supported the increases (with some arguing for greater increases) seeing they would improve productivity and safety (arising from fewer needed vehicle trips), and give access to cheaper and more modern vehicles from larger overseas markets which use the larger dimensions proposed.

  Many individual and community groups did not support the increases. This was generally out of concern for possible increased safety risks arising from New Zealand's often narrow and curved road network.

- Overdimension loads: Many individual submitters wanted to see limits on width for houses/buildings, speed and increased use of pilot vehicles for very large loads. Others, especially those from the heavy haulage sector, preferred a case-by-case approach to improve the safe movement of such loads. A number of submitters suggested improved training for pilots was also important.

256. Some submissions sought to make changes to specific aspects of the Rule. Where such suggestions did not create additional safety issues or impose costs on others these have generally been included in the package of proposals. These include, for example, allowing ground-spread fertiliser spreaders to not require certification to be exempt certain time restrictions or the use of aerodynamic tabs on the sides of vehicles.

257. Some submitters raised issues that are beyond the scope of this review of the Rule. These were:

    - Encouraging greater use of rail and coastal shipping as an alternative to road transport, or variations on this.

    - Changing the road user charges system to ensure that all charges are fed back to road controlling authorities to cover the cost of pavement wear. Separately the Bus and Coach Association suggested that due to loading patterns and design configurations between buses and trucks, buses paid too much in road user charges.

258. There will be a further round of public consultation of the proposed changes, in the form of a draft Rule.

Conclusions and recommendations

259. There is scope for modest increases in limits to vehicle dimensions and mass which can meaningfully increase the productivity of the transport fleet overall without affecting the safety of other road users. The ability of vehicle operators to make use of these increases will vary widely depending on their loads, routes, and type of vehicle.

260. In respect of the safe management of overdimension loads, especially very large loads, the widely differing circumstances involved with such loads mean the preference is not to regulate through establishing specific limits. Instead, the preferred approach is to ensure better initial planning is undertaken and, where necessary, trip specific conditions through permits are imposed. This is to be supported by establishing penalties for breaching critical conditions.

261. The review of the Rule has also shown other, minor, changes can be made to many of the Rule's provisions that can contribute to improving productivity and/or safety.

262. The detailed nature of the Rule means that to allow the changes proposed to occur the Rule needs to be amended. In doing so the opportunity should be taken to make the Rule easier to understand and responsibilities made clearer.

Implementation plan

263. It is intended that the key changes to mass and dimensions will come into force on 1 November 2016. Other changes may be phased in after that date. For example, the implementation of any new permitting arrangements may require further time to allow road controlling authorities to put in place any necessary administrative changes. The specific timeframe for implementation will be developed following consideration of public submissions on the draft Rule.

264. Between the revised Rule being published in the Gazette (scheduled for 29 September 2016) and it coming into force, the Transport Agency will prepare guidance and other supporting material for stakeholders and the general public.

Monitoring, evaluation and review

265. A monitoring and evaluation programme is being developed by the Ministry of Transport to assess the impacts of these changes. There will also be specific engagement with industry and other stakeholders to assess performance and any issues that arise.

266. There have been two evaluations of HPMVs since their inception in the Rule with a third being tendered. This will provide a baseline for subsequent evaluations of the VDAM reforms.

267. The Ministry of Transport proposes a further three evaluations over a five year period to monitor the implementation and impact of the changes to the Rule and to check on the system's ability to identify and respond to emerging risks. The evaluations will supplement and build on usual monitoring practices, which include consideration of:

    - Annual Weigh in Motion data on truck overloading

- Data on all road crashes involving injury
- The results of Police compliance operations
- Road user charges data
- Vehicle licensing data

268. For road controlling authorities, work through the Road Efficiency Group will provide better data on the road network. Any significant demand for maintenance for the local road network can be taken into account in investment planning by being elevated as a system level concern under the Government Policy Statement on Land Transport.

Annex 1 : Summary of proposed changes to the Land Transport Rule: Vehicle Dimensions and Mass 2002

Changes to axle and gross vehicle mass (see also Annex 4)	
Axle mass	Small increases in axle mass limits for general access
	Increased axle mass limits for buses operating under permit
	Increased axle mass limits for specialist vehicles operating under permit
	New mega tyre size (444mm and wider) with a mass limit of 7,600kg
Gross mass	Increased gross mass limit for 7-axle combinations with a minimum wheelbase of 16.8m from 44,000kg to 45,000kg
	Increased gross mass limit for 8-axle combinations with a minimum wheelbase of 17.4m from 44,000kg to 46,000kg
Buses	Increases in axle mass up to 2,000kg, when operated under permit
Specialist vehicles • Rubbish trucks • Dump trucks • Concrete mixers • Ground-spread fertiliser trucks	Increases up to 3,000kg, when operated under permit
Approved overlength simple trailer combinations Car transporters with NZTA approved pro-forma design	Increase gross mass from 36,000kg to 40,000kg when operating under HPMV permit
Weighing tolerance	Reduction in weighing tolerance from 1,500kg to 500kg
Changes to dimensions	
Width	Extend maximum allowable width to 2.55m, inclusive of load securing devices
Close proximity warning devices	Allow up to 50mm on either side of a vehicle in addition to maximum vehicle width
Side mirrors	Mirrors not to exceed 2.98m from outer edge to outer edge (with the additional extra vehicle width will mean a reduction on allowable mirror width)
Aerodynamic tabs	Allow up to 25mm on each side of a vehicle in addition to the maximum vehicle width
Height	Extend maximum allowable height to 4.30m, inclusive of load securing devices
Ground clearance technology	Allow operators with suitable technology to temporarily exceed the height limit when raising the vehicle to clear obstacles

Changes to management of overdimension loads	
Main changes	Transport Agency when issuing a permit to give due consideration to safety of the vehicle and safety of road users, including being able to have regard to previous traffic offending history of applicant
	Include a list of restrictions the Transport Agency can include in a permit, including maximum width, speed, and number of pilots
	Establish critical conditions for permits
	Applicants for Category 4 loads must declare they have assessed intended route and identified safety mitigations. For loads larger than Category 4, an engineering assessment to be undertaken
Minor changes	Establish clearer responsibilities for permit holders and lead pilots
	Refine travel zones to reflect changing road use patterns
	Apply travel restrictions when ANZAC Day falls on a Saturday
	Allow dedicated ground-spread fertiliser vehicles to be exempt from time restrictions
	Remove option to use flags to mark edges for Category 4 loads
	Allow pilots to use sound warning devices
	All tractors between 2.5m and 3.1m to be required to use a warning light or hazard panels to signify width
	Provide for the Transport Agency to be able to establish alternative warning signs for vehicles and pilots
	Remove requirement for warning panels/signs to be frangible
	Define lighting by effect, not watts
	Allow vehicles to travel in convoy, subject to piloting and traffic flow requirements
	Remove limitation on tyre rim size for Class 2 pilot vehicles
	Allow overlength HPMVs up to 23m long to temporarily operate unladen without a permit when moving between the manufacturer and customer and/or vehicle compliance assessment pending registration and permitting
	Allow where a vehicle has broken down or involved in a crash for another vehicle to be used temporarily to move the trailer without permit
	Road controlling authorities and other defined agencies be able to allow overdimension vehicles to operate in emergencies without permit
Other minor changes to the Rule	
	Formalising definition of certain loads as indivisible
	Allowing ancillary items to be carried with overweight loads
	Bulk permitting of High Productivity Motor Vehicles
	Provide for operators of heavy vehicles to use real-time monitoring systems to verify their location and weight

Annex 2 : Criteria and sub-criteria used to assess proposals to amend the Vehicle Dimensions and Mass Rule

Safety: Does this option improve, maintain or diminish safety outcomes?
Effect on heavy vehicle crash risk:
Effect on uptake of better standards:
For other road users
Probability of harm:
Severity of harm:

Productivity: Does this option have the potential to enhance, maintain, or reduce current productivity levels?
Passengers/freight per vehicle:
Trips/VKT per unit of task:
Cost per freight-tonne/passenger km:

Infrastructure: What impact does this option have on New Zealand's roading network?
Overview of main data sources:
• **Pavements – State highways:**
• **Bridges and structures – State highways:**
• **Pavements – Local roads:**
• **Bridges and structures – Local roads:**

Community Well-being: Is community well-being enhanced, maintained, or diminished by this option?
Public confidence in heavy vehicles:
Heavy vehicle noise levels:
Emission levels:
Consumer prices for goods/services:

Better regulation – VDAM-specific	
Operator compliance costs:	**Government enforcement costs:**
Operator transaction costs:	**Effect on compliance rates:**
Government administration costs:	**Enforceability:**

Annex 3 : Road safety issues and proposed changes to vehicle dimensions and mass

Road user safety

The impacts of the proposed changes against road user safety are difficult to assess on their own and cannot be isolated from other factors that affect crash rates and severity. However, there are safety performance measures that deliver positive impacts, and crash data over the past decade shows overall declines in crashes generally, and for crashes involving trucks.

In summary:

- Small increases in dimension and mass limits will not produce noticeably bigger trucks or buses nor will they result in a significantly higher crash risk.
- The proposed changes to the Rule are expected to contribute to improved safety outcomes because operators are able to:
    - carry more with fewer trips, reducing exposure to heavy vehicles
    - use more modern vehicles with improved safety specifications from a wider range of overseas markets.

Safety interventions and technology improvements

A combination of factors such as road improvements, vehicle technology, road policing and changes in legislation have influenced the longer term changes in the road toll. These changes are also expected influence the safety impact of changing dimension and mass limits. For instance:[43]

- *Roads:* The safety of the state highway system has been improved. Some significant sections have been replaced with barrier-separated roads, such as the Waikato Expressway, and Albany to Puhoi section of State highway 1. Other initiatives include the addition of passing lanes, highway re-alignment projects, and audible edge markings
- Vehicles: The safety of the heavy vehicle fleet has continued to improve over the past decade. The typical new vehicle being imported now has improved occupant protection and ESC (electronic stability control), and older technologies such as ABS (anti-lock braking system) are now more prevalent
- Legislation: Recent legislative changes relevant to heavy vehicles include: the ban on handheld cell phone use while driving (2009); measures targeting recidivist drunk (2011) and drugged drivers (2009); changes to the give way rules (2012); and the decreased adult alcohol limit (2014)
- Road policing: There has been a significant investment in Police road safety efforts over the past 15 years:
    - Road policing numbers have increased, and specialist highway patrol, alcohol, crash investigation, and traffic intelligence units have been established, and the Police's Commercial Vehicle Investigation Unit has changed to a national structure
    - Investment has continued with the rollout of improved, more efficient, speed camera and alcohol test equipment, and Police have increased levels of mobile and compulsory breath testing in recent years

[43] Ministry of Transport *Road Toll Report Year ended December* 2015.

- Road policing has operated at a higher level of intensity during holiday weekends, and there has been less tolerance of speeding during those periods, and reinforcement through safety advertising.

Safety performance measures

The proposed changes to dimension and mass limits are intended to encourage the uptake of the latest trucks and buses from overseas markets that have modern safety specifications. For example European countries are a potential major supplier of heavy vehicles, which are typically built to 2.55m wide, but cannot be used in New Zealand under the existing Rule.

A range of new technologies is emerging that could improve heavy vehicle safety. These include features that further improve braking, stability and handling, and others that provide additional information and feedback to the driver.

The benefit of these technologies may be reduced where drivers take advantage of the increased vehicle performance by driving more aggressively. While this has been shown to be the case for passenger cars, it is not specifically shown for heavy vehicles.[44] This is largely because heavy vehicle drivers:

- regularly use technologies that monitor driver performance, including speed, acceleration and braking, rest breaks and journey travel times
- are professional drivers, so are likely to have a lower safety risk.

Other safety performance initiatives relevant to the proposed changes include:

- encouraging the use of close proximity monitoring systems (CPMS), which:
  - are camera or sensor systems mounted on the outside of a vehicle that monitor how close objects or people are to the vehicle
  - raise a driver's awareness of the vehicle's proximity to objects or people
  - are acknowledged mechanisms to assist in a reduction in crashes, consistent with crash data citing lack of vision as the main cause of side-impact crashes.
- The third action plan of the Safer Journeys Strategy, released in 2016, includes investigating mandating of vehicle under-run protection, which may help to increase the safety of pedestrians and cyclists. As under-run protection does not add to a vehicle's width or height it does do not have to be specifically provided for in the Rule.
- New Zealand's graduated driver licensing system for trucks takes account of driver experience, driving skill, training and education. This works to delay access to the largest vehicles for younger, less experienced drivers. Changes are proposed for heavy vehicle licences that aim to: [45]
  - improve the availability of properly trained heavy vehicle drivers without compromising safety
  - balance the heavy vehicle industry's need for more drivers with government and road users' high safety expectations
- operators will still need to comply with current Rule safety performance standards for braking, acceleration, slope start-ability, load securing, rollover, and stability.

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[44] *NZTA Literature Review of Heavy Vehicle Safety*, July 2015.

[45] *Driver Licensing Review Discussion Document*, April 2016.

- the proposed changes provide for more effective planning in the safer movement of loads that are outside the standard categories (i.e. 'overdimension' loads that require special permits because they are very wide, high or long).

Crash risk and severity

There is limited evidence that small increases in dimension and mass limits increase crash rates and severity. This is largely because data on this is not collected or that other factors have more impact. Overall, it is expected that the proposed changes would have a neutral, or small positive effect on road safety for all road users.

While in theory increases in the dimensions and mass of heavy vehicles could have a negative safety effect, other factors, such as operating environment, can have a greater influence on safety. Other points to note are:

- The New Zealand Police Commercial Vehicle Investigation Unit has stated there are lower numbers of heavier vehicles than lighter vehicles recorded in their crash data, although dimensions or mass are not always identified.[46] This is also the case for similar systems in other countries

- A study that concluded the operating environment, including road type and time of day, has a greater impact on crash rates than truck configuration[47]

- An increase in width diminishes separation between vehicles and other road users. However, this does not necessarily increase danger to other road users as:

    - Around 90 percent of the New Zealand state highway network has 3.5m lanes and the Transport Agency estimates that 74 percent of road transport kilometres occur on the state highway network

    - In determining risk, width cannot be isolated from other factors, e.g. road design; lane number and width, vehicle length, direction of travel, and mitigation measures such as separation markings and devices[48]

    - The Insurance Council of New Zealand submitted that moving from 2.50m to 2.55m width would not increase crash rates sufficiently to adjust risk ratings significantly.

Crash data trends

Transport Agency and Ministry of Transport studies show a small decline in heavy vehicle crashes during a period when heavy vehicle kilometres has increased.

The road toll has generally been trending down over time, despite increases in the population, vehicle fleet and travel. From 2001 to 2014, the road toll reduced by 35 percent[49], even though the number of vehicles increased by 32 percent, population increased by 16 percent, and travel distance increased by 15 percent.

The rate at which trucks are involved in fatal crashes has dropped to about a third of what it was in the early 1990s.[50] This is set out in Figure 1.

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46 The Commercial Vehicle Investigation Unit investigates most fatal heavy vehicle crashes, many serious injury and some minor and non-injury crashes.

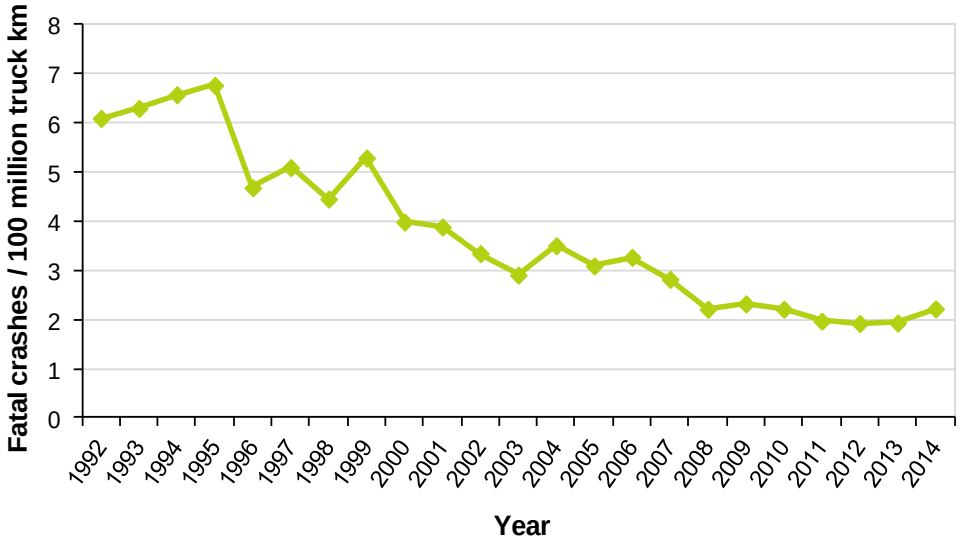
47 *Highway Safety and Truck Crash Comparative Analysis*, US Department of Transportation, Federal Highway Administration, 2013.

48 Analysis done by NZTA using the International Road Assessment Programme (iRAP) Road Attribute Risk factors.

49 Ministry of Transport *Road Toll Report year ended December* 2015

50 Ministry of Transport *Trucks 2015 Report.*

Figure 1. Annual rate of fatal truck crashes per 100 million truck kilometres travelled



Note: Truck km travelled based on total Road User Charges (RUC) km purchased

A 2015 Transport Agency review[51] found that during 2009-2013:

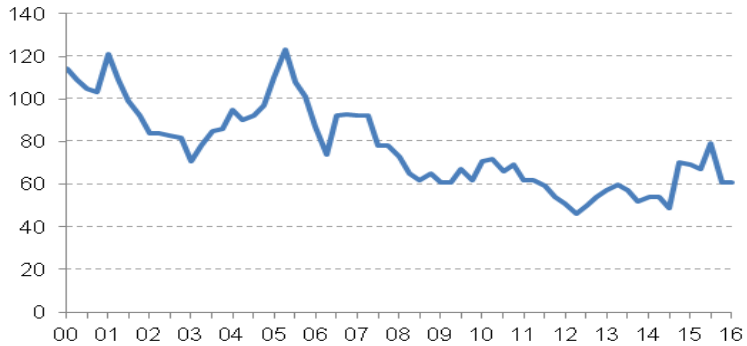
- heavy vehicles were involved in injury crashes at about the same rate as light vehicles (per kilometre travelled)
- crashes involving heavy vehicles had a similar profile to other crashes (e.g. inattention, poor observation, failure to give way or stop).

Trucks tend to be over-represented in serious crashes. Deaths from crashes involving trucks make up around 18 percent of the total road toll (5 year average). However, there are already many large trucks on New Zealand roads (76 percent of truck and trailer combinations operate at 44 tonne weight)[52] and the changes to dimensions and mass aim to:

- reduce exposure by enabling operators to carry more with fewer trips
- encourage heavy vehicle fleet renewal to newer vehicles with modern safety technology.

Ministry of Transport data shows that deaths involving heavy vehicles have generally been trending down over the past 15 years.[53] This is set out in the graph in Figure 2 (bottom axis figures are years 2000-2016).

Figure 2. Road deaths in heavy vehicle crashes – rolling 12 month totals



[51] *Literature review of heavy vehicle safety*, 2015, New Zealand Transport Agency.

[52] Analysis by independent advisers (Castalia, November 2015) based on WiM data.

[53] From http://www.transport.govt.nz/research/roadtoll/.

Annex 4 : Proposed changes to Schedule 2 mass limits

Part A - General Mass Limits	kg
Table 1 – Maximum mass on individual axles	
Type of axle	
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	~~5,400~~ 5,500
(b) in any other axle set	6,000
2. Single large-tyred:	
(a) in a twin-steer axle or quad-axle set	~~5,400~~ 5,500
~~(b) in a quad-axle set~~	~~5,500~~
(b) ~~(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 triaxle set	6,600
(c) ~~(d)~~ in any other axle set	7,200
3. Single mega-tyred:	
(a) in a twin-steer axle set	5,500
(b) in a single-steer axle set	7,200
(c) in any other axle set	7,600
4 ~~3~~. Twin-tyred:	
(a) in a quad-axle set	~~5,500~~ 6,000
(b) in a tri-axle set	~~6,600~~ 7,000
(c) in any other axle set	8,200
5 ~~4~~. Oscillating axle, in any axle set	9,500
Table 2 – Maximum sum of axle mass on two axles in a tandem axle set	
1. Two single standard tyres	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	~~10,800~~ 11,000
(b) not in a twin-steer set	13,000
3. Two single mega-tyred axles:	11,000
(d) in a twin-steer axle set	
(e) not in a twin-steer axle set	14,000
4 ~~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
5 ~~4~~. Twin-tyred axle:	
(a) for passenger service vehicles, with a single standard-tyred axle,large-tyred axle, or single mega-tyred axle and a load share between 60/40 and 55/45 ~~load share~~	~~13,600~~ 14,500
(b) for other vehicles, with a single standard-tyred axle, single large-tyred axle, or single mega-tyred axle ~~and 55/45 load share~~	~~14,500~~ 13,600
6 ~~5~~. Single standard-tyred axle with an oscillating axle	13,000
7 ~~6~~. Single standard-tyred axle with a single large-tyred axle or a single mega-tyred ~~twin-tyred~~ axle	12,000
8 ~~7~~. Two oscillating axles	15,000

Table 3 – Maximum sum of axle mass in a tri-axle set	
Three oscillating axles, three twin-tyred axles, ~~or~~ three single large-tyred axles, or three single mega-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~~ 16,000
Table 4 – Maximum sum of axle mass in a quad-axle set	
1. ~~Four t~~Twin-tyred axles, ~~or four~~ single large-tyred axles, single mega-tyred axles, or oscillating axles, with at least 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)	
1. Two single standard-tyred axles	~~10,800~~ 11,000
2. Two single large-tyred axles	12,000
3. Two single mega-tyred axles	13,000
~~3~~4. A single standard-tyred axle with a single large-tyred axle, single mega-tyred axle, or a twin-tyred axle	12,000
~~4~~5. 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 (including maximum gross mass)	
Distance from the centre of the first axle to the centre of the last axle	
1.8 m but less than 2.5 m	15,500
2.5 m but less than 3.0 m	17,500
3.0 m but less than 3.3 m	19,000
3.3 m but less than 3.6 m	20,000
3.6 m but less than 4.0 m	21,000
4.0 m but less than 4.4 m	22,000
4.4 m but less than 4.7 m	23,000
4.7 m but less than 5.1 m	24,000
5.1 m but less than 5.4 m	25,000
5.4 m but less than 5.8 m	26,000
5.8 m but less than 6.4 m	27,000
6.4 m but less than 7.0 m	28,000
7.0 m but less than 7.6 m	29,000
7.6 m but less than 8.2 m	30,000
8.2 m but less than 8.8 m	31,000
8.8 m but less than 9.4 m	32,000
9.4 m but less than 10.0 m	33,000
10.0 m but less than 10.8 m	34,000
10.8 m but less than 11.6 m	35,000
11.6 m but less than 12.0 m	36,000
12.0 m but less than 12.5 m	37,000
12.5 m but less than 13.2 m	38,000
13.2 m but less than 14.0 m	39,000
14.0 m but less than 14.8 m	40,000
14.8 m but less than 15.2 m	41,000
15.2 m but less than 15.6 m	42,000
15.6 m but less than 16.0 m	43,000
16.0 m or more	44,000
16.8 m or more, and a minimum 7 axles	45,000
17.4 m or more, and a minimum 8 axles	46,000

Part B - Mass Limits for High-Productivity Motor Vehicles	kg
Table 1 – Maximum mass on individual axles	
Type of axle	
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	~~5,400~~ 5,500
b) in any other axle set	6,000
2. Single large-tyred:	
(a) in a twin-steer axle set	~~5,400~~ 5,500
(b) in a quad-axle set	6,500
(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 triaxle set	6,600
(d) in any other axle set	7,200
3. Single mega-tyred:	
(a) in a twin-steer axle set	5,500
(b) in a single-steer axle set	7,200
(c) in any other axle set	7,600
4 ~~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
5 ~~4~~. Oscillating axle, in any axle set	9,500
Table 2 – Maximum sum of axle mass on two axles in a tandem axle set	
1. Two single standard tyres	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	~~10,800~~ 11,000
(b) not in a twin-steer set	13,000
3. Two single mega-tyred axles:	11,000
(d) in a twin-steer axle set	
(e) not in a twin-steer axle set	14,000
4 ~~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
5 ~~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
6 ~~5~~. Single standard-tyred axle with an oscillating axle	13,000
7 ~~6~~. Single standard-tyred axle with a single large-tyred axle	12,000
8 ~~7~~. Single standard-tyred axle with a twin-tyred axle	13,300
8 ~~7~~. Two oscillating axles	15,000
Table 3 – Maximum sum of axle mass in a tri-axle set	
Three oscillating axles, three twin-tyred axles, ~~or~~ three single large-tyred axles, or three single mega-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	
~~Quad-axle set with t~~Twin-tyred axles, ~~or~~ single large-tyred axles, single mega-tyred axles, or oscillating axles, with at least 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 the centre of the last axle is 1.0m or more but less than 1.8m (including maximum gross mass)	
1. Two single standard-tyred axles	~~10,800~~ 11,000
2. Two single large-tyred axles	12,000
3. Two single mega-tyred axles	13,000
~~3~~4. A single standard-tyred axle with a single large-tyred axle, single mega-tyred axle, or a twin-tyred axle	12,000
~~4~~5. 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	**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
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 ~~Passenger Service~~ Specialist Vehicles	
Type of Axle	**kg**
1. Twin-tyred axle in any axle set:	~~8,800~~ 12,000
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~~ 16,000
(b) Twin-tyred axle with a single large-tyred axle and a 55/45 load share	~~16,000~~ 18,000
3. Two twin-tyred axles:	
(a) spaced less than 1.3m from the first axle to the last axle	17,000
(b) spaced 1.3m or more from the first axle to the last axle	18,000

Note: Part C limits only available by permit issued by a road controlling authority, and under the existing Rule, are only available for passenger service vehicles (buses). It is proposed to expanded availability to include other specialist vehicles: passenger service vehicles (buses); concrete mixers; rubbish trucks; dump trucks; and ground-spreader trucks.

Annex 5 : Proposed changes to routes and route restrictions for Category 3 and 4 overdimension loads

The following proposed changes to zone descriptions and Auckland motorway restrictions reflect changes in road layouts and road use patterns since the Rule was established.

Schedule 6

Zone 1 Definition

Establish a western boundary for Zone 1, and add Kumeu to the north/western Auckland boundary for Category 4 loads being in Zone 1. Beyond that Zone 3 should apply.

Zone 1: Wellington

Amended the zone boundary between Zone 1 and 3 to read “East to the Southern Featherston Boundary (twin bridges at the bottom of the Rimutaka Hill)”.

Zone 1: Christchurch

The new Zone 1 boundary for Christchurch be described as: “North of Rolleston”. (The Zone 3 area for the South Island, accordingly, would no longer be described as “Templeton and south of Templeton”, but rather: “Rolleston and south of Rolleston”)

South – Ashburton – SH1 Fairfield Road to Tinwald.

West of Christchurch – Extend to SH73 West Milton – from Dawsons Road.

North of Christchurch SH1 – extend to Salt Water Creek – from Waimakariri Bridge.

East of Christchurch – SH75 – extend to Leadleys Bridge.

Zone 2 Travel Zones: Schedule 6

The boundary for Zone 2 to 3 change to be at SH1, Taupo (Eastern Taupo Arterial).

Amend the current Zone 2 travel zone description, to read “Opotiki and west of Opotiki” instead of “Opotiki and North of Opotiki”.

Schedule 7: Travel on Auckland Motorways

1. Correct Name

Change the name of Buckley Ave to Squadron Drive.

2. Auckland Western Motorway (SH18)

Loads that exceed 3.1m in width or 4.25m in height be permitted to travel on SH 18 between the SH16 and SH18 interchange and the Old Albany Highway.

3. SH1: Northern Toll Road

That the section of the Auckland Northern Motorway on SH1 between the Silverdale interchange and the end of the Northern Motorway be permitted for use by overdimension loads. (When the Puhoi to Warkworth motorway is completed then travel should be permitted “to the end of the Northern Motorway”)