

11 May 2022

[REDACTED]
[REDACTED]

Tēnā koe [REDACTED]

Thank you for your official information request of 11 March regarding:

- the development of existing regulation regarding installation of seatbelts in buses
- Te Manatū Waka the Ministry of Transport's (Te Manatū Waka's) work in relation to seatbelts on school buses, and
- regulation relating to the use of high-performance vehicles by inexperienced drivers.

Thank you also for your understanding about the time taken to respond to your request. Responding to it has been complicated by absence of key staff due to illness and bereavement.

Your request is difficult to answer in respect of historic policy decisions because it appears that many of the relevant current regulations, with their initial policy justifications, have been carried over from earlier regulations. For example, key elements of the Land Transport Rule: Passenger Service Vehicles 1999 (PSV Rule) were carried over from the Passenger Service Vehicle Construction Regulations 1978.

We have looked for the information you requested and, following that, consider that much of the original documentation you are requesting is very old and likely not held in our electronic records. I am refusing your request for information to the extent it covers information not in our electronic records under section 18(f) of the Official Information Act (the Act), as this information cannot be made available without substantial collation or research.

For the remainder of your request, I have outlined my decision on your request for information on each part. I have also included general comment about the policy matters that you have raised.

Development of seatbelt regulation

I have identified a 2018 report, "Bus safety in New Zealand", which examined the outcomes of investigations carried out by the Coroner and Police following three serious bus crashes in mid-2018 as being in scope of your request. This report outlines the regulatory requirements for bus safety in New Zealand and provides an overview of work underway or scheduled to further improve the safety of bus travel. Though publicly available on our website, I have enclosed this report as Appendix A.

I have not identified any other specific documents held by Te Manatū Waka as being relevant to your request for information about the development of existing regulation for installation of seatbelts in buses.

While not information held by us, you may be interested in information about the Land Transport Rules which govern the fitting and operation of seatbelts on buses. As the agency responsible for operational policy, Waka Kotahi publicly releases documents detailing Land Transport Rules, amendments to the Rules, and other information online at: www.nzta.govt.nz/resources/rules/.

This resource addresses recent amendments to relevant Rules, including 'question and answer'-style documents.

Our statistics show travelling as a bus passenger is the safest mode of road transport both per kilometre travelled and per hour spent travelling, and about seven times safer than travel in a private car.

Buses are safer than other forms of road transport in part because the impact forces from a crash are more likely to be absorbed by the larger mass of the bus. This reduces the effect of a crash on the passengers, even without seatbelts, making it less severe and less likely to cause injury than would be the case in smaller, lighter vehicles. New Zealand bus fleet data shows that most passenger injuries are minor and would not have been prevented by wearing seatbelts.

Before being used on the road, all buses must be checked and certified to ensure they meet all the vehicle requirements in the PSV Rule. Currently, buses in New Zealand are not required to have seatbelts, however they must satisfy the alternative requirements of clause 6.1(3) of the PSV Rule by having another seat, a partition or a guard rail positioned not more than 1 metre in front of the front edge of the seat.

However, where buses are fitted with seatbelts, the seatbelts must meet all requirements of the Land Transport Rule: Seatbelts and Seatbelt Anchorages 2002, as well as the PSV Rule. This means the seatbelts will be inspected at entry to the fleet and while in-service through the certificate of fitness process. It is not permissible to have seatbelts fitted which are non-operational or unable to be operated safely.

When Te Manatū Waka previously examined ways to increase bus safety, it found that the cost of retrofitting seatbelts in all buses in New Zealand would be prohibitive. This was because many buses would need to have their floors strengthened so that the seatbelt anchorages could be properly attached. We also found that newer buses, designed for open road use, are now usually equipped with seatbelts and so new regulations may not significantly speed up their introduction.

Seatbelts on school buses

You may be aware of a recent petition to Parliament asking that the House of Representatives pass legislation requiring that all school buses must have seat belts. The petition, Petition Committee (Committee) report, and our evidence to the Committee are all publicly available online: https://www.parliament.nz/en/pb/petitions/document/PET_109505/petition-of-philippa-cameron-our-school-buses-need-seat. Our evidence to the Committee is a good recent summary of our position and the reasons for our position and I encourage you to review this.

I have not identified any further documents held by Te Manatū Waka as being in scope of your request for information in relation to seatbelts on school buses. Bear in mind this is in part because we do not regulate buses differently when used as school buses. Accordingly, I refuse this part of your request under section 18(d) of the Act, on the grounds that all identified relevant information requested is publicly available.

Following the report of the Committee, I can advise that Waka Kotahi is currently preparing a research report on school bus safety. Seatbelts will form a part of this report. This is currently in the early stages of completion and a report is expected by the end of September 2022. The report will be published online when completed.

Te Manatū Waka does not currently have plans to separately regulate passenger service vehicles that are used for school transport services, as this would likely impact school transport

services provided by regional councils as well. These services are contracted as part of the public transport system and primarily operate in urban areas at low speeds, often in vehicles that service public transport bus routes during other parts of the day.

You should note the Ministry of Education can and does set further requirements and expectations in its own procurement process about the types of buses used to carry children to and from school. School bus service providers contracted by the Ministry of Education are required to meet additional standards, including vehicle age (not more than 26 years), vehicle telematics, driver training, and annual medicals for drivers.

I note the Ministry of Education also provided evidence to the Committee when it considered the petition mentioned above. However, if you have any queries about specific Ministry of Education-contracted school bus services, I encourage you to contact the Ministry of Education.

Use of high-performance vehicles by inexperienced drivers

Te Manatū Waka last investigated in 2010–2013 whether vehicle power restrictions for young drivers should be introduced in New Zealand. I have identified four documents within scope of your request which I am releasing to you under the Act, enclosed as Appendices B–E:

- WGTA12426 Vehicle Power Restrictions for Young Drivers, 19 March 2010
- WGTA12597 Further Information on Vehicle Restrictions for Young Drivers, 09 April 2010
- OC00264 Vehicle Power Restrictions for Young Drivers, 20 October 2011
- A draft research report on “Vehicle Power Restrictions”, from 2013.

I am withholding the contact details of public servants in all these documents, where relevant, under section 9(2)(a) of the Act to protect the privacy of natural persons. I do not consider there is any public interest in the release of this information.

The 2013 research report is a draft report of the findings of an investigation that the Government committed to in the Safer Journeys Action Plan 2011–2012. Note that as a draft report, it does not necessarily reflect the final view of the Government then or now.

While some jurisdictions overseas restrict use of high-performance vehicles by inexperienced drivers to minimise exposure to risky driving scenarios, New Zealand’s driver licensing system does not limit use of high-performance vehicles by drivers on their learner or restricted licenses (provided the vehicle weighs less than 4,500kg).

Research we have seen indicates that restricting vehicle power for less experienced drivers under 25 years of age may reduce road injuries by 0.4 to 1.8 percent. There is limited real-world evidence for this estimate and modelling research assumes 100 percent compliance with restrictions. On that basis, and given low prevalence of use of these vehicles, anticipated road safety benefits from vehicle power restrictions are likely modest.

We consider the biggest vehicle-related risk for young drivers is that they tend to drive vehicles that are less crashworthy than average and have fewer safety features. That is one reason why we are progressing improvements to vehicle safety standards through the Road to Zero Strategy and Action Plan. I understand you are already familiar with the Strategy and Action Plan.

The Ministry publishes our Official Information Act responses and the information contained in our reply to you will be published on the Ministry website. Before publishing we will remove any personal or identifiable information.

You have the right under section 28(3) of the Act to make a complaint to the Ombudsman about the treatment of your request for information, who can be contacted at info@ombudsman.parliament.nz.

Thank you for writing to Te Manatū Waka with your queries. I trust you will find the above is of assistance.

Ngā mihi,

A handwritten signature in black ink, appearing to read 'M. Skinner', with a stylized flourish at the end.

Matthew Skinner
Manager Mobility and Safety
Ministry of Transport

Bus safety in New Zealand

Executive Summary

1. The Ministry of Transport (the Ministry), with input from the NZ Transport Agency (NZTA), has compiled factual information on bus safety following the bus crashes in July and August, including:
 - 1.1. a summary of known facts about the three bus crashes
 - 1.2. statistical information on the bus fleet and bus safety
 - 1.3. an overview of the regulatory framework for bus safety
 - 1.4. an overview of contractual safety obligations on school and urban bus operators
 - 1.5. a summary of strategic work underway related to bus safety.

Summary of the facts on the bus crashes in July/August

2. The three recent crashes all involved Mitsubishi Fuso buses manufactured between 1991 and 1995. There were no driver licence breaches and all vehicles had a current certificate of fitness (CoF).
3. The NZ Police investigation has concluded that in the crash on Mount Ruapehu there was no evidence of mechanical fault with the bus, and the NZ Police will not lay any criminal charges in relation to the crash. The crash has been referred to the Coroner. The NZTA is still investigating the Ruapehu Alpine Lifts (RAL) vehicle fleet.
4. The Taranaki and Manawatu crashes are still under investigation by the NZ Police. However, the NZTA does not suspect that vehicle design or manufacturing deficiencies contributed to the crashes.

Bus fleet statistical information

5. The majority of the bus fleet is less than 20 years old, and a large proportion (around 40 percent) is less than 10 years old. Newer buses do the bulk of the kilometres travelled. Buses manufactured since 2000 make up 87 percent of total vehicle kilometres travelled by buses. Mitsubishi Fuso buses make up 15 percent of the bus fleet, and are the second most common make of bus in New Zealand.
6. Between 2010 and 2014 travelling as a bus passenger was the safest mode of road transport and was significantly safer than travel as a car driver or passenger.

Regulatory framework

7. Bus operation has a range of regulatory controls, with requirements covering vehicles, operators and drivers.
8. Buses must meet a range of design standards before entering the fleet, and must meet additional age, comfort, quality and design requirements to obtain public transport funding. Buses must also be regularly inspected (generally every six months) by an approved vehicle inspector.

9. Operators must hold a transport service licence to ensure they are fit and proper in their conduct of a passenger service.
10. Drivers must be licensed to ensure they meet safety, competence, fitness and propriety standards for driving a bus and must meet worktime and logbook requirements for fatigue management.

Contractual safety obligations

11. School bus service providers contracted by the Ministry of Education (MoE) are required to meet additional standards, including vehicle age (not more than 26 years), vehicle telematics, driver training, and annual medicals for drivers.
12. Similarly, urban bus services contracted by a regional council must also meet additional safety standards, including a vehicle age limit of 20 years. Auckland Transport also requires the average age of their bus fleet to be less than 10 years old and requires closed-circuit television (CCTV) cameras to be installed in all buses.

Strategic work underway

13. There are several strategic projects underway that relate to bus safety, including:
 - 13.1. the development of the new road safety strategy
 - 13.2. the response to concerns about the NZTA's regulatory performance
 - 13.3. the Heavy Vehicle Entry Certification review
 - 13.4. the Land Transport: Passenger Service Vehicle Rule 1999 review
 - 13.5. the 2021 school bus tender
 - 13.6. proposed changes to driver licensing.

Introduction

14. The safety of buses and bus services can be considered from several perspectives. These include:
 - 14.1. the driver of a bus
 - 14.2. a passenger on-board a bus
 - 14.3. customers boarding or alighting from buses, or making their way to a bus stop or pick up location
 - 14.4. other road users interacting with buses, while moving and stationary.
15. The focus of this report is the safety of passengers on-board buses. However, many of the measures that are in place to manage the safety of passengers also help ensure safe outcomes from these other perspectives.
16. The Taranaki and Manawatu crashes are still under investigation by the NZ Police and the Ruapehu Alpine Lifts (RAL) vehicle fleet is still under investigation by the NZTA. The Mount Ruapehu crash has also been referred to the Coroner. While these investigations are underway we have limited information on the potential causes or circumstances surrounding the crashes. As a result the Ministry, with input from the NZTA, has compiled factual information on bus safety, including:
 - 16.1. a summary of known facts about the bus crashes
 - 16.2. statistical information on the bus fleet and bus safety
 - 16.3. an overview of the regulatory framework for bus safety, including safety standards for vehicles, operators, and drivers
 - 16.4. an overview of contractual safety obligations on school and urban bus operators
 - 16.5. a summary of strategic work underway related to bus safety.
17. The Ministry is aware of concerns relating to the NZTA's performance of regulatory functions. The overview of the regulatory framework in this report reflects the systems in place, but generally does not comment on if/how these systems are performing. Details of the response to concerns about the NZTA's regulatory performance are provided on page 15.

Recent bus crashes - summary of known facts

Mount Ruapehu crash – 28 July 2018

18. The known facts about the Mount Ruapehu crash are:
 - 18.1. the vehicle was a 1994 Mitsubishi Fuso, first registered in New Zealand on 29 July 2004
 - 18.2. NZ Police confirmed that no driver licence breaches were detected

- 18.3. the vehicle had a certificate of fitness (CoF) issued on 31 May 2018, which was current at the time of the crash
- 18.4. NZ Police has completed its investigation. NZ Police have concluded that there was no evidence that a mechanical failure caused the accident and will not lay any criminal charges in relation to the crash
- 18.5. NZ Police will continue to support other agencies in their ongoing investigations.
- 19. Following the fatal crash on 28 July 2018, the NZTA initiated a fleet audit of all buses being operated by RAL, excluding the bus involved in the accident. RAL was the transport service license holder responsible for operating the bus involved in the accident. The audit resulted in RAL being issued with a Notice of Proposal to have their transport service license suspended. During the period available for RAL to make a submission in response to the Notice of Proposal, the operator voluntarily suspended their passenger service licence. As a result, it is no longer able to operate passenger bus services.
- 20. The NZTA was not aware of any issues with RAL before the crash in July 2018. The NZTA is continuing its investigation into the RAL vehicle fleet.

Manawatu crash – 2 August 2018

- 21. The known facts about the Manawatu crash are:
 - 21.1. the vehicle was a 1991 Mitsubishi Fuso, first registered in New Zealand on 29 November 2005
 - 21.2. NZ Police confirmed that no driver licence breaches were detected
 - 21.3. the vehicle had a CoF issued on 11 July 2018, which was current at the time of the crash.

Taranaki crash – 8 August 2018

- 22. The known facts about the Taranaki crash are:
 - 22.1. the vehicle was a 1995 Mitsubishi Fuso, first registered in New Zealand on 20 December 2007
 - 22.2. NZ Police confirmed that no driver licence breaches were detected
 - 22.3. the vehicle had a CoF issued on 10 July 2018, which was current at the time of the crash.
- 23. As outlined above, the Taranaki and Manawatu crashes are still under investigation by the NZ Police, the Mount Ruapehu crash has been referred to the Coroner, and the RAL vehicle fleet is still under investigation by the NZTA. However, the NZTA does not suspect that vehicle design or manufacturing deficiencies contributed to the crashes.
- 24. The NZTA has also confirmed that there is no link between the vehicles involved in the crashes and heavy vehicle specialist certifiers or other certification agents (such as agents completing CoF checks) that are being investigated by the NZTA.

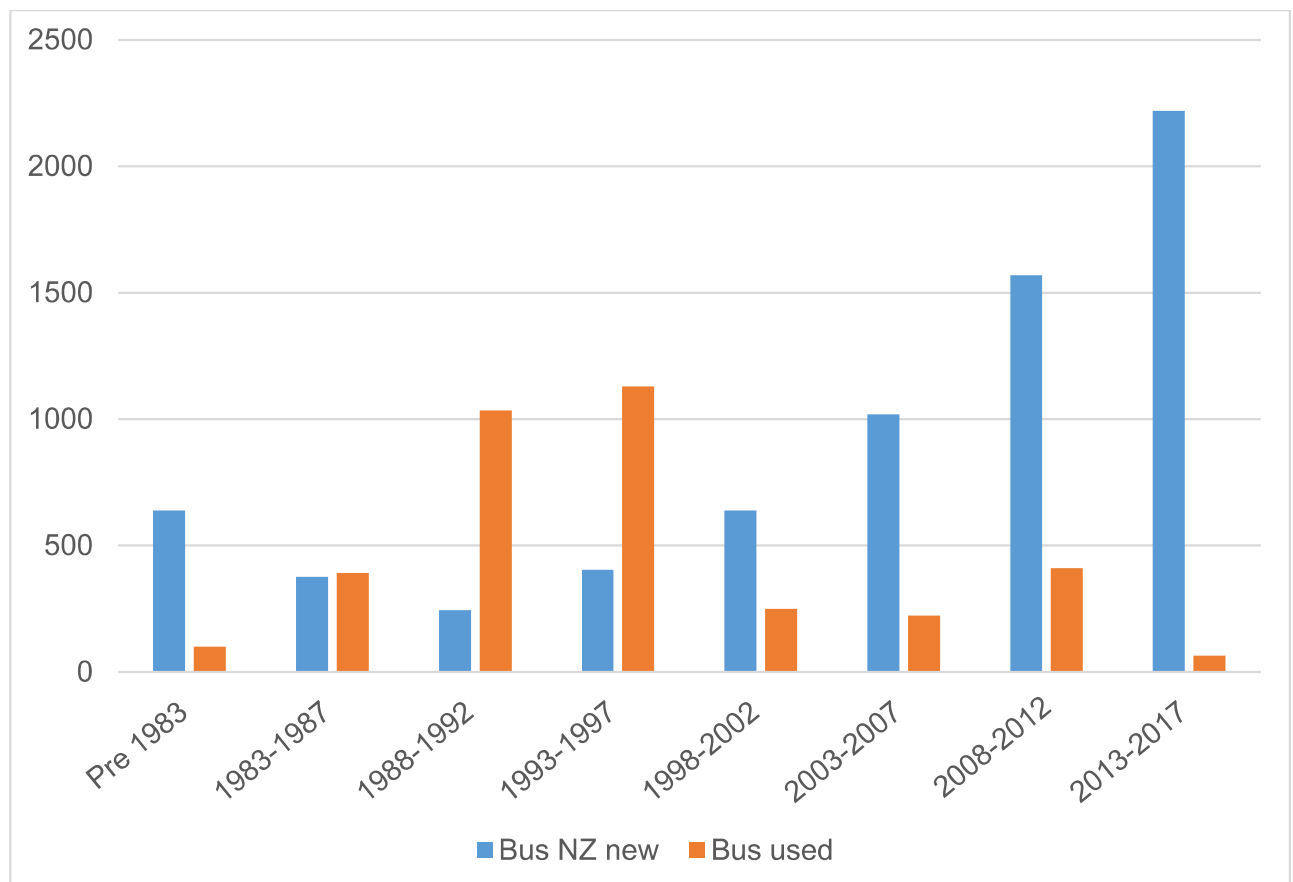
25. The NZTA also has no record of any specific issues with the operators of the vehicles prior to the crashes taking place.
26. Until the investigations by the NZ Police, the NZTA, and the Coroner are complete, no further details of the crashes will be available and there will be no separate investigation into the crashes beyond this report.

Bus fleet information and safety data

Vehicle fleet

27. Figure 1 below shows that the majority (around 60 percent) of the bus fleet is less than 20 years old. A large proportion (around 40 percent) is less than 10 years old.
28. New Zealand new buses of all age groups typically travel more than used imports. Buses manufactured since 2000 travel significantly more per vehicle, and make up the vast majority (87 percent) of total vehicle kilometres travelled by buses.
29. The three buses involved in the crashes in July and August were all Mitsubishi Fuso vehicles. Mitsubishi Fuso are the second most common make of bus in New Zealand. Currently there are 1,727 Mitsubishi Fuso buses in use in New Zealand, representing 15 percent of the bus fleet. MAN buses are the most common buses in use in New Zealand, with 1,867 vehicles. In total there are 11,216 buses in our vehicle fleet.

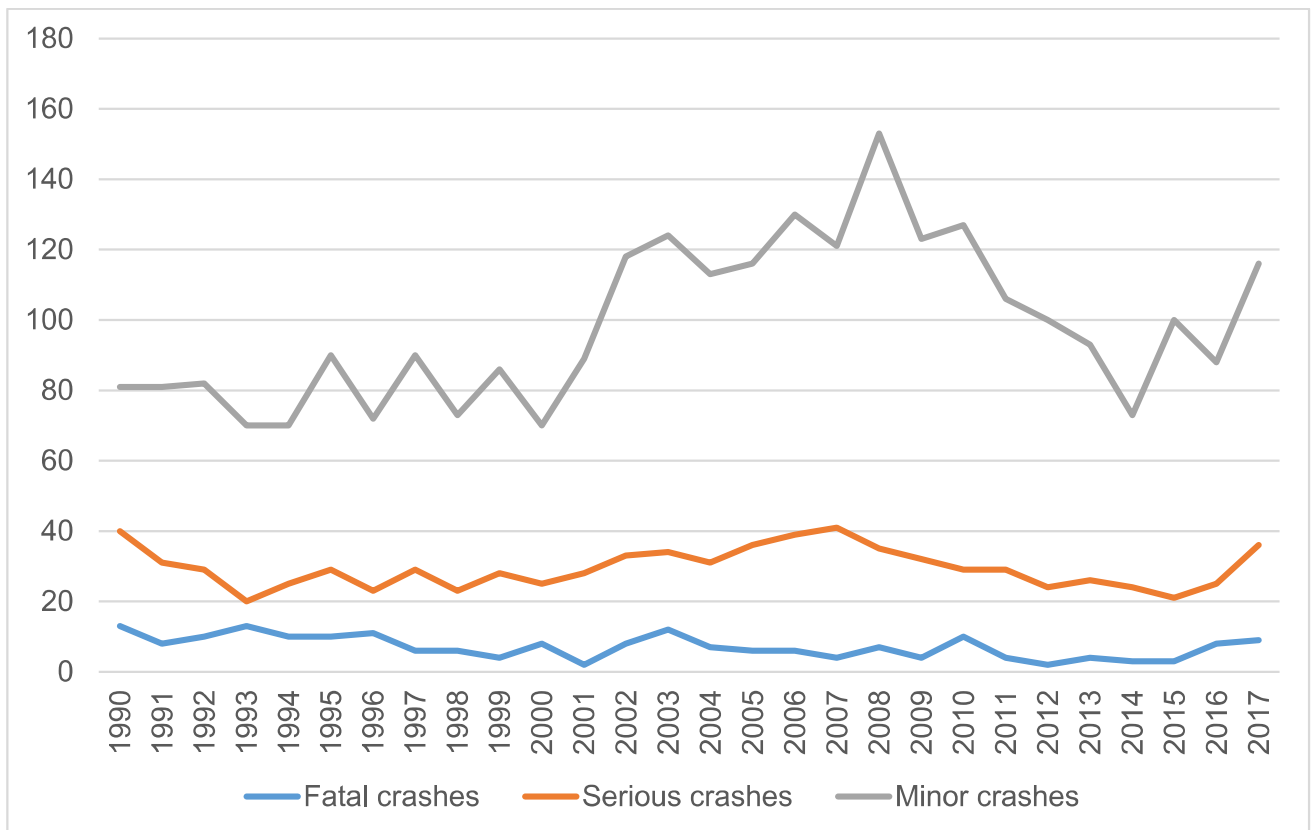
Figure 1: Age profile of the New Zealand bus fleet in 2017



Trends in crashes involving buses

30. Figure 2 shows there has been no clear long-term trend in the number of fatal, serious, and minor crashes involving buses¹ in New Zealand. The numbers have fluctuated year to year. Over the last 28 years there has been an average of seven fatal crashes, 29 serious crashes, and 98 injury crashes involving buses each year. 2017 had a higher than average, but not unprecedented, number of crashes involving buses.
31. Between 2001 and 2016 the bus fleet more than doubled from 5,022 to 10,268. Kilometres travelled by buses almost doubled over the same period. However, trends in the number of crashes have not reflected this growth. Rather than increasing to match growth in the bus fleet over this period, the number of crashes involving buses has fluctuated.
32. Fatal and injury crashes involving a bus have generally represented between 1 and 1.5 percent of total annual fatal and injury crashes since 1990.

Figure 2: Fatal, serious, and minor crashes involving buses since 1990



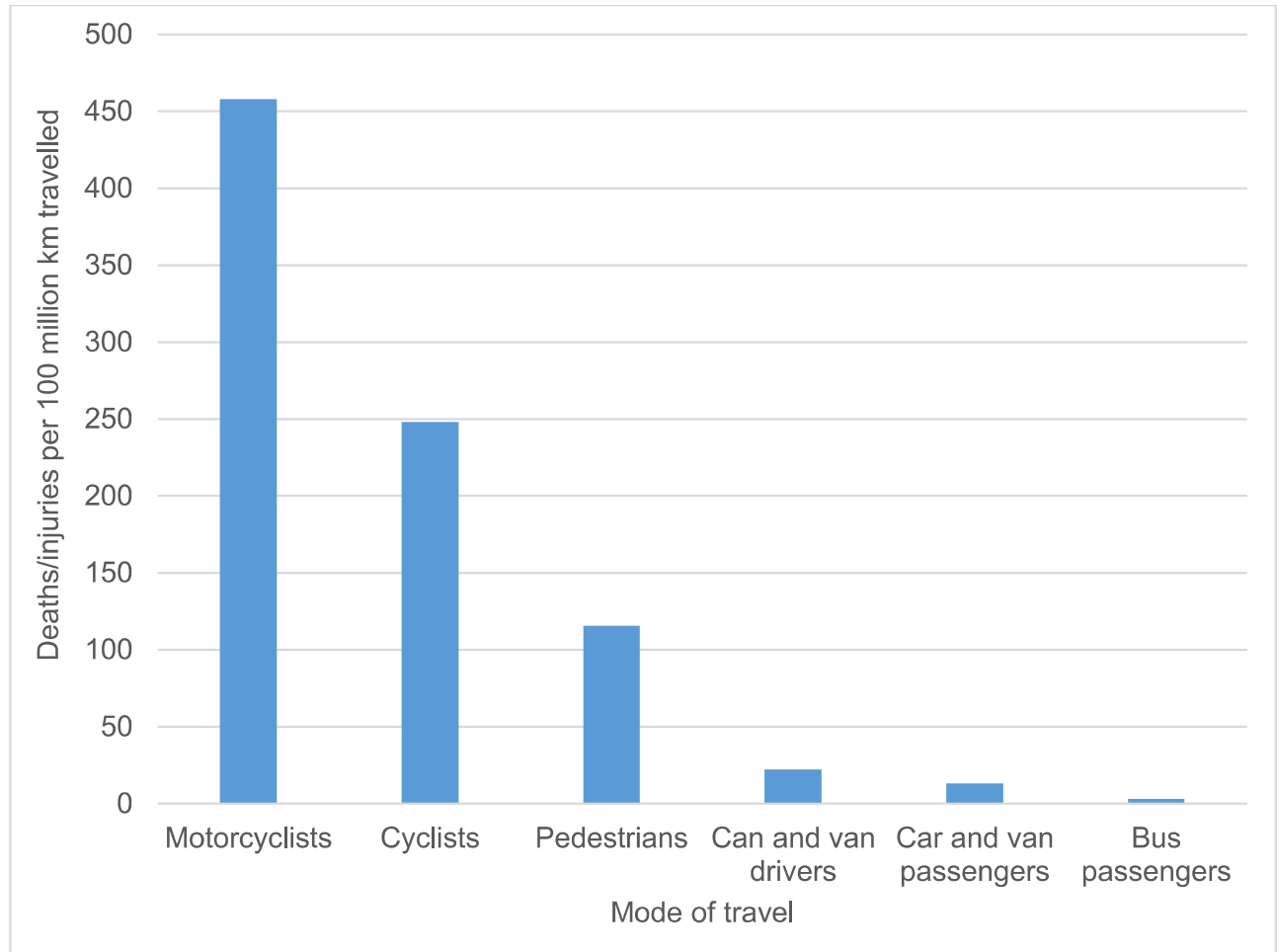
Safety of passengers travelling by bus

33. Between 2010 and 2014 travelling as a bus passenger was the safest mode of road transport on the basis of both per kilometre travelled and per hour spent travelling. Figure 3 shows that during 2010 to 2014 travel as a bus passenger was significantly safer than travel as either a car passenger or car driver.

¹ This data records whether a bus was involved in a crash regardless of whether there was any fault with the bus or from its driver that contributed to the crash.

34. For every 100 million kilometres travelled 22 car drivers were killed or injured, 13 car passengers were killed or injured. This compares to three bus passengers for every 100 million kilometres travelled.

Figure 3: Deaths and injuries in motor vehicle crashes per 100 million km travelled (July 2010 - June 2014)



Vehicle safety standards

Vehicle entry standards

35. Before being used on the road, all buses must be checked and certified to ensure they meet all the vehicle requirements in Land Transport Rule: Passenger Service Vehicles 1999 (the PSV Rule). The safety requirements for buses under the PSV Rule are greater than those for other vehicles. The PSV Rule covers:
- 35.1. entrances and exits (doors and doorways)
 - 35.2. aisles (space, steps and ramps)
 - 35.3. seating (passenger and drivers' seats, access and vision)
 - 35.4. emergency exits (location, signs and design)
 - 35.5. safety features (vehicle body, fire-fighting, baggage, signage and more)

- 35.6. stability and structural strength (including roof-racks)
 - 35.7. special equipment for people with disabilities (including wheelchair hoists and ramps)
 - 35.8. certificate of loading (CoL) (maximum number of passengers and maximum loaded weight).
- 36. The standards referenced in the PSV Rule reflect international practice as issued by the jurisdiction from which the vehicle is sourced at the time of manufacture. The European Regulations, European Directives, Japanese domestic standards, Australian Design Rules and Australian and New Zealand standards are all referenced as the required standards for buses used in New Zealand.
 - 37. The NZTA is currently reviewing the policy settings behind the PSV Rule. For details see page 16.

Certificates of loading (CoL)

- 38. The PSV Rule sets out the requirements for vehicle loading. These include the number of seated and standing passengers, and the weight limit of the vehicle – its gross vehicle mass (GVM). The CoL must be displayed in a vehicle and be clearly visible to the driver and passengers.
- 39. The CoL specifies the maximum number of seated and standing passengers (excluding the driver) in age categories of ‘adult’, ‘secondary’, ‘intermediate’ and ‘primary’. The maximum number of passengers is calculated by a NZTA-approved inspector, such as Vehicle Testing New Zealand.
- 40. When determining the maximum number of seated passengers for a particular bus the PSV Rule allows three primary or intermediate school children to sit in the same space as two adults or secondary school students. This requirement was made when buses generally had bench seats, and it recognised the seating capacity (the width of a bench seat and the size of a child) of buses of that time. The requirement still applies today, even when individual seats are provided. This means some buses, particularly those on school runs, can have three children seated across two formed seats. While less than ideal, the approach has meant there are approximately 30 percent fewer buses needed nationally in school service than would otherwise be the case. In safety terms, the risk of travelling by school bus is still significantly lower than travelling by car, bicycle, or on foot.

Seatbelt requirements

- 41. Seatbelts are not mandatory for buses, although increasingly new buses used for tour and long distance services are equipped with seatbelts. Wearing seatbelts in these vehicles is logical as the vehicles are usually travelling long distances at high speeds where the risks are greater.
- 42. The situation is different for urban buses. Shorter distances, lower speeds and protection provided by the size and mass of a bus, reduce the benefits of seatbelts. Recognising the nature of the transport task and the relatively lower risk to passengers, urban buses typically do not have seatbelts and allow standing passengers. This is a trend observed in many international jurisdictions, including Australia, the United Kingdom, and the United States of America.

43. New Zealand bus fleet data shows that the majority of passenger injuries are minor and would not have been prevented by wearing seatbelts.
44. Where buses are fitted with seatbelts, the seatbelts must meet all legal requirements of the PSV Rule and Land Transport Rule: Seatbelts and Seatbelt Anchorages 2002. Seatbelts are inspected at entry and in-service as part of a CoF.
45. As part of the development of the new road safety strategy, we are giving consideration to whether seatbelts should be made mandatory on some or all buses entering New Zealand. Given the age of buses in New Zealand, retrofitting seatbelts would be difficult and costly with floor and superstructure strengthening required. For more information on the road safety strategy, see page 15.

Requirements for urban buses (RUB)

46. In addition to the PSV Rule, buses used for regional council contracted public transport services must comply with the Requirements for urban buses (RUB). The RUB is New Zealand's national standard for urban bus quality. It has been developed by the NZTA, the Bus and Coach Association NZ (BCA), public transport operators, bus builders and suppliers, Auckland Transport, Greater Wellington Regional Council and Environment Canterbury. Regional councils and Auckland Transport use the RUB in their urban bus contracts so that they can access NZTA investment in these services.
47. The RUB has comfort and access requirements (e.g. wheelchair access) over and above those in the PSV Rule. The RUB also establishes vehicle age requirements. See the *Contractual safety obligations* section below for details.

Certificate of fitness (CoF) inspections

48. In general, all buses must have a CoF issued every six months. However, the NZTA can require a CoF every three months for operators that consistently fail to maintain acceptable levels of safety compliance. The increase in frequency of CoF inspections for these operators is accompanied with guidance and mentoring from NZTA officers to encourage improved performance. They can also offer 12 monthly CoF inspections to operators with a consistently high level of vehicle safety compliance. A CoF is a regular check to ensure that the vehicle meets safety standards in the following areas:
 - 48.1. brake condition and performance²
 - 48.2. tyre condition (including tread depth)
 - 48.3. structural condition (rust is not allowed in certain areas)
 - 48.4. certificate of loading (display and validity)
 - 48.5. lights (all bulbs working and compliant lights)
 - 48.6. glazing (a safe windscreen and emergency exit windows with correct glass)
 - 48.7. fire extinguisher (one is in place and in the required condition)

² New Zealand applies a very thorough semi-laden brake test to heavy vehicles (including buses) that means heavy vehicle brakes are periodically performance-tested to a high standard.

- 48.8. windscreen washers and wipers
- 48.9. doors (open and close safely)
- 48.10. emergency exits (accessible and operational)
- 48.11. seatbelts (if fitted, not faded or damaged, and buckles that work properly)
- 48.12. airbags (if fitted)
- 48.13. steering and suspension (must be safe and secure).

Police and NZTA inspections

- 49. In addition to CoF requirements, a bus must also pass 'walk-around' condition checks that the NZTA or Police carry out during random roadside inspections. Any defects identified during these checks can result in an instruction to proceed to the nearest place of repair. If the fault is safety critical, a non-operation order may be issued.
- 50. Roadside inspections can be conducted by a sworn NZ Police Officer, a NZ Police Commercial Vehicle Safety Team (CVST) Vehicle Safety Officer or a NZTA Vehicle Specialist.
- 51. All CVST Vehicle Safety Officers and Vehicle Specialists are "A" Grade automotive engineers or have a similar qualification.
- 52. Inspections can vary from level 1 to 7, depending on the location of the inspection, the risk profile of the vehicle and the experience/qualifications of the inspector. Depending on the level of inspection, checks may include:
 - 52.1. obvious visual vehicle defects
 - 52.2. driver compliance checks
 - 52.3. various mechanical checks
 - 52.4. break testing
 - 52.5. a vehicle emission check for excessive exhaust smoke and/or noise.

Operator safety standards

Transport service licence

- 53. A transport service licence (TSL) is required before an individual or business can operate a bus as a passenger service. This requirement is intended to provide consumer protection and safety by ensuring passenger service operators are fit and proper in their behaviour and conduct. Passenger service operators are held to a higher standard than private vehicle operators in part as they generally drive more frequently and therefore pose a greater road safety risk.
- 54. As part of the application process for a TSL to operate a bus service, the TSL holder, or a nominated person in control of the service, must complete an exam to test their knowledge of the laws and practices that relate to operating a bus service.

Operator Rating System

55. To further protect consumers and ensure road safety, the Operator Rating System (ORS) was introduced in 2008 for all heavy goods and large passenger service (bus) operators. The ORS was designed to encourage transport operators to make their vehicles and driving practices as safe as possible by giving each operator an 'Operator Safety Rating'. Operator Safety Ratings describe an operator's level of regulatory compliance that contributes to their safety risk.
56. ORS scores range from between one and five stars, based on how an operator has been assessed in safety-related events over a given 24-month period. The ratings are based on compliance with the following safety-related events:
 - 56.1. CoF inspections
 - 56.2. roadside inspections
 - 56.3. relevant traffic offences and infringements.

Driver safety standards

Heavy vehicle driver licensing

57. To operate a bus the driver must have at least a full class 2 driver licence. This is based on the requirement that the bus has a gross laden weight of between 6,000kgs and 18,000kgs. The class 2 licence has two stages 'learner' and 'full'. A learner class 2 licence is obtained when:
 - 57.1. a full class 1 licence has been held for at least six months
 - 57.2. a medical certificate has been provided within five years
 - 57.3. a theory test is passed that covers work time limits, vehicle weight restrictions, and speed limits.
58. A full class 2 licence is obtained when:
 - 58.1. a medical certificate has been provided within five years
 - 58.2. a learner class 2 licence has been held for at least six months and then a practical driving test in a class 2 vehicle is passed, or
 - 58.3. a learner class 2 licence is held and an approved training course for progression to a full class 2 licence is passed.
59. The rationale behind the current heavy vehicle licence regime is based on the principle of progression. A driver must have sufficient experience of driving a light vehicle before they can obtain a class 2 licence. Progression to class 4 (larger single vehicles) and class 5 (larger combination vehicles) requires the driver to first hold a full class 2 licence.
60. There are changes proposed to heavy vehicle driver licensing. See page 16 for details.

Passenger (P) endorsement requirements

61. In addition to driver licensing requirements, anyone driving a bus for gain or reward is required to hold a P endorsement. The P endorsement requirement is designed to ensure the safety of passengers by checking the criminal history, traffic offences, and medical health of drivers. More specifically, to be eligible for a P endorsement drivers must:
- 61.1. have held a full New Zealand licence for two years³
 - 61.2. complete a fit and proper person check, which is carried out by the NZTA and incorporates a vetting process to identify transport offences, criminal convictions, and any history of behavioural problems
 - 61.3. provide a medical certificate and meet eyesight requirements.
62. Drivers can choose to get a P endorsement that lasts for one year or five years.

Work time and logbook requirements

63. The Land Transport Rule: Work Time and Logbooks 2007 (the Work Time and Logbooks Rule) sets requirements that are designed to manage fatigue for drivers of heavy and commercial transport service vehicles. Bus drivers are subject to the following work time limits:
- 63.1. A driver must have a break of at least half an hour after 5.5 hours of work.
 - 63.2. A driver can work a maximum of 13 hours in any cumulative 24 hour period and then they must take a continuous break of at least 10 hours (as well as the standard half-hour breaks every 5.5 hours).
 - 63.3. A cumulative work day is a period during which work occurs, and that:
 - 63.3.1. does not exceed 24 hours, and
 - 63.3.2. begins after a continuous period of rest time of at least 10 hours.
 - 63.4. Drivers can accumulate a total of 70 hours work time (known as a 'cumulative work period') before they must take a continuous break of at least 24 hours.
64. Tour bus operators may seek a variation to these work time limits from the NZTA for drivers of multi-day tours.
65. Compliance with the work time limits set out above is supported by a requirement to keep a logbook. Drivers of heavy vehicles and vehicles used for a transport service are required to keep logbooks. Logbooks must:
- 65.1. show the extent of the cumulative work day and the cumulative work period
 - 65.2. record when the most recent 10-hour break was taken
 - 65.3. record the period back to (and including) the last 24-hour break

³ Drivers with overseas licenses do not meet this requirement. However, it is possible for drivers with overseas driving experience to apply for an exemption.

- 65.4. be maintained until the next 24-hour break is taken at the end of that cumulative work period.
- 66. However, there are several exemptions from these logbook requirements that apply to bus and coach drivers, including:
 - 66.1. drivers of scheduled urban services provided the routes do not exceed 100km and are registered with the relevant regional council. This exemption extends to urban bus drivers doing off-peak charter work between 8am and 6pm, within 50km of the depot.
 - 66.2. drivers of school buses do not have to keep a logbook.
- 67. The logbook exemptions for urban and school bus drivers reflect the nature of these services. Urban bus drivers are required to carry a document that shows the routes and times allocated to that driver. School bus drivers typically have two relatively short periods (1-2 hours) of work time in a day, with a substantial break in between.
- 68. Logbook compliance checks are carried out by either the NZTA or Police during audits and roadside weigh station inspections. Chain of responsibility requirements for operators came into force on 1 October 2007. These requirements mean anyone who employs or controls drivers will need to be aware of these provisions and breaches could incur a fine of up to \$25,000 if convicted. Logbook entries can be compared to GPS records for the bus and wage records for drivers, to assist with NZTA investigations. Logbook omissions and work time breaches identified during checks by the NZTA or Police can result in fines and demerit points.
- 69. A comparison of international driver safety standards is provided in Appendix 1.

Contractual safety obligations

Ministry of Education (MoE) contracted school buses

- 70. The MoE provides school transport services through service contracts with operators, and through a funding agreement with schools to provide their own transport (referred to as Direct Resourcing). The information outlined below describes services contracted by the MoE, rather than through Direct Resourcing.
- 71. Under current MoE service contracts the maximum age of individual school buses cannot exceed 26 years. This age limit is a proxy for emissions standards. The older age limit for school buses than for urban services (20 years) has allowed some operators to transition vehicles from typically high usage urban services to typically low usage school transport services. The current school bus fleet includes a mixture of purpose-built school buses and repurposed urban buses.
- 72. In addition to general health and safety obligations under the Health and Safety at Work Act 2015 and legal obligations under land transport rules, school transport operators are required to undertake Police vetting of new and existing drivers under the Vulnerable Children Act 2014. The MoE school bus service contracts also provide further checks and balances to ensure the safety of operators and drivers, which are summarised below:
 - 72.1. all school buses are required to have telematics systems installed, which allow the MoE to monitor vehicle location, excess speed, harsh braking, and sharp cornering

- 72.2. all operators are required to have a drug and alcohol policy
- 72.3. all drivers are required to undertake an annual medical to ensure they are fit to drive school transport services
- 72.4. all drivers are required to complete unit standards for the National Certificate in Passenger Service, including hazard identification and risk reduction for safe driving, first aid, rigid vehicle handling and dynamics, and fatigue management
- 72.5. service contracts can be terminated if any vehicle from in the service fleet is placed on 3-month CoF checks or if a vehicle is ordered off the road by the NZTA
- 72.6. operators can be required to stand-down drivers indefinitely, if the MoE considers that the drivers “may pose a risk to the health and safety of students or to the Ministry’s reputation as an operator of a safe service”.
- 73. Since 1 July 2017, the MoE has also taken direct responsibility for contract management and safety audit of operators, a function that had previously been outsourced.

Regional council contracted urban bus services

- 74. The RUB requires that urban buses contracted by regional councils must be less than 20 years old. The RUB suggests it is ‘good practice’ to have an average age of the urban bus fleet of no more than 10 years by 1 January 2017. This policy has been adopted by Auckland Transport and Greater Wellington Regional Council, which require each operator’s fleet to have an average age of less than 10 years on an ongoing basis.
- 75. Some regions, including Auckland and Wellington, have set their own vehicle quality standards, which often differ or go beyond what is required in the RUB. Auckland’s vehicle quality standards include safety features such as braking requirements, air suspension requirements, and door safety requirements.
- 76. In addition to meeting the requirements of the Health and Safety at Work Act and land transport rules, Auckland Transport has the following contractual checks and balances to ensure the safety of urban bus services:
 - 76.1. Drivers are trained to comply with the National Certificate in Passenger Service (see paragraph 72.4 above for more details) or equivalent standard.
 - 76.2. Bus operators are required to notify Auckland Transport of all health and safety incidents or accidents resulting in serious harm to employees or harm to a member of the public. Non reporting of accidents triggers a Cure Plan, which details the actions to be taken by the operator to prevent a re-occurrence.
 - 76.3. Buses are required to have multiple closed circuit television (CCTV) cameras installed, including cameras to monitor the entrance area and driver interface and forward facing cameras to monitor the road ahead of the vehicle.

- 76.4. Auckland Transport can cancel service contracts when there are repeated contract breaches, including safety related breaches.

Current strategic work underway

Road safety strategy

77. The development of a new road safety strategy provides an opportunity to assess many aspects of bus safety. The Ministry has worked through a reference group process with key stakeholders and other government agencies to discuss issues and potential initiatives to improve road safety. There were five reference groups covering various aspects of road safety, including speed, users, infrastructure, vehicles, and workplace related matters.
78. The Vehicles, Vehicle Standards and Certification reference group discussed options to improve the safety of vehicles, including buses. The Vehicles as a Workplace reference group also discussed fatigue management, including work time and logbooks, for commercial and heavy vehicle transport operators.
79. The Ministry is in the process of finalising outcomes reports for the reference groups, which will be published in early 2019.

Response to concerns about the NZTA's regulatory performance

80. The NZTA Board recently advised the Minister of concerns about how the NZTA's regulatory function has been performing. The concerns relate primarily to regulatory non-compliance cases the NZTA has not managed in a timely or responsive way. The non-compliance cases are across a range of the NZTA's regulatory functions, and relate to the certification and assurance of third party delivery agents, including vehicle certifiers, training course providers, licensing agents, road transport operators and drivers. The NZTA is working to address the backlog as quickly as possible and to understand the underlying factors that have contributed to the regulatory performance issues.
81. The Ministry, as the NZTA's monitor, is also reviewing the performance of the NZTA's regulatory functions. The Review will undertake an assessment of all components of the NZTA's regulatory capability and delivery. The Terms of Reference for the Review can be found here: <https://www.beehive.govt.nz/release/review-nzta-regulatory-performance>
82. Separate to the Review, the Ministry is developing a regulatory stewardship programme to ensure the regulatory framework for the transport system is modern, fit for purpose and delivers the intended policy outcomes. As part of this work, the Ministry is progressing a project to ensure that the three transport regulators have the appropriate tools, systems and resources to give effect to their regulatory functions and responsibilities.

Heavy Vehicle Entry Certification (HVEC) review

83. In response to some new buses imported in late 2017 potentially not meeting certain New Zealand vehicle requirements, the NZTA began a review of the Heavy Vehicle Entry Certification (HVEC) system.
84. This review is in progress and includes both new and used heavy vehicles. The purpose of the review is to identify opportunities to improve the entry certification system and to provide increased assurance in the standard of heavy vehicles

entering New Zealand with a robust, risk-based approach, which treats all providers fairly. To do this, the NZTA commissioned an internal step-by-step documentation of the process, and consulted with industry to develop a series of recommendations to improve the HVEC process.

85. Following the completion of NZ Police and NZTA investigations into the three crashes, the learnings will be considered alongside the wider HVEC recommendations.
86. The recommendations from the HVEC review will be considered in the context of the broader NZTA work on regulatory performance, which seeks to ensure that all compliance functions (including heavy vehicles) are performing to the standard required.

Review of the PSV Rule

87. The NZTA is currently reviewing the policy settings behind the PSV Rule. The PSV Rule has not been substantially reviewed since it was introduced in 1999, and many of the provisions in the PSV Rule were carried over from earlier regulations dating back decades. Some of the requirements in the PSV Rule are covered in other rules and other parts are out of date and incompatible with current technology. This project is a fundamental review of the PSV Rule, and will consider what rules are required for a vehicle based solely on the nature of how it is used (i.e. as a passenger service vehicle).

Proposed changes to driver licensing

88. Early in 2016, the Ministry and the NZTA consulted the public on proposed amendments to the Land Transport (Driver Licensing) Rule 1999 (the Driver Licensing Rule). The proposed changes would improve the efficiency of the driver licensing system and support a more productive commercial driving sector, while maintaining road safety.
89. The proposed amendments included streamlining progression through heavy vehicle licence classes. This proposal would allow potential bus drivers to obtain the required licences in the same timeframe whether they choose to undertake a practical test or to complete an approved course. Currently drivers that undertake approved courses can progress in a shorter timeframe. Drivers over 25 would also not need to wait for 3 months before obtaining a learner licence in the next licence class. The implications would be most significant for potential drivers of larger buses (over 18 tonnes gross laden weight), which require a class 4 licence to drive.

Employment Relations Amendment Bill

90. The Employment Relations Amendment Bill received Royal Assent on 11 December 2018 and will change minimum entitlements for employees. When the changes commence on 6 May 2019 bus drivers will be entitled to additional breaks over the course of typical driving shifts. These breaks will supplement the worktime and rest break requirements in the Work Time and Logbooks Rule.

2021 school bus tender

91. All MoE school bus contracts expire on 31 December 2020. The MoE is currently preparing to tender for school bus services in 2019, providing enough lead-time to commence services for the first school term in 2021.

The Bus and Coach Association NZ (BCA) Alpine Code of Practice

92. The BCA is developing a voluntary Code of Practice (COP) to encourage and embed best practice in alpine bus operations. The COP will be developed by both BCA and non-BCA members that frequently operate in alpine areas. It will cover all aspects of operations in these areas, including vehicle quality standards, maintenance requirements and driver training.
93. The BCA regularly reviews and refreshes guidelines for members. As a non-government organisation they cannot mandate adherence to or adoption of any guidelines they develop, hence the COP will be voluntary. In recognition of the multitude of players in the alpine travel industry, non-BCA member organisations are able to participate in the development and adoption of the COP.

Appendix 1: International comparison of driver safety standards

Driver safety standards in Australia

94. Some requirements to drive a bus for gain or reward in Australia differ between states. However, in general the standards are comparable to those in New Zealand.
95. Drivers must have the relevant class of driver licence and have some form of driver accreditation or endorsement. To be eligible for the accreditation/endorsement they typically need to:
 - 95.1. hold a full Australian licence for a minimum period (varies from six months to one year)
 - 95.2. meet minimum age requirements (e.g. 20 years of age in New South Wales)
 - 95.3. undergo a criminal history check and be medically fit.
96. The National Heavy Vehicle Regulator sets national work time limits for bus drivers. These limits are quite similar to New Zealand's work time limits, with relatively small variations in the timing and duration of breaks. In New Zealand rest time cannot be taken in a moving work vehicle, whereas in Australia 'stationary rest time' is only required for longer rest breaks. The work time limits in Australia are as follows:
 - 96.1. after 5.25 hours drivers are required to take a 15 minute break
 - 96.2. must take at least 30 minutes rest time in a work period of 8 hours, in blocks of at least 15 minutes
 - 96.3. 10 hours work time in 11 hours, 60 minutes rest in blocks of at least 15 minutes
 - 96.4. 12 hours work time in 24 hours, required to have 7 continuous hours stationary rest time
 - 96.5. over the course of 7 days bus and coach drivers are required to have 6 night rest breaks with at least 7 hours stationary rest time.
97. All bus drivers who drive 100km or more from their home base are required to keep a logbook (referred to as a 'work diary'). Drivers of contracted bus services in New South Wales are not required to keep a logbook under a state based exemption from Heavy Vehicle National Law.

Work time limits in the European Union

98. The work time limits in the European Union differ significantly from the limits in New Zealand, with shorter durations of work between rest breaks and longer periods of rest between periods of driving. The following limits apply:
 - 98.1. after 4.5 hours drivers are required to take at least a 45 minute break, separable into 15 minutes followed by 30 minutes
 - 98.2. daily driving periods must not exceed 9 hours, except for twice a week when it can be extended to 10 hours

- 98.3. 11 hours of daily rest, with an exemption of going down to 9 hours rest three times a week
- 98.4. total weekly driving time may not exceed 56 hours and total fortnightly driving time must not exceed 90 hours.



MINISTRY OF TRANSPORT REPORT

Subject: VEHICLE POWER RESTRICTIONS FOR YOUNG DRIVERS
Date: 19 March 2010 **Docmin No.:** WGTA12426
Attention: Hon Steven Joyce (Minister of Transport)
Priority: Medium **Security Level:** In-Confidence
Deadline: Wednesday 31 March

Reason for Deadline: To consider in conjunction with the Cabinet paper: *Safer Journeys* - Increasing the safety of young drivers (WGTA12433)

Purpose of Report

1. To outline the available evidence and research about the effectiveness of vehicle power restrictions for young drivers. You requested this information at the Ministry official's meeting on Tuesday 9 February 2010.
2. This information will assist you with your discussions about the *Safer Journey's* initiative to investigate introducing vehicle power restrictions for young drivers.

Contact for telephone discussion (if required)

Name	Position	Telephone		Suggested First Contact
		Direct Line	After Hours	
David Eyre	Policy Project Manager	s 9(2)(a)		√
Michael Woodside	Senior Adviser	s 9(2)(a)		
Ben Carpenter	Adviser	s 9(2)(a)		

Minister of Transport's Office Actions

- ☐ *Noted* ☐ *Seen* ☐ *Approved*
☐ *Needs Change* ☐ *Referred to*
☐ *Withdrawn* ☐ *Not Seen by Minister* ☐ *Overtaken by events*

Executive Summary

3. Introducing vehicle power restrictions for young drivers was the fourth-ranked initiative from public submissions on the *Safer Journey's* discussion document.
4. Some Australian states impose a high-powered vehicle restriction on novice drivers. At the time of its introduction, it was considered that reducing the power of vehicles driven by new drivers would result in a reduction in crash risk. It is our understanding, from discussions with Victorian officials, that this decision was mainly the result of a large amount of public pressure and political support for such a move. While the restriction has yet to be formally reviewed overseas, research to date suggests there were many implementation difficulties and to date there is no clear evidence of the benefits.
5. Speed is a major contributor to crashes, and the public support for introducing vehicle power restrictions for young drivers may, therefore, exist with a view to reducing the number of crashes involving excessive speed. However, anecdotal evidence in Victoria suggests that many vehicles that have not been restricted are still sufficiently powerful to allow young drivers to lose control of the vehicle. This reflects the fact that vehicle power, and more specifically power-to-weight, is far from being the only factor in loss of vehicle control, and therefore, crash risk.
6. Initial evidence indicates that the size of the 'powerful vehicle' problem is not large and that there are many issues to resolve before considering implementing power restrictions in New Zealand.
7. Officials note that improving the crashworthiness (occupant protection) of vehicles is another option that can have significant effects on young driver safety.
8. The results of research evaluating vehicle power restrictions in Australia by the Monash University are due later this year. Until this time, the Ministry considers that the focus of road safety initiatives for young drivers should be on those outlined in the *Safer Journeys* – Young driver's package, and encouraging young drivers to choose vehicles with more favourable crashworthiness ratings.

Recommendations

9. The recommendations are that you:

- (a) **note** that there have been significant implementation issues when vehicle power restrictions were introduced in Australia, and to date there is no clear evidence of the benefits
- (b) **note** that officials will provide you with a more comprehensive review of the effectiveness of vehicle power restrictions for young drivers after the formal review of such restrictions operating in Australia is completed later this year.

Anna Kennedy
Adviser

David Eyre
Policy Project Manager

Ben Carpenter
Adviser

MINISTER'S COMMENTS:

MINISTER'S SIGNATURE:

DATE:

Vehicle power restrictions for young drivers

Purpose

1. To outline the available evidence and research about the effectiveness of vehicle power restrictions for young drivers. You requested this information at the Ministry official's meeting on Tuesday 9 February 2010.
2. This information will assist you when discussing the *Safer Journey's* initiative to investigate introducing vehicle power restrictions for young drivers.

High power restriction for probationary licence holders in Australia

3. Victoria, New South Wales (NSW), and Queensland have a high power restriction for probationary licence holders. Australia's Graduated Driver Licensing System (GDLS) has three main driver licensing stages: learner, probationary (NZ's restricted), and full.
4. In general, the power restriction means that a probationary licence holder cannot drive a vehicle with:
 - eight or more cylinders
 - a turbocharged or supercharged engine
 - an engine that has been modified to increase its performance
 - any other vehicle that has been identified by Gazette (these are generally high performance six cylinder vehicles).

Vehicles which are excluded from these restrictions are:

- turbocharged or supercharged diesel powered vehicles
 - all models of the Smart car, produced by Mercedes Benz
 - vehicles with low powered turbocharged or supercharged engines as published by Gazette.
5. Exemptions can be obtained for lower performance turbo and supercharged cars. The lower-performance turbocharged or supercharged vehicles that are exempt generally have improved safety features and greater fuel-efficiency.
 6. We have attached a draft comparison of high powered restrictions across Australian states. This attachment is from the draft Austroad's report, which is yet to be finalised.

Research and evaluation of power restrictions

7. A full evaluation of the effectiveness of vehicle power restrictions has not been completed. Monash University intends to complete such an evaluation by the end of 2010. In the interim, we have sought advice and feedback from transport officials who have worked with the only advice we have is the feedback from Victoria officials who have worked with the vehicle restriction.
8. Victoria has modified its vehicle restriction twice since it was introduced in the 1990s. The initial restrictions comprised a restricted list of vehicles – those with greater than 125 kilowatts of power per tonne of weight, or greater than 3,500cc engine capacity per tonne. Because of problems with keeping the restricted list current, and because it was very difficult for Police to enforce at the roadside, enforcement was limited.
9. In 2007, the restricted list was dropped in favour of a characteristics-based system, with the aim of making enforcement easier. This meant that all vehicles with a V8, or a supercharger or turbocharger were off-limits for restricted drivers. This system has also encountered problems, especially with the proliferation of modern vehicles that are using turbo- and super-chargers to increase the power of small capacity engines in the name of improved fuel economy.
10. Because of complaints from the vehicle industry over the limitations of the characteristics-based system, a list of turbo- and super-charged vehicles exempt from the restrictions was introduced. Since July 2009, individuals can also apply for an exemption for their vehicle where they consider the restrictions are not warranted. Up to February 2010, VicRoads had granted about 180 exemptions of this type.
11. VicRoads continues to investigate other options for applying restrictions including re-establishing a power-to-weight based restriction linked to vehicles at first registration, which would enable vehicles to be easily identified at the roadside by enforcement authorities.
12. In summary, there have been difficulties with implementing and enforcing the power restriction in Victoria. Victoria officials note that their system still allows young drivers to drive vehicles that are sufficiently powerful for them to lose control of.
13. There is no vehicle power restriction in place in Western Australia. The University of Western Australia (UWA) (2005) found that young novice drivers are no more at risk of death or serious injury driving powerful cars than other drivers. The UWA research concluded that there was no evidence to suggest that the risk of a young driver being involved in a serious injury crash in the first two years of licensing is influenced by the power-to-weight ratio of the vehicle they drive or that the serious injury crashes of this group are characterised by high vehicle power-to-weight ratios.¹
14. The research highlighted speeding as the cause of most crashes involving young drivers and noted that even the lowest powered vehicles that can be driven at excessive speed are a problem.

¹ The study looked at 662 serious injury crashes in 1999 and 2000 in Western Australia and compared the power to weight ratio of crashed vehicles with the power to weight ratio of vehicles driven by novice drivers who did not crash during the same period. Only three percent of crashed vehicles had a power to weight ratio above 100 kilowatts a tonne of vehicle weight and only two vehicles had power to weight ratio above 125 kilowatts.

Size of the problem in New Zealand

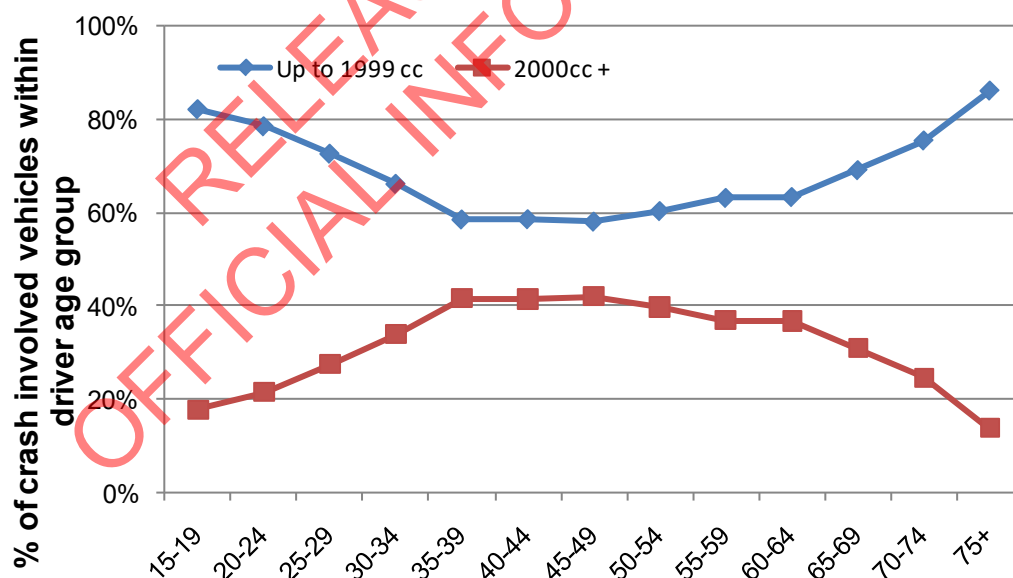
15. In New Zealand, the CC ratings of vehicles are known for 83 percent of young drivers (aged 15-19 years) involved in crashes between 2005 and 2009. Figure 2 shows that teenagers (aged 15-19) on their restricted or full licences driving vehicles with a high CC rating are not overrepresented in crashes.

Figure 2: Table showing the percentage of crash-involved vehicles driven by a 15-19 year old with a full or restricted licence, by CC rating (2005-2009).

Vehicle CC rating	Number of 15-19 year old drivers with a full or restricted licence in sample	Percentage of crash-involved vehicles driven by a 15-19 year old, with this CC rating (excl unknown)
Unknown	1405	
Under 1350	937	14%
1350-1599	2325	34%
1600-1999	2512	36%
2000-2999	843	12%
3000+	282	4%

16. However, Figure 2 might not illustrate the full extent of the problem because CC ratings are not an ideal indicator of power. Other factors not recorded in the motor vehicle register influence power, such as the engine power, vehicle weight, cylinder configuration, or whether it has a turbo- or super-charger. Many of the vehicles between 1350-2000cc may have a turbo- or super-charger.
17. Another way of examining the problem is to compare 15 to 24 year olds to other age groups. Figure 3 shows that more than 75 percent of 15-24 year old drivers involved in crashes over 2005-2009 were driving vehicles under 2000cc.

Figure 3: Percentage of vehicle size of crashes by the age of the crash-involved driver (2005-2009).



18. The mean disposable income (of less than \$10,000) for the 18-24 year age group may help account for the relationship between age and engine size.² And smaller cars are generally cheaper than larger ones. Unless young drivers are driving the family car, they are less likely to be able to afford newer vehicles with more occupant protection and crash prevention features. However, provisional results from the NZ Drivers Study illustrate that just 18 percent (out of a sample of almost 2,000) of the vehicles young drivers predominantly use are owned by the young drivers themselves. The majority (67 percent) are owned by the parents, some of which may be a second cheaper vehicle bought for the young driver to predominantly use.
19. In summary, the initial analysis indicates that higher performance (as identified by CC rating) is not a large problem.

Issues if implementing a vehicle power restriction in New Zealand

20. In considering a power restriction, the following factors are relevant:
- (a) Vehicle power restrictions are difficult to set-up and implement, as indicated from experiences in Victoria.
 - (b) Vehicle power restrictions are difficult to enforce as it is practically impossible for Police to assess engine power at the road side, as indicated from experiences in Victoria.
 - (c) Many cars that are not restricted are still capable of rapid acceleration and high speeds.
 - (d) Vehicle power restrictions could encourage the use of small cars, which generally provide less protection to a young driver in a crash than a larger car.
 - (e) If a family car was large and powerful, a learner driver could be significantly limited in their ability to learn to drive.

Other options to improve the safety of vehicles driven by young drivers

21. Young drivers tend to drive vehicles that have poor crashworthiness (occupant protection). Therefore, it is possible to minimise the risk of serious injuries and fatalities if young drivers choose vehicles with more favourable crashworthiness ratings.³
22. Monash University estimated the most-crashworthy vehicle available on the market provides a 0.54 percent risk of a driver being seriously injured or killed in a crash.⁴ However, this research also found that the average crashworthiness of vehicles driven by New Zealand young drivers when they were seriously injured or killed was 5.33 percent for 16 year olds, 5.14 percent for 18-20 year olds, and 4.97 percent for 21-24 year olds. Because the majority of young people drive their parent's car, any improvements to the crash worthiness of vehicles driven by young drivers would have wider benefits for all.

² In terms of income, a Ministry of Social Development report on household living standards (Household Incomes in New Zealand, Perry 2008). The mean disposable income of the 18 to 24-year-old age group in their research was less than \$10,000.

³ As concluded in the study by Monash University 'Vehicle Safety and Young Drivers' (2009).

⁴ The Volkswagen Golf manufactured from 2004 to 2006 was rated the most crash-worthy vehicle available in the latest release of the Used Car Safety Ratings, Newstead, Watson and Cameron (2008).

23. If young drivers drove the most-crashworthy vehicle, the estimated reduction in serious injuries and fatalities would be approximately 89 percent. Whilst this scenario is not realistic as it would require all young drivers to drive a specific model of vehicle, it shows that vehicle factors can minimise the risk of injury and fatalities. The research showed that there are also large savings from young drivers moving to the safest vehicle within their price range. Improving the access of young drivers to vehicles that offer good occupant protection to minimise the risk of injury is consistent with the *Safer Journey's* initiative to promote vehicle safety systems to all consumers.
24. Overseas experience shows that consumer awareness programmes balanced with regulation are the best ways to increase the uptake of safer vehicles. This requires encouraging drivers to make informed choices about vehicle purchases in terms of crash worthiness and occupant protection.
25. *Safer Journeys* suggested three ways to assist consumers to choose safer vehicles:
- The government could provide consumers with safety information. The Right Car website already has information on many newer makes and models, but we could extend it to rate older vehicles too.
 - Motor vehicle dealers could give buyers safety information at point of sale (this could be optional or mandatory). This gives consumers peace of mind that the safety features they want are in fact on the vehicle.
 - Develop incentives such as working with the insurance industry to lower insurance premiums for safer vehicles.



MINISTRY OF TRANSPORT REPORT

Subject: FURTHER INFORMATION ON VEHICLE RESTRICTIONS FOR YOUNG DRIVERS

Date: 09 April 2010

Docmin No.: WGTA125971

Attention: Hon Steven Joyce (Minister of Transport)

Priority: Routine

Security Level: In-Confidence

Purpose of Report

1. To provide further information on the vehicle power restrictions for young drivers in New South Wales and Queensland, Australia. You requested this information on 23 March 2010, after reviewing the *Vehicle power restrictions for young drivers* briefing of 19 March, which outlined feedback from Victorian officials who have worked with the vehicle restriction.

Contact for telephone discussion (if required)

Name	Position	Telephone		Suggested First Contact
		Direct Line	After Hours	
David Eyre	Policy Project Manager	s 9(2)(a)		
Michael Woodside	Senior Adviser	s 9(2)(a)		
Leo Mortimer	Manager Road and Rail Safety	s 9(2)(a)		√

Minister of Transport's Office Actions

☐ *Noted*

☐ *Seen*

☐ *Approved*

☐ *Needs Change*

☐ *Referred to*

☐ *Withdrawn*

☐ *Not Seen by Minister*

☐ *Overtaken by events*

Executive Summary

1. This briefing outlines feedback from officials in Queensland and New South Wales who have worked with vehicle restrictions for young drivers.
2. New South Wales and Queensland introduced vehicle restrictions for young drivers in 2005 and July 2007, respectively.
3. In New South Wales, there has been a 45 percent reduction in crashes involving P1 drivers in their first year of driving since 2007. However, a range of other changes to the graduated licensing system in mid 2007 make it difficult to attribute this reduction to the effect of the power restrictions alone.
4. In Queensland, quantitative evaluation of the effect of the restriction is planned to occur in 2011, as a limited number of young drivers are currently operating under the restrictions.
5. Given the lack of compelling evidence as to the effectiveness of vehicle restrictions in reducing young driver crashes in Australia, and the lack of sufficient knowledge of what the cost of implementing a vehicle restriction scheme in New Zealand might be, it is recommended that final decisions on whether to implement a scheme are delayed until the costs and benefits can be further clarified.

Recommendations

6. The recommendations are that you:
 - (a) note this additional information on the experience of vehicle restrictions in place for young drivers in New South Wales and Queensland
 - (b) note the lack of compelling evidence from Australian states of the benefits of vehicle restrictions for young drivers
 - (c) agree to delay final decisions on implementing vehicle restrictions in New Zealand until further work on the costs and benefits is known Yes/No
 - (d) direct the Ministry of Transport to undertake further work to establish the likely costs of implementing a vehicle restriction scheme in New Zealand. Yes/No

Anna Kennedy
Advisor

Benjamin Carpenter
Advisor

Leo Mortimer
Manager Road and Rail Safety

MINISTER'S COMMENTS:

MINISTER'S SIGNATURE:

DATE:

Further information on vehicle restrictions for young drivers

Purpose

1. To provide information on the effectiveness of vehicle restrictions for young drivers in New South Wales and Queensland, Australia.

Background/Issues

2. A copy of the *Vehicle power restrictions for young drivers* briefing, provided to you on 19 March, is attached. This briefing outlined the vehicle restrictions in place in Australia, attached a draft comparison of the restrictions across Australian states, and summarised feedback from Victorian officials who have worked with the vehicle restriction. This briefing also outlined the initial analysis of young drivers and higher performance vehicles in New Zealand.
3. At your direction we have sought further information from New South Wales and Queensland officials who have worked with vehicle restrictions for young drivers in their states.

Queensland

4. Queensland introduced their vehicle restrictions for P-plate drivers on 1 July 2007. Restrictions have been introduced in a phased way so that only those entering the P-plate phase of their licence have been subject to the restrictions. Therefore the number of drivers driving under the vehicle restrictions has increased quite slowly and thus quantitative evaluation of the effect of the vehicle restrictions is planned for 2011.
5. Prior to introducing the vehicle restrictions Queensland officials analysed crash data. The data showed there was around a 2 percent fatality rate for crashes involving provisional drivers driving vehicles with 8 cylinder engines, as opposed to a 1 percent fatality rate for mature drivers driving vehicles of the same engine size. The data also showed worse crash outcomes for provisional drivers driving vehicles with 8 or more cylinders, as opposed to those driving vehicles with 6 or less cylinders. Therefore, it seemed justified to restrict the access of young drivers to vehicles with more than 6 cylinders.
6. Since 2008 there has been a reduction in fatalities in crashes where a young driver (aged 17 to 24 years) was involved and a corresponding decrease in the percentage of fatalities involving young drivers in Queensland. This is shown in Figure 1 below.

Figure 1: Fatalities involving young drivers in Queensland, Australia (2004-2009)

Year	Fatalities involving young drivers	Total fatalities	% fatalities involving young drivers
2004	116	311	37
2005	109	330	33
2006	108	335	32
2007	110	360	31
2008	98	328	30
2009	92	331	28

Note: these figures include fatalities involving motorcycle riders aged 17 to 24 years.

7. Similar to New South Wales, several modifications to the graduated licence system (including power to weight motorcycle restrictions) were introduced in 2007, along with the vehicle restrictions. Prior to the changes coming into effect there had been a rush on both learner and provisional licence applications (for both car and motorcycle licences). This had resulted in an increased number of these drivers/riders on the roads and Queensland officials wondered about the effect this had on crashes involving these drivers in the short term (the increase in the 2008 fatality figure). Analysis to be done in 2011 would look at crash rates in further detail including, for example, the crash rate per licensed driver.
8. There were three evaluation projects of the changes to the graduated licence system planned. This included qualitative analysis (including interviews) already underway of the effects of the changes. The analysis would also include the number of offence notices issued for breaches of vehicle power restrictions.

New South Wales

9. In late 2004/early 2005, the New South Wales Minister of Transport released a discussion paper for public comment that included several options for improving the safety of young drivers. One of the options was for restrictions on high performance vehicles.
10. Comments from Victoria, where power-to-weight based vehicle restrictions were in place at the time, indicated significant reservations about that scheme due to its unenforceability and confusion for both the Police and public. Also, power-to-weight did not pick up some vehicles of key concern such as the Subaru WRX. There was also a danger in restricting access to safe family vehicles and shifting young drivers into low-powered but old and relatively unsafe cars.
11. Public support for vehicle restrictions, from the consultation process on the discussion paper, was overwhelming.
12. New South Wales evidence did show that high-performance turbocharged and V8 vehicles were over-represented in crashes involving young drivers.
13. The decision was made to introduce restrictions on V8s, turbocharged and supercharged vehicles (excluding diesels), and some vehicles with engine and other modifications—rather than a power-to-weight regime as had been used in Victoria.
14. There are some exemptions from the restrictions for people in particular circumstances. There are also exemptions for turbocharged and supercharged vehicles deemed as being not high-powered. This has come about through the increasing number of turbocharged and supercharged vehicles that are power-assisted for reasons of fuel-economy rather than power. The RTA is looking to automate this exemption process and tie exempted vehicles to vehicle registration, where under present arrangements a letter must be carried by the person saying that their vehicle is exempt from the restriction.
15. The RTA considers that the restriction system may be proving effective, with a reduction over the last 2 years in the proportion of young driver crashes involving these high-powered vehicles. Also, since 2007 there has been a 45 percent reduction in crashes involving P1 drivers in their first year of driving. However, the RTA notes that some of the reason for these reductions may be due to a range of other changes to the graduated licensing system that were introduced in 2007. Changes included the 120 hour logbook rule, a tougher driving test and a tough stance on speed offences.
16. There are around 150,000 P1 licence holders and 250,000 P2 licence holders in NSW. There are around 1,000 offence notices issued a year in New South Wales for non-compliance with high-performance vehicle restrictions.

17. When restrictions were introduced in 2005, there were 200 to 300 exemptions granted a year. This has increased significantly recently and there were around 1,000 exemptions granted in 2009. This increase is thought to be due to the introduction of exemptions for the vehicles that are turbocharged or supercharged to increase fuel economy, but that are not high-performance.
18. A further problem encountered is high-powered six cylinder cars. An exclusion list (cars that are not allowed to be driven by P-plate drivers) has been created to reflect the high performance of some of these vehicles. This list is small and includes mostly exotic sports cars.
19. Similar to Victoria, New South Wales is investigating whether an electronic system of vehicles that are approved/non-approved for P plate drivers can be set up, tagged to the vehicle's registration. This would remove the need for lists and be easier to use for both the public and for Police enforcement.

Next steps

20. In Australia, the key reasons behind implementing vehicle power restrictions for young drivers were the large amount of public pressure and political support for such an intervention. This high level of support is also evident in New Zealand, with vehicle power restrictions being the fourth-ranked initiative from submissions on *Safer Journeys*.
21. The discussions with Australian officials show that implementing vehicle power restrictions for young drivers is possible. However, the benefits arising from the restrictions implemented in Australia states are yet to be conclusively proven despite there being some evidence of their effectiveness in New South Wales. The Australian experience also shows that implementation of such a system is a complicated process and all states have had to modify their approach over time; sometimes significantly, as was the case in Victoria.
22. If New Zealand were to proceed with implementing vehicle power restrictions, a positive would be that there is a lot to learn from the Australian experience thus far. Taking these lessons on board should help contribute to a smoother implementation process locally.
23. Because vehicle power restrictions are not simple to implement, the costs of doing so should not be underestimated. We have not yet carried out work to detail the likely costs of implementing such a scheme in New Zealand.
24. In light of the discussions with officials from New South Wales and Queensland the benefits of vehicle power restrictions remain unconvincing. The formal review of vehicle power restrictions currently being undertaken by Monash University Accident Research Centre, and the analysis of the effect of the restrictions in Queensland, are both expected to provide further important information on this subject.
25. It is recommended that final decisions on whether a vehicle power restriction scheme be implemented in New Zealand are delayed until the costs and benefits can be further clarified.



MINISTRY OF TRANSPORT REPORT

Subject: VEHICLE POWER RESTRICTIONS FOR YOUNG DRIVERS

Date: 20 October 2011

OC no.: OC00264

Attention: Hon Steven Joyce (Minister of Transport)

Priority: Routine

Security level: In-Confidence

Purpose of report

1. This report addresses the commitment in the Safer Journeys Action Plan 2011–2012 to investigate vehicle power restrictions for young drivers.

Contact for telephone discussion (if required)

Name	Position	Telephone		Suggested First Contact
		Direct Line	After Hours	
Russell Brown	Adviser	s 9(2)(a)		✓
David Eyre	Policy Manager Programme	s 9(2)(a)		

Minister of Transport's office actions

☐ *Noted*

☐ *Seen*

☐ *Approved*

☐ *Needs change*

☐ *Referred to*

☐ *Withdrawn*

☐ *Not seen by Minister*

☐ *Overtaken by events*

Executive Summary

2. New Zealand drivers aged 15 to 19 who own high-performance vehicles have an increased injury risk compared to other drivers of that age. If this extra risk could be eliminated, it is estimated it would prevent 0.4 percent of injuries from crashes involving drivers aged 15 to 19, with an annual social cost saving of \$2,762,941.
3. Some states of Australia have sought to avoid this risk by restricting access to high-performance vehicles by drivers on provisional licences. Victoria has had such a policy for 20 years, and three other Australian states have introduced similar measures in the last few years. No other jurisdiction in the world has power restrictions for light passenger vehicles. There is some public support for such a policy in New Zealand.
4. After considering this matter, the Ministry does not recommend that a vehicle power restriction policy be introduced in New Zealand. Any potential benefit is small as relatively few young drivers drive high-performance vehicles, and it is likely that much of their increased risk arises from characteristics of the drivers themselves, which will be present regardless of the vehicle driven. Even if characteristics of the vehicle have some influence on behaviour, there is no guarantee that alternative vehicles permitted under the policy will not have the same effect. It is unlikely therefore that the benefits of introducing vehicle power restrictions will outweigh the costs.
5. An alternative policy with greater potential benefits would be to increase efforts to promote information about vehicle crashworthiness and safety features to encourage safe vehicle choice for young drivers.

Recommendations

6. The recommendations are that you:
 - (a) **Note** that drivers aged 15 to 19 who own high-performance vehicles have a higher injury risk than other drivers of that age; however, only a small proportion of young drivers own such vehicles. If this extra risk were eliminated, it is estimated it would prevent 0.4 percent of injuries from crashes involving drivers in this age group. The estimated maximum potential benefit of this would be an annual social cost savings of \$2,762,941.
 - (b) **Note** that the maximum potential benefit is unlikely to be attained because of compliance issues and risk transfer.
 - (c) **Note** that there is no evidence to show that vehicle power restrictions would eliminate this risk. It is likely that much of the risk is a characteristic of the type of driver who chooses these vehicles, rather than the vehicles themselves. It is possible that there is also an influence from the vehicles; however, lower-performance vehicles may exert a similar influence if access is restricted.
 - (d) **Note** that vehicle power restrictions present a number of practical difficulties for implementation and enforcement.
 - (e) **Note** that the NZ Transport Agency estimates the cost of implementing a vehicle power restrictions policy at between \$1,454,135 and \$6,994,612, with ongoing costs of between \$95,350 and \$1,243,240 per annum.

- (f) **Note** that the Ministry considers that the actual benefits are unlikely to outweigh the costs.
- (g) **Agree** not to propose implementing power restrictions on light passenger vehicles for young or novice drivers. Yes/No
- (h) **Note** that as part of proposed Safer Journeys actions, officials could consider targeting advice about vehicle crashworthiness and safety features to promote safe vehicle choice for young drivers.
- (i) **Note** that the RightCar website already contains information that could be used to develop advice about safe vehicle choice for young drivers.

Russell Brown
Adviser

David Eyre
Policy Manager, Programme

MINISTER'S COMMENTS:

MINISTER'S SIGNATURE:

DATE:

Vehicle power restrictions for young drivers

Purpose

7. This briefing provides you with an update on our investigation into the potential benefit of introducing vehicle power restrictions for young drivers, and advice about addressing risk related to vehicle choice.

Background

8. The Safer Journeys strategy identifies several factors associated with young drivers' high risk of crash, injury and death. These include immaturity and inexperience, as well as a propensity to engage in risky behaviour such as speeding and drink-driving. Following the release of the strategy, government has raised the minimum driving age to 16, reduced to zero the permitted blood alcohol content for drivers under 20 and made provision to make the restricted licence test more difficult. We are investigating other proposals, including compulsory third party insurance and R-plates for restricted licence holders.
9. A potential exogenous factor contributing to their high risk is the type of vehicle driven by young people. We know, for example, that cars driven by young people tend to be cheaper, smaller and older than most cars in the vehicle fleet. The Safer Journeys Action Plan 2011–2012 specifically proposes investigating the potential benefits of vehicle power restrictions for young drivers.
10. There is a public perception that high-powered vehicles are a significant contributor to crashes involving young people in New Zealand. Vehicle power restrictions, which would restrict access by young drivers to vehicles according to some criterion of high performance, was the fourth most favoured proposal in public consultation on the Safer Journeys discussion document in 2009. It subsequently ranked in the top five in a survey commissioned by the NZ Transport Agency. The policy is also popular in Australia where four states have introduced it into law (more detail on the Australian approach is included in appendix one).
11. The popular impression that vehicle power or performance is part of the young driver problem may have been influenced by extensive negative media talk of a subculture of “boy racers”, and prominent reporting of a few serious crashes of illegally modified vehicles. (In the media and in popular discourse, and even among industry stakeholders, the issue of vehicle power is routinely confused with illegal vehicle modifications. Illegal modifications are, of course, already prohibited and would not be affected by power restrictions.)
12. Other than four Australian states, the Ministry is not aware of any jurisdictions in the world that have power restrictions for light passenger vehicles. Some, including New Zealand, have power or engine size restrictions for young motorcycle riders. Compared to driving a car, riding a motorcycle requires a higher level of vehicle control — and motorcycle power directly affects how easy it is to control. In New Zealand, motorcycle power restrictions apply to all novice riders, not just young people.
13. The Ministry has briefed you on vehicle power restrictions on two previous occasions, advising that introducing such restrictions in New Zealand is unlikely to reduce the risk of injuries and death for young drivers. (Refer WGTA12426 and WGTA125971.)

Potential benefit from introducing vehicle power restrictions

14. In order to assess whether vehicle power restrictions for young drivers would reduce crashes, injuries and deaths, we must first establish whether vehicle performance is positively correlated with risk for young drivers and, if it is, investigate the likelihood that the risk could be constrained by power restrictions.
15. To date, the most extensive investigation into young drivers and high-performance vehicles is a study recently carried out by Keall and Newstead of the Monash University Accident Research Centre, which included data from New Zealand¹.
16. Their report is to be released soon. It will show that in New Zealand just 0.9 percent of vehicles owned by drivers aged 15 to 19 years old are 'high-powered'². Such vehicles make up 2.4 percent of the total vehicle fleet so, even allowing that some young drivers will have access to vehicles owned by their parents or friends, the proportion of young drivers using 'high-powered' vehicles is likely to be quite small.
17. Keall and Newstead found that drivers aged 15 to 19 years old who own 'high-powered' vehicles do have a higher injury risk than their peers. If we could lower the crash risk for these drivers so it was the same as other young drivers, they estimate that the maximum potential benefit would be the prevention of 0.4 percent of injuries from crashes involving drivers aged 15 to 19. The Ministry calculates that this represents around 12 injuries a year and would equate to annual social cost savings of \$2,762,941³.
18. Keall and Newstead make it clear that their estimate for potential injury reduction from restricting access to high-powered vehicles is a maximum and is based on two important assumptions:
 - 18.1. 100 percent compliance with the restrictions
 - 18.2. none of the increased risk associated with high-performance vehicles transfers with the drivers to alternative vehicles (because the drivers are inherently risky or because alternative vehicles have a similar effect)

Compliance

19. Compliance depends on the willingness to comply, ease of compliance, the level of enforcement and the number of exemptions.
20. Australian experience was that enforcement is difficult. Compliance varied from state to state but was quite low in some states. In Queensland, for example, the number of crashes involving young drivers of high performance vehicles is virtually unchanged since power restrictions were introduced.

¹ Keall, M. and Newstead, S. (Forthcoming). *Potential safety benefits of restricting young drivers from driving high performance vehicles*, Monash University Accident Research Centre.

² The study identified 'high-powered' vehicles using the same criteria as the Australian vehicle power restriction laws. These laws restrict vehicles with 8 or more cylinders, vehicles with turbo- or supercharged engines, and certain other specifically named models.

³ The minimum driving age has increased since these data were collected, so these estimates are based on drivers 16–19 years-old. The cost estimate also assumes that the estimated increased risk has the same injury severity profile as overall risk (ie the same proportions of minor, serious and fatal injuries).

The risk associated with drivers in alternative vehicles

21. Aside from inexperience, the main reason for the high crash risk of young drivers is that they deliberately engage in risky behaviours, because they underestimate the risk involved or because they enjoy it.
22. The even higher risk associated with high-performance vehicles must ultimately be due to driver behaviour. There are good reasons to expect that much of this increased risk would transfer with those young drivers to whatever alternative vehicles they use or would be permitted to use.

Risk is a feature of drivers and their lifestyles

23. Risk is likely to transfer with the driver. A large UK study found that young drivers of high-performance vehicles were at increased risk of a crash for attitudinal reasons. This study also found that these were drivers who frequently drove in circumstances associated with higher risk, including recreational driving, driving at night and driving connected with social activities⁴. Another study found that drivers who tended to engage in risky driving behaviour preferred higher performance vehicles⁵. In summary, if this risk is a characteristic of the driver rather than the vehicle, it is likely to persist even if vehicle choice is restricted.

Risk as a feature of vehicle characteristics is difficult to identify

24. Even if risky behaviour is influenced by some features of high performance vehicles, a vehicle restriction policy will only be effective if it can limit those features. The difficulty in doing so is that we do not know which aspects of a vehicle's performance might influence young drivers' behaviour.
25. Furthermore, wherever you set the threshold, it is likely that young drivers will aim for that threshold or just below it. This is illustrated in Australia, where online discussion groups regularly deal with the question of which are the best performing vehicles that can be driven on a provisional licence (eg which have the best acceleration or top speed but to which access is not restricted).

Evidence of benefits from vehicle power restrictions

26. The Ministry has been unable to find any evidence that vehicle power restrictions in Australia have reduced crashes involving young drivers.
27. As stated earlier, the proportion of young drivers using high-performance vehicles is quite small. The potential benefit from power restrictions is therefore so small that, even if the benefit is realised, it may not be detectable in crash data. Furthermore, any benefit might be masked by the results of other safety initiatives. The four Australian states that now have power restrictions introduced them concurrently with other measures that have much greater expected injury reductions for young drivers, such as a zero blood alcohol limit.
28. A number of reviews by overseas jurisdictions and organisations have considered vehicle power restrictions as part of a graduated licensing system. None has recommended the

⁴ Clarke DD, Ward P, Truman W (2002) In-depth accident causation study of young drivers, *TRL Report TRL542*. Transport Research Laboratory, Crowthorne, UK

⁵ Mark S. Horswill & Martin E. Coster (2002): The effect of vehicle characteristics on drivers' risk-taking behaviour, *Ergonomics*, 45:2, 85-104

adoption of passenger vehicle power restrictions, with most citing both a lack of evidence for their effectiveness, and reasons to doubt that they would work.

Potential negative effects from vehicle power restrictions

29. Given the relatively small potential benefits of vehicle power restrictions, even if they are realised, any counterproductive effects may result in a net dis-benefit.
30. There is a risk that vehicle restrictions may result in worse safety outcomes if they prevent young drivers from using their parents' cars and encourage them into less safe vehicles, or vehicles over which parents have less influence. It is practically difficult to manage this risk using exemptions and maintain the integrity of the policy.
31. Restrictions may also affect employment opportunities for young people as jobs may require high-performance vehicles to be driven, or high-powered vehicles may be available for commuting. This can be managed by issuing exemptions, at the expense of reducing compliance.
32. Restricting access to high-performance vehicle models could encourage young drivers to modify the vehicles that are available to them, to increase their performance. Such modifications can be very difficult to detect. This might result in an increase in the number of illegally modified vehicles, including uncertified and potentially unsafe modifications.

The cost of implementing vehicle power restrictions

33. The NZ Transport Agency has considered several options for implementing vehicle power restrictions for young drivers. The one-off implementation costs are estimated at between \$1,454,135 and \$6,994,612. There may also be costs to young drivers and their families in purchasing compliant cars, or applying for an exemption to allow a young driver to continue driving the family car.
34. Ongoing operational costs are estimated at between \$95,350 and \$1,243,240 per annum, though this does not take account of some of the ongoing administrative difficulties and disputes that are likely with most options.
35. The least-cost system is to include an indication on a vehicle's licence label as to whether it was approved for drivers on a restricted licence. This is the approach taken with motorcycle power-to-weight restrictions and could avoid some of the enforcement difficulties experienced in Australia. (Though this might conflict with other proposals under consideration regarding the continued need for a licence label.) Such a system could be provided for an initial cost of \$1,623,135, with operational costs of \$95,350 per annum.

Benefit-cost analysis of introducing vehicle power restrictions

36. The table below shows the calculated net present values and benefit-cost ratios for the policy described in paragraph 40.
37. The maximum potential benefit is the 0.4 percent reduction in injuries from crashes involving drivers aged 16 to 19 (as described earlier). This estimate depends on full compliance and on the policy eliminating all the increased risk experienced by young drivers in high-performance vehicles.
38. Australian experience suggests that compliance could be low. The Ministry considers that the value of the potential benefit could also be low because the increased risk is likely to

transfer with the driver to a lower performance vehicle, either because it is a characteristic of the driver, or because the alternative vehicle has similar effects.

Benefit–cost analysis: vehicle power restrictions for drivers aged 16–19

Rate of Compliance	80%	60%	80%	80%	80%	100%
% of benefit	10%	20%	20%	40%	60%	60%
NPV	-\$1,283,033	-\$541,450	\$200,132	\$3,166,461	\$6,132,790	\$8,357,537
BCR	0.54	0.80	1.07	2.14	3.22	4.02

39. For example, if it is supposed that 20 percent of the extra risk currently associated with high-performance vehicles can be avoided by restricting those vehicles, and the policy achieves 80 percent compliance, then the benefit-cost ratio is very close to 1.
40. The maximum benefit-cost is when 100 percent compliance and 100 percent benefit are achieved. This would result in a benefit-cost ratio of 6.7 and a net present value of \$15,773,360; however, this is not a realistic scenario. If no benefit were achieved, which is possible, the net present value would be -\$2,766,197.
41. For this analysis, the proportions of minor, serious and fatal injuries are assumed in all cases to be the same as the overall proportions for crashes involving drivers in this age group⁶.
42. Some costs have not been accounted for in this analysis. The NZ Transport Agency has noted that ongoing administration costs may exceed its estimates, particularly as it would be difficult to make the implementation completely reliable and disputes are possible. There will also be enforcement costs that are difficult to estimate and costs to young drivers or their families if alternative transport has to be found.

What can the government do about vehicle-related risk for young drivers?

43. The conclusion of this paper is that although there is a potential benefit from introducing vehicle power restrictions, this is likely to be small because:
 - Relatively few young drivers drive high performance cars
 - It would be difficult to achieve and sustain the required high levels of compliance
 - Risk might transfer with the driver

For these reasons the benefits of introducing vehicle power restrictions are unlikely to outweigh the costs.
44. The Ministry does not therefore recommend that you introduce vehicle power restrictions in New Zealand. Researching this issue has identified that greater potential benefits could accrue from promoting safe vehicle choices for young drivers. We have good evidence that the biggest vehicle-related risk for young drivers is that they tend to drive vehicles that are less crashworthy and have fewer safety features. Promoting safe vehicle choices would be a lesser cost, non-legislative alternative to mandating vehicle power restrictions. The Safer Journeys Action Plan 2011–2012 already includes actions that would deliver this work—in

⁶ Numbers of serious injuries and deaths in the 6 year period analysed were too small to allow Keall and Newstead to estimate their potential reduction independently of overall injuries.

particular, the actions proposing to expand the coverage of the RightCar website, and review the 'Stars on Cars' safety rating scheme.

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Appendix One: Australian Experience

1. Four Australian states have introduced vehicle power restrictions: Victoria (1991; modified in 2007 and 2009), New South Wales (2005), Queensland (2007), South Australia (2010). All restrict vehicles with eight or more cylinders, turbo- or supercharged vehicles, and vehicles with certain modifications.
2. All four states have faced difficulties implementing their power restriction policies. Victoria originally introduced its vehicle restriction based on power-to-weight ratio or engine capacity-to-weight ratio⁷. The former, at least, is arguably a reasonable measure of performance, which was thought to increase risk for young drivers. However, as these criteria depend on technical information that can be difficult to discover, both compliance and enforcement turned out to be problematic. When other states introduced power restrictions, they sought to avoid Victoria's problems by using simpler, and more questionable, proxies for performance. Victoria has modified its own scheme twice and all four states with power restrictions now use similar criteria.
3. It should be noted that the Australian car fleet has far fewer models of car than New Zealand.
4. This has not avoided implementation problems. As noted above, whatever criteria are chosen for restriction, there will be performance and safety anomalies. There has also been some backlash against power restriction laws in Australia, particularly on the issue of preventing young drivers from driving the family car or work vehicle, and from vehicle distributors whose cars have apparently been unfairly restricted. In order to get around these problems, all four states have modified the simple restriction criteria, with additional criteria and with systems of driver exemptions and vehicle exceptions.
5. Driver exemptions are difficult to manage, complicating both administration and enforcement. Just issuing exemptions to drive specific vehicles if they are owned by parents, guardians, employers or other appropriate fully licensed drivers would probably defeat the restriction altogether. Some Australian states require that the vehicle be the only available transport, but confirming this hardly seems practical. Anecdotal reports suggest that exemptions may be easy to get.
6. Vehicle exceptions are also difficult to manage. All four states augment their restriction criteria with lists of specific models that are also restricted or unrestricted, but this gets complicated. South Australia now lists over 2000 models. Victoria not only lists exceptions, but has introduced an extra category of vehicles that remain restricted but may be driven by exempted drivers. A "family type vehicle" may be assigned to this category according to criteria which include the number of doors and its position in the model range. Queensland sought to avoid these complexities by adding extra restriction criteria and listing only five exceptions; however, crash statistics suggest that compliance with vehicle restrictions in Queensland is very low.

⁷ Victoria's original restriction was 125 kilowatts per tonne or a capacity-to-mass ratio of 3.5 litres per tonne of the unladen mass of the motor vehicle.

Vehicle Power Restrictions

Purpose of report

1. This report presents the findings of an investigation by the Ministry of Transport into whether vehicle power restrictions for young drivers should be introduced in New Zealand. The investigation was proposed as part of Safer Journeys: New Zealand's Road Safety 2010–2020 and committed to in the Safer Journeys Action Plan 2011–2012.

Summary

2. Vehicle power restrictions for young drivers would restrict access to certain vehicles by drivers on restricted licences, or below a certain age, on the basis of some criterion of high vehicle performance.
3. It is widely thought that such a restriction would improve safety outcomes for young drivers; however there is little evidence for this conclusion.
4. A recent study shows that in New Zealand, drivers aged 15 to 19 years-old who own high-powered vehicles have about twice the injury risk compared to other drivers in that age group. It is estimated that if this extra risk were avoided, 0.4 percent of injuries from crashes involving drivers aged 15 to 19 could be prevented.
5. It is likely that this higher risk appears mainly because of the vehicle choices of drivers who are already at higher risk because they engage in inherently risky behaviour, such as speeding, or because they drive in circumstances that increase risk for young drivers, such as recreational driving at night or with passengers.
6. Perceived vehicle performance may also influence driving behaviour independently of vehicle choice, but there is little evidence of the extent of such influence.
7. To the extent that the risk associated with high-performance vehicles is a characteristic of their owners, vehicle restrictions are not expected to reduce the risk.
8. Victoria has had vehicle power restrictions for drivers on provisional licences for 20 years. Despite an absence of evidence that these have reduced road trauma for young drivers, three other Australian states have introduced similar restrictions in the last few years. No other jurisdictions in the world have power restrictions for light passenger vehicles.
9. The biggest vehicle risk for young drivers is that they tend to drive vehicles that are less crashworthy than average and have fewer safety features. In particular, young female drivers drive the least crashworthy vehicles available. Vehicle power restrictions would not address this issue and may be counter-productive.
10. An alternative policy with greater potential benefits would be to promote safe vehicle choice for young drivers.

Problem definition

11. Young drivers have a high risk of crashes, death and injury compared to older drivers.
12. There is evidence that young drivers have a higher risk of crashes, death and injury when driving high-performance vehicles.
13. Would restricting young drivers' access to high performance vehicles reduce their crash risk or reduce crash severity?

Background

14. In all countries, young drivers have a high risk of crashes, death and injury compared to older drivers. In New Zealand, drivers aged 15 – 19 years-old are involved in more than twice the number of fatal or serious injury crashes per distance travelled as drivers aged 20 – 24, and more than four times as many as drivers aged from 30 – 34.
15. Proposals that would mainly affect young drivers were popular with the respondents to the Safer Journeys discussion document, released in late 2009. Introducing vehicle power restrictions for young drivers was the fourth most favoured proposal. It also ranked in the top five in a subsequent survey commissioned by the NZ Transport Agency.
16. Clearly, the idea that there is a problem with young drivers and high-powered cars has wide appeal. This perception may have to do with views about the nature of driving, or with views about young people. It may have been influenced by extensive media coverage of social friction involving young people and vehicles. This has included negative coverage of a supposed subculture of 'boy racers' and prominent reporting of a few serious crashes of modified vehicles.
17. As a popular point of view, it is not always clear what the problem is supposed to be. The view that inexperienced drivers are unable to handle powerful cars, for example, suggests a different causal picture than the view that powerful cars encourage speeding. In any case, for a power restriction to have a benefit, it must be supposed that there is a risk inherent in the type of vehicle.
18. If there is a problem, it is rather small. Regardless of popular opinion, only 0.9 percent of vehicles owned by 15 – 19 year-olds are high-powered (according to Australian legal definitions)¹. Some young drivers may have access to such vehicles owned by parents or friends. High-powered vehicles make up 2.4 percent of the fleet overall.

How might vehicle performance influence safety?

19. There are four ways in which high-performance vehicles might *cause* young drivers to be at greater risk?

¹ Keall M, Newstead S (Forthcoming) Potential safety benefits of restricting young drivers from driving high performance vehicles, Monash University Accident Research Centre

- High-performance vehicles might be more difficult to drive, so inexperienced drivers can't handle them.
 - High-performance vehicles might make it easier to get into dangerous situations.
 - Young drivers will get into dangerous situations regardless, but when they do, they will be going faster in a high-performance vehicle.
 - High-performance vehicles might encourage irresponsible behaviour by young people.
20. Alternatively, high performance vehicles may not cause greater risk, but may tend to be chosen by riskier drivers. To the extent that this is the case, restricting vehicles would not affect the overall risk for young drivers.
21. Furthermore, if vehicle performance does independently increase risk, restrictions would only be effective if alternative, permitted vehicles do not have a similar effect.

Evidence

22. There is no evidence that clearly supports the proposal that vehicle power restrictions would reduce road trauma for young or novice drivers.
23. There has been little research into the value of vehicle power restrictions as part of a graduated licence system. Notably, there has been no proper evaluation of the effect of Victoria's power restrictions, which have been in place for 20 years.
24. As the proportion of young drivers that drive high performance vehicles is so small, it is unlikely that any benefit from power restrictions would be detectable in crash data. Furthermore, the four jurisdictions that have power restrictions introduced them concurrently with other measures that, evidence suggests, have much greater expected injury reductions, such as a night driving curfew.
25. There are four significant pieces of research that have investigated the relationship between young driver crash risk and high performance vehicles.
- Drummond (1994) considered power restrictions as part of a major review by Australian researchers of graduated licensing systems. Drummond's original research dates from the mid-80s. As he points out, it used a small sample – it is also now quite old. It found that drivers in their first year of driving had an increased crash risk in vehicles with more than 150 bhp. This finding was cited by Victoria on the introduction of its power restrictions but, in this review, Drummond points out that it does not provide good support for the measure. He concludes that the potential benefit of power restrictions is marginal and that if they were effective, which he questions, less than 2 percent of injuries to novice drivers would be prevented.

- Clarke et al (2002)² found a higher crash risk for young drivers with high-performance vehicles. Their research suggests that young drivers of high-performance vehicles tend to have better driving skills than other young drivers but that they tend to engage in more risky behaviour. They also found that, for these drivers, recreational driving, particularly at night, was correlated with crashes.
- Palamara and Gavin (2005)³ found no correlation between power-to-weight ratio and serious injury risk for Western Australian drivers in their first two years of licensing. Unfortunately, the poor response from their control group meant that the statistical power of the study is quite weak. However, it did find a low incidence of crashes involving high-performance vehicles. Western Australia did not introduce vehicle power restrictions.
- Keall and Newstead (forthcoming)⁴ have carried out the most thorough evaluation to date of the potential benefit of vehicle power restrictions for young drivers, and the only one to use New Zealand data. They find that in New Zealand, drivers aged 15–19 who own high-powered vehicles have about twice the injury risk compared to other drivers in that age group. They estimate that if this extra risk were avoided, 0.4 percent of injuries from crashes involving drivers aged 15–19 could be prevented. They stress that for vehicle power restrictions to achieve this, there would have to be full compliance and it would have to be the case that none of the extra risk is due to driver characteristics. Since the latter, at least, is very unlikely, even this small estimated benefit should be treated as an optimistic upper bound. The authors conclude that other measures, such as tackling speed or alcohol, are likely to have greater benefits.

26. Each of these studies used different criteria to identify high vehicle performance. However, it does seem that young drivers have a higher risk of injury in high-performance vehicles.

27. This does not mean that restricting young drivers' access to high-performance vehicles would reduce this risk.

- To the extent that the increased risk is due to characteristics of the drivers who choose these vehicles, we should expect the risk to be present whatever vehicles they actually drive.
- If risky behaviour is also influenced by some features of high performance vehicles, vehicle restrictions will only be effective if

² Clarke DD, Ward P, Truman W (2002) In-depth accident causation study of young drivers, *TRL Report TRL542*. Transport Research Laboratory, Crowthorne, UK.

³ Palamara P, Gavin A (2005) The Relationship Between Vehicle Power to Weight Ratio and Young Driver Crash Involvement, *Report No. RR157, Report to the Road Safety Council of Western Australia*. Injury Research Centre, The University of Western Australia

⁴ Keall M, Newstead S (Forthcoming) Potential safety benefits of restricting young drivers from driving high performance vehicles, Monash University Accident Research Centre

they are able to limit those features. For example, if risk-taking is encouraged by the feeling that a vehicle is valued for its performance, then restricting availability may simply change which vehicles young drivers value for their performance.

28. It is not possible to disentangle driver effects from vehicle effects, or to isolate particular vehicle effects, by interrogating crash statistics. Therefore the above studies shed little light on these issues. One study used quite different techniques to look at vehicle effects on driver behaviour.

- Horswill and Coster (2002)⁵, using a questionnaire-based methodology, found that drivers who engage in risky driving behaviour were likely to prefer higher performance vehicles — supporting the idea that the risk lies with the driver. However, they also found some evidence that perceived vehicle performance increases intentions to engage in risk-taking. The latter finding suggests that an independent vehicle effect is possible, though it says little about the nature or extent of the effect.

29. The direct cause of any increased crash rate for a particular driver group, is how they drive. Other than inexperience, the main reason for the higher crash risk of young drivers is that they deliberately engage in risky behaviours, either because they underestimate the risk involved or because they enjoy it. In particular, young drivers have a high incidence of crashes involving speeding or alcohol.

30. Other factors correlated with higher risk for young drivers include driving at night, driving with passengers and being distracted while driving.

Extant vehicle power restrictions

31. Four Australian states have power restrictions for light passenger vehicles as part of their graduated licence scheme. No other jurisdictions in the world have adopted a similar policy.

- Victoria (introduced in 1991, definition of restricted vehicle changed 2007)
- New South Wales (introduced 2005)
- Queensland (introduced 2007)
- South Australia (introduced in 2010)

32. Several countries, including New Zealand, have power or engine capacity restrictions for novice motorcycle riders. There is little evidence that these have been effective in reducing casualties; however, it is possible that compliance is not always good and likely that the more common engine capacity restrictions do not reflect vehicle performance.

33. New Zealand has recently replaced engine capacity restrictions for novice motorcyclists with power-to-weight ratio restrictions. Compared to

⁵ Mark S. Horswill & Martin E. Coster (2002): The effect of vehicle characteristics on drivers' risk-taking behaviour, *Ergonomics*, 45:2, 85-104

driving a car, riding a motorcycle requires a higher level of vehicle control, and a motorcycle's power directly affects how easy it is to control.

34. Some countries (for example, in Europe) have different minimum licensing ages for mopeds, motorcycles and cars, with lower-powered vehicle types having lower minimum ages.

What is a high performance vehicle?

35. No research has identified a causal relationship between any aspect of vehicle performance and increased risk for young drivers, nor any performance threshold at which risk is increased. (The one study design that might have found a threshold, Palamara and Gavin, found no correlation at all.) The studies that indicate young drivers do have a higher risk have all used different criteria for identifying high-performance vehicles, including clues from the model name, engine power output and the Australian legal definitions.
36. Vehicle performance is usually discussed in terms of particular objective measures such as:
- top speed
 - acceleration — from a standstill to a particular speed, such as 0–100km/h, from one speed to another or in particular gears
 - power output
 - power-to-weight ratio
 - stopping distance from a particular speed, or time to accelerate to a certain speed then stop
 - fastest time for a specified distance or around a specified track
 - handling tests (such as the 'moose test', that assesses sudden change of direction)
37. Perceptions of vehicle performance are also based on subjective aspects, such as 'driving feel', and often rely on the reports or opinions of others, such as motoring journalists.
38. Assessment of a vehicle's performance can also be relative and based on its relation to similar vehicles or on technological features — so a high-performance mini-car might have modest absolute performance figures. Other aspects such as brand, colour or design features might also influence perceptions.
39. The direct reason that young drivers have a higher risk in high-performance vehicles seems to be that those drivers tend to engage in risky activities, rather than that they cannot control the vehicle. If some feature of the vehicle contributes to this propensity, we don't know what it is. It could be specific aspects of performance, or a general impression of high performance capability. Or it could be something-else such as styling, fashion or the opinion of peers.
40. If vehicle features do directly influence risk, any practical restriction would not necessarily control those features. Less tangible effects are even less likely to be controlled. For example, consider peer approval. Note that

cost is already a strong constraint on the sort of performance vehicles available to young people. It is likely that further restricting access would merely change the performance features that are salient to young drivers.

What restrictions are practical?

41. If we suppose that factors such as power and acceleration might influence driver behaviour, then a credible basis for restricting access for young drivers might be power-to-weight ratio. The first passenger vehicle power restriction, applied in Victoria, restricted vehicles defined as 'high-powered' by setting a threshold for power-to-weight ratio or for engine capacity-to-weight ratio⁶. This proved very difficult to apply in practice, and in 2007 Victoria substituted a new restriction for 'probationary prohibited vehicles'.
42. The four Australian states that have vehicle restrictions have now settled on similar criteria for restricted vehicles, though they use various terms to describe them (see table). All restrict vehicles that have:
- eight or more cylinders
 - turbochargers or superchargers (except diesels)
 - specified modifications
 - other vehicles identified by specific model or by additional criteria
43. None of these indicators corresponds directly to an objective measure of performance, so anomalies are inevitable. For example, restricted vehicles may have lower power-to-weight ratios than many unrestricted vehicles. In particular, it has been increasingly common for manufacturers to use turbo- or supercharging to increase engine efficiency, for gains in economy and environmental performance rather than power. Some Australian vehicle distributors have complained that such anomalies are unfair, and various exceptions have been introduced to deal with them.

Are Australian criteria applicable in New Zealand?

44. The New Zealand vehicle fleet has been shaped by different forces than Australia's. Most notably, Australia has a vehicle manufacturing industry and New Zealand has accepted a large number of used vehicles from Japan. Perhaps these differences mean that young drivers in New Zealand have different performance vehicles from young drivers in Australia.
45. In a similar vein, Australian definitions of 'high-performance' might be considered to set a high bar. Certainly, some of the vehicles that might be associated with young car enthusiasts in NZ, such as sporty 4-cylinder Japanese cars, would not fall into this category. These may be the sorts of vehicles that young drivers consider to have high performance.
46. In several studies, Keall and Newstead have found differences between the Australian and New Zealand fleets but they did not find large

⁶ Victoria's original restriction was 125 kilowatts per tonne or a capacity-to-mass ratio of 3.5 litres per tonne of the unladen mass of the motor vehicle.

differences in the sort of vehicles owned by young drivers. Their analysis found that young drivers in New Zealand who own vehicles that would be restricted by the Australian laws, have a higher injury risk than their peers.

47. Without any evidence basis for a risk/performance threshold, or even for considering any particular aspect of performance dangerous, expanding the scope of restrictions would be fairly arbitrary. In addition to going beyond the evidence, any speculation that vehicle effects are culturally relative would undermine the assumption that they are due to intrinsic vehicle performance. It would also threaten circularity — for example, if it is assumed that the problem is young people driving high-powered vehicles, and high-powered vehicles are identified by looking at what young people drive.
48. In fact, a list of the vehicles most crashed by young drivers, even where speed is a factor, does not look like a list of high-performance vehicles⁷.

Other considerations

49. Other measures that have been introduced, such as raising the driving age, will reduce any potential benefit of power restrictions. Laws that have been introduced to tackle anti-social driving behaviour (The Land Transport (Unauthorised Street and Drag Racing) Amendment Act 2003 and Land Transport (Enforcement Powers) Amendment Act 2009) may more directly address the behaviour that increases young drivers' risk.
50. 'Low-powered' vehicles are not intrinsically safer, and they are powerful enough to get any driver into trouble. Any modern vehicle will quickly exceed the speed limit. The vehicles most often crashed by young drivers, even where speed is implicated, are not high-powered vehicles.
51. The policy would restrict choice for young drivers and their parents, without strong evidence of a safety benefit. There may be costs if available vehicles are restricted and additional vehicles are purchased or if alternative transport must be found. Discussions in Australia have also raised equity issues, with claims that young drivers in rural areas might disproportionately have access to four-wheel-drive vehicles that are likely to be restricted.
52. Young drivers who seek performance vehicles can be expected to prefer vehicles that maximise aspects of performance within the rules, or anomalous vehicles that beat them — further reducing any potential benefit from a restriction. Online discussions amongst Australian car enthusiasts often address the question of which is the best performing car available to a provisional licence holder in a state with vehicle restrictions.

Specific risks of vehicle power restrictions

53. There is a risk that vehicle restrictions may be counterproductive if they prevent young drivers from driving their parents' cars and encourage

⁷ Keall M, Newstead S (Forthcoming) Potential safety benefits of restricting young drivers from driving high performance vehicles, Monash University Accident Research Centre

them into less safe vehicles, or vehicles over which parents have less influence. Though this risk may be small, it is serious. The maximum benefit possible from power restrictions is also small, and also speculative.

54. Australian states have tried to manage the risk of encouraging less safe vehicles (as well as unreasonableness and increased costs) by allowing driver exemptions; however this is problematic in practice. If young drivers are simply exempted from the restrictions if they want to drive a high-powered vehicle registered to their parents (or other unrestricted driver), then the restriction is easily avoided and compliance would be low. Australian states have instead offered an exemption for a particular vehicle if it is the only available means of transport. However, it is not clear how inaccessible alternative transport must be, and it is not feasible for the issuing authority to check. It is known that some states have issued a lot of exemptions and they may be quite easy to obtain.
55. Restrictions may affect employment opportunities for young people as jobs may require high-performance vehicles to be driven, or high-powered vehicles may be available for commuting. This can be managed by issuing exemptions, at the expense of reduced compliance.
56. High performance vehicles usually do have higher performance, including better handling and braking. It is possible that putting more risky drivers in less capable cars will increase their crash risk.
57. Performance modifications can be undetectable. Modifications that might affect safety must be inspected by certifying engineers. It is possible that restricting high-performance models, and high performance per se, will increase the number of uncertified modifications, which are potentially unsafe. Indeed, it could create demand for vehicles with uncertified modifications, whereas currently, lack of certification presumably decreases a vehicle's value.
58. The NZ Transport Agency has noted that ongoing administration costs may exceed its estimates. There will also be opportunity costs from enforcement.

Anomalies created by power restrictions

59. Whatever criteria are adopted for a vehicle restriction, two kinds of anomaly will affect the credibility of the policy. These concern performance and safety.

Performance

60. However the restriction is defined, there will be performance overshoots and undershoots. Some vehicles that are not restricted will be perceived as having higher performance, in some respect, than some vehicles that are restricted. These are likely to be favoured by young drivers who would currently seek high performance vehicles.
61. Other vehicles will be restricted despite not having high performance. For example, many manufacturers use forced induction (turbo- or supercharging) for reasons of efficiency rather than high performance. This is very common for diesel engines.

62. Performance anomalies have attracted a lot of negative attention in Australia, including from the vehicle industry. Each state has introduced measures to avoid such anomalies, either by adding extra conditions or by listing additional restricted or approved vehicles. This makes both compliance and enforcement more difficult and can become very complicated. For example, Victoria uses lists and extra conditions. It also has an extra category of vehicles that are restricted but may be driven by drivers who apply for an exemption. These vehicles are assessed against various criteria including power-to-weight ratio, number of seats, whether it is a "family type vehicle" and, bizarrely, its relationship to other models in the same range. NSW uses lists or, rather, a book, specifying over 2000 models!

Safety

63. The other kind of anomaly that inevitably results from this sort of distinction is that many restricted vehicles will be objectively safer than many unrestricted vehicles – according to measures such as ANCAP or Used Car Safety Rating, or characteristics such as age, size or safety equipment. Safety anomalies cannot be avoided. For example, newer vehicles tend to be safer than older vehicles, and high-performance vehicles often have better safety features. These anomalies have also attracted negative press in Australia, especially in situations where young drivers are encouraged into less safe vehicles than they would otherwise have access to.

The cost of the policy

64. The NZ Transport Agency has considered several options for implementing vehicle power restrictions for young drivers. Depending on the option chosen, the one-off implementation costs are estimated at between \$1,454,135 and \$6,994,612.
65. Ongoing operational costs are estimated at between \$170,350 and \$1,318,240 per annum, though this does not take account of some of the ongoing administrative difficulties and disputes that are likely with most options.
66. The most expensive options involve each restricted licence holder applying for approval for the vehicles they intend to drive. While this might be the most accurate system, it might also discourage compliance. It is unlikely that the very high cost of processing individual applications would be justified by its advantages.
67. The two most feasible options considered are:

Option 1

The status of all vehicles, restricted or approved, is presented on the NZTA website by vehicle model.
The status of individual vehicles is not recorded on the motor vehicle register and is not indicated on vehicle licence labels.
Drivers are responsible for identifying the vehicles they are permitted to drive. Police will also have to identify vehicles in order to check compliance.
Depending on the sophistication of the website interface, this option could be implemented for between \$1,454,135 and \$1,604,135. The largest component of this is the communication campaign, estimated at \$1,450,000.
Annual operational costs would be \$258,040 for the cheaper implementation or \$222,040 for the more expensive implementation.

68. The NZ Transport Agency favours this option for its low cost and relative ease of implementation and ongoing operation.

69. Option 1 is similar to the approach used in Australia. It is likely to have the same problems with respect to compliance and enforcement.

Option 2

The status of all vehicles, restricted or approved, is presented on the NZTA website by registration number.
The status of individual vehicles is recorded on the motor vehicle register and is indicated on vehicle licence labels.
Drivers do not have to assess their vehicles or vehicles they might drive. Police can also identify vehicle status by checking the licence label.
This option could cost \$1,623,135. Again, the largest component of this is the communication campaign, estimated at \$1,450,000.
Not counting the cost of administrative issues caused by problem vehicles, the ongoing operational cost would be \$95,350 per annum.

70. In this option, the whole vehicle fleet would be assessed. New entrants to the fleet would be assessed at registration, so ongoing costs would be low.

71. It is proposed that where the NZ Transport Agency has insufficient information to evaluate a vehicle, the registered owner would have to provide suitable documentation before the vehicle could be driven by someone with a restricted licence. The reasonableness of such a requirement would have to be considered.

72. This option would greatly simplify enforcement and avoid some of the problems experienced in Australia. However, it may be relatively easy to fraudulently alter licence labels.
73. The NZ Transport Agency points out that it is unlikely that all vehicles could be adequately assessed and that this could reduce the accuracy of the system and cause administrative issues and disputes which would increase costs.

Benefit-Cost Analysis

74. The tables show the calculated net present values and benefit-cost ratios for the options described above, based on a 10 year span and assuming various levels of effectiveness. The cheaper implementation of option 1 is shown.
75. The maximum benefit is assumed to be a 0.4 percent reduction in injuries from crashes involving drivers aged 16 to 19. However, this estimate depends on full compliance and on the policy eliminating all the increased risk experienced by young drivers in high-performance vehicles, both of which are unlikely.
76. Much of the increased risk is likely to transfer with the driver to a lower performance vehicle, either because it is a characteristic of the driver, or because the alternative vehicle has similar effects. Australian experience suggests that compliance could also be low.
77. In this table, two components are shown for the effectiveness of the policy. Either component can represent compliance with the policy or the proportion of the maximum benefit achieved. The total effectiveness of the policy is the product of the two components.
78. For example, if it is supposed that 20 percent of the extra risk currently associated with high-performance vehicles can be avoided by restricting those vehicles, and the policy achieves 80 percent compliance, then the benefit-cost ratio for either option is very close to 1.
79. If the effectiveness of the policy could be 100 percent, the benefit-cost ratio for option 2 would be 6.7 and its net present value would be \$15,773,360 (slightly lower for option 1); however, this is not a realistic scenario.

Option 1 Benefit-cost analysis: vehicle power restrictions for drivers aged 16-19

Effectiveness	< 100%	80%	60%	80%	80%	80%	100%
	0%	10%	20%	20%	40%	60%	60%
NPV	-\$3,094,041	-\$1,610,877	-\$869,295	-\$127,712	\$2,838,617	\$5,804,946	\$8,029,693
BCR	■	0.48	0.72	0.96	1.92	2.88	3.60

Option 2 Benefit-cost analysis: vehicle power restrictions for drivers aged 16-19

Effectiveness	< 100%	80%	60%	80%	80%	80%	100%
	0%	10%	20%	20%	40%	60%	60%
NPV	-\$2,766,197	-\$1,283,033	-\$541,450	\$200,132	\$3,166,461	\$6,132,790	\$8,357,537
BCR	■	0.54	0.80	1.07	2.14	3.22	4.02

80. The proportions of minor and serious injuries, and fatalities, are assumed in all cases to be the same as the overall proportions from crashes involving drivers in this age group. Numbers of serious injuries and deaths in the 6 year period analysed by Keall and Newstead were too small to enable an estimate of their potential reduction independently of overall injuries.

81. Some costs have not been accounted for, including: likely administrative costs in excess of those estimated, opportunity costs of enforcement and costs to young drivers or their families. Also not shown in the table is the possibility, noted above, that the policy could produce a negative safety outcome.

Other vehicle-related risks for young drivers

82. Though the evidence is weak that vehicle power is a considerable safety risk for young drivers, there is evidence for other vehicle risks.

83. The type of vehicle driven is certainly a factor in the high injury and death rate of young drivers. Young drivers tend to own and drive cars that are cheaper, smaller and older than average. These are all correlated with lower vehicle crashworthiness.

84. Compared to Australia, a much larger proportion of vehicles crashed by young drivers in New Zealand are the least crashworthy vehicles in the fleet⁸. In particular, young women drive the least safe vehicles available.

85. Because young drivers have such a high crash risk, increasing the crashworthiness of the vehicles that they drive, even at the expense of shifting these vehicles from other age groups, would reduce injury rates for young drivers and for the whole population.

86. It is estimated that if all New Zealand's young drivers drove vehicles that were as safe as the safest vehicle available, serious injuries and fatalities in this group would be reduced by 89 percent⁹. Obviously this is not feasible, but considerable benefits would be realised even under more realistic scenarios in which young drivers' vehicles are substituted with safer alternatives.

⁸ Keall MD, Newstead SV (2010) Characteristics of Vehicles Driven by Different Driver Demographics – How can safer vehicle choices be encouraged? Report 301 Monash University Accident Research Centre, Melbourne, Australia, p. 27

⁹ Whelan M, Scully J & Newstead S (2009) Report 292 Monash University Accident Research Centre, Melbourne, Australia, p 65

87. The information is available to provide advice on choosing vehicles for young drivers. The NZ Transport Agency's RightCar website could be used to present this information, but other opportunities may also exist.

International experience

88. Overseas jurisdictions and international bodies that have considered vehicle power restrictions for light vehicles have rejected them due to a lack of evidence showing that they are likely to be effective in improving safety for young drivers, and based on arguments that they are unlikely to be effective. For example: the OECD report, Young Drivers – the Road to Safety¹⁰; a United Kingdom Government report¹¹; the Queensland Government's report¹² and a review by the Canadian Traffic Injury Research Foundation¹³.

89. Where overseas jurisdictions have released public discussion documents that include power restrictions, they have emphasised the lack of supporting evidence. For example: discussion documents released by governments in Northern Ireland¹⁴, Queensland¹⁵ and NSW¹⁶.

90. Other overseas bodies that have investigated graduated driver licensing policies have ignored vehicle power restrictions altogether. For example: reviews by the World Health Organisation¹⁷ and the US Centers for Disease Control and Prevention¹⁸.

Implementation and enforcement

91. Australian experience shows that power restrictions can be very difficult to implement and enforce. The identification of restricted vehicles can be difficult or confusing for drivers, authorities and police alike. This is further complicated by the many vehicle exceptions required and the many driver exemptions that are necessary.

92. Keall and Newstead found that crash statistics for young drivers in high-performance vehicles, in Australian states that have restrictions, suggest that compliance is fairly low. In particular, power restrictions in Queensland seem to have made little difference to the number of crashes involving young drivers and high-powered vehicles. This may be due to

¹⁰ Young Drivers – the Road to Safety (2006) OECD – ECMT

¹¹ UK House of Commons Select Committee on Transport, seventh report, www.parliament.uk.

¹² Parliamentary Travelsafe Committee (2003) Provisional Driver and Rider Licence Restrictions, Legislative Assembly of Queensland Report 41,

¹³ Daniel R. Mayhew DR, Simpson HM & Singhal D (2005) Best practices for graduated driver licensing in Canada, Ontario, Transport Injury Research Foundation

¹⁴ Consultation on Proposed Changes to the Learner and Restricted Driver Schemes and on Graduated Driver Licensing (2011) Department of the Environment Northern Ireland

¹⁵ Queensland Youth: on the Road and in Control (2005) Queensland Transport

¹⁶ Improving safety for young drivers: An options paper for community comment, November 2004 NSW RTA

¹⁷ Peden M et al. (eds) (2004) World report on road traffic injury prevention, Geneva, World Health Organization; Toroyan T, Peden M (eds) (2007) Youth and Road Safety, Geneva, World Health Organization

¹⁸ Policy Impact: Teen Driver Safety, retrieved 20 September 2011, www.cdc.gov/Motorvehiclesafety/teenbrief/index.html

the number of exemptions issued or because drivers are ignoring the restriction – which may indicate poor enforcement.

93. The main reason for the difficulty of enforcement is the difficulty in identifying restricted vehicles. Victoria's original restriction was based on power-to-weight ratio and engine capacity-to-weight ratio, and was impossible for drivers or police to assess by visual inspection, or even with quite good vehicle knowledge. This was replaced in 2007 by the simpler restriction that is now used, with minor variations, in all four states. In many cases, this is still difficult to assess by inspection.
94. Queensland, NSW and Victoria have all considered avoiding some of Victoria's problems by recording restricted vehicles on the motor vehicle register and including an indication on vehicle licence labels. However, none of these states appears to have introduced such a system.
95. New Zealand has introduced licence label indications for learner approved motorcycles (LAMS) so could extend them to light passenger vehicles. The NZ Transport Agency has indicated that it is unlikely to be able to assess all vehicles – which may make the system unreliable and involve many disputes. For administrative reasons, it would favour a proposal more similar to the Australian systems.
96. Compliance will be affected by factors such as the level of enforcement, awareness of the policy, ease of compliance and number of exemptions issued, but it is also possible that the restriction might be evaded, for example, by altering the licence label or making undetectable performance modifications.
97. A New Zealand Police Inspector has pointed out that, due to the difficulty of identifying restricted vehicles, a power restriction would usually only be enforced when a driver has been stopped for some other reason.

Policy options

Vehicle power restrictions

98. Any implementation of vehicle power restrictions requires some criteria for identifying 'high performance' vehicles. One option would be to adopt a version of the Australian criteria, though there is no evidential basis for these.
99. At a minimum, vehicle power restrictions would apply to drivers on a restricted licence.
100. There are no grounds for extending a restriction to learner drivers. The base risk for learner drivers is very low and there is no evidence for this group that risk corresponds to vehicle performance. A restriction would prevent some learner drivers from acquiring supervised driving experience in their parents' cars, which would likely be counterproductive. No Australian state restricts vehicles for learners.
101. The scope of vehicle restrictions could be extended or limited with an age criterion. South Australia limits its policy to provisional licence holders under 25 years old. Extending the scope by age would be difficult to justify as the research that identifies the increased risk for young

drivers in high performance vehicles actually finds the risk for this group is lower than their peers after the age of 20 (Keall and Newstead) or in their second and third year of licensing (Drummond).

Alternative policies

102. All known studies or reviews of vehicle power restrictions have recommended that alternative policies are much more likely to improve safety outcomes.
103. Many of these other policies have already been introduced in New Zealand as part of the graduated licensing system, including passenger restrictions, night driving restrictions and transmission restrictions.
104. The raised minimum driving age, zero blood alcohol limit and measures to increase learners' supervised driving experience, are all policies that are also expected to reduce injuries for young drivers and have been introduced since the data for Keall and Newstead's research were collected.
105. Legislation that has targeted anti-social driving behaviour¹⁹ could be seen as directly addressing one of the causes of the increased risk associated with high-performance vehicles.
106. The biggest vehicle factor in injury rates for young drivers is the low crashworthiness of their cars and their lack of crash avoidance features. This could be addressed by providing better advice about vehicle safety for young drivers and promoting safer vehicle choice.

¹⁹ The Land Transport (Unauthorised Street and Drag Racing) Amendment Act 2003 and Land Transport (Enforcement Powers) Amendment Act 2009.

Appendix

Vehicle power restrictions for novice drivers – the Australian experience

1. Four Australian states have vehicle power restrictions for drivers on provisional licences. They are the only jurisdictions in the world to introduce such policies. These policies were not well supported by evidence.
2. State government documents concerning the introduction of the policies are evasive about the reasons for them and their expected benefits.

Victoria

3. Victoria was the first state to introduce power restrictions for light vehicles, way back in 1991. As other state governments have noted, Victoria has never carried out any proper evaluation of the effect of the policy.
4. Part of the original justification was the finding by Drummond and Healy (1986; VicRoads 1990) that first-year drivers were at a greater risk of having a casualty crash in a vehicle of more than 150 bhp (112 kW) than a similar driver in a vehicle of less than 150 bhp. Drummond (1994) subsequently argued that his data did not support the policy and that it could have only a marginal benefit. He estimated a likely crash reduction of less than 2% among drivers in their first year of driving, provided that their crash risk does not transfer with them. He also found that drivers of high-powered vehicles in their second and third years had a lower crash risk than drivers of lower-powered vehicles.
5. Victoria restricted vehicles on the basis of a definition of 'high-powered' vehicles that specified a maximum power-to-weight ratio and a maximum engine capacity-to-weight ratio. This proved difficult and costly to enforce and drivers found it confusing. In 2007, Victoria replaced its 'high-powered' restriction with a specification of 'probationary prohibited vehicles' that is not based directly on power, and was similar to the definition by then used in NSW.
6. The RIS for the changes introduced in 2007 notes Drummond's (1994) estimate, without the qualification, and also cites Clarke et al (2002) in support, even though that study did not attribute the cause of the heightened risk to the type of car. It suggests that "Speed and high risk-taking behaviours contribute to the high risk of young drivers and restricting access to high powered vehicles may help to limit the potential negative consequences of these risky driving behaviours".

New South Wales

7. NSW adopted vehicle restrictions for probationary drivers after circulating a discussion document in 2004 that proposed restricting high-powered and heavy vehicles²⁰. The discussion document notes that the complexity of such policies makes them difficult to enforce, and states that "no indication of the effectiveness of the restrictions in Victoria is currently

²⁰ Improving safety for young drivers: An options paper for community comment
November 2004 NSW RTA

available". Nonetheless, it suggests that restrictions "could help ensure risk takers did not have access to cars that would increase the danger to the driver and the community".

8. The Ministry of Transport has been informed that the NSW Roads and Traffic Authority had recommended against including the policy in the discussion document, based on discussion with Victorian officials and on the grounds that the available evidence suggested it was fraught with problems for no proven benefit.
9. The consultation process nonetheless elicited high public support for vehicle restrictions.
10. Since adopting the policy in 2005, government documents justify it with the claim that "the scheme aims to prohibit young driver access to vehicles that are overrepresented in young driver crashes". This leaves entirely open what the scheme is intended or expected to achieve, other than ensuring that particular vehicles are not crashed by particular drivers.
11. NSW has around 400,000 drivers on provisional licences. It issues around 1000 infringement notices per year for non-compliance with vehicle restrictions, and issued around 1000 exemptions in 2009.

South Australia

12. South Australia adopted vehicle restrictions for drivers on provisional licences in 2010. Road Safety Minister, Jack Snelling said in a press release "the vast majority of Learner and P platers aim to drive safely and responsibly, but there's increasing community concern over young inexperienced drivers getting behind the wheel of these very powerful vehicles"²¹. Other new rules were introduced at the same time, including requirements for learners to have a number of hours of supervised practice. Under the heading "Why new rules?" the government's website refers to the research underlying the practice requirements but does not give a reason for the power restrictions²².

Queensland

13. In 2003 the Parliamentary Travelsafe Committee report²³, based on a review of research, data on vehicle ownership in Queensland and extensive public consultation, recommended against introducing vehicle power restrictions. The report cited a lack of evidence for a benefit, limited potential benefits and anticipated difficulties with enforcement as reasons for the Committee's position. However, the Committee recommended monitoring restrictions in other states, particularly Victoria, and reconsidering the policy if positive evaluations were forthcoming.

²¹ High Powered Vehicle Ban for P-Platers from September, Government of South Australia News Release, 2 July 2010.

²² <http://mylicence.sa.gov.au/newrules>

²³, Parliamentary Travelsafe Committee, Provisional Driver and Rider Licence Restrictions, Legislative Assembly of Queensland Report 41, 2003

14. The Queensland government accepted this recommendation²⁴ and, in a 2006 update²⁵, reported that, while it was still monitoring power restrictions in other jurisdictions, it was also considering the issue through a community discussion paper on young driver safety²⁶.
15. In response to a high road toll in 2005, the government held the 2006 Road Safety Summit. As a result of this summit and the aforementioned discussion paper, a number of measures were incorporated into the graduated licensing scheme, including vehicle restrictions. A research briefing covering the measures cites no new evidence to support vehicle restrictions²⁷.
16. A 2010 briefing to the Queensland Minister of Transport noted that from 2001 to 2005 there were 962 casualties in Queensland as a result of crashes involving 17-24 year-olds driving eight cylinder cars and utilities. These resulted in 23 people killed and 307 persons hospitalised. Analysis of this data showed that young drivers in V8 cars were twice as likely to be drink-driving and twice as likely to be driving with excessive speed when compared with young drivers in cars with fewer than eight cylinders. No further information was provided about factors that may have contributed to these crashes.
17. The number of injuries involving young drivers of high-powered vehicles in Queensland has changed little since restrictions were introduced. This suggests poor compliance, possibly as a result of a permissive exemption regime or a lack of enforcement.

Western Australia

18. Western Australia does not have vehicle power restrictions for young drivers and has cited a lack of evidence for their benefits as a reason for not introducing them.
19. The WA Office of Road Safety commissioned a literature review of training and licensing systems for young drivers, which was released in 2005²⁸. This notes that nothing had changed since a consultant previously engaged by Western Australia in 1994 found no evidence that power restrictions would reduce young driver road trauma. It also notes public support for the measure but points out that so-called 'hoon legislation', introduced in 2004 to target anti-social driving, could be seen as an effective alternative.
20. The 2005 study by Palamara and Gavin, which found no correlation between high-powered vehicles and young driver crash risk in Western

²⁴ <http://www.parliament.qld.gov.au/documents/committees/TSAFE/2003/p-licence-restrictions/plr-govtresponse.pdf>

²⁵ <http://www.parliament.qld.gov.au/documents/committees/TSAFE/2003/p-licence-restrictions/plr-govtresponse-implementationUpdate.pdf>

²⁶ Queensland Youth: on the Road and in Control (2005) Queensland Transport

²⁷ Dixon, Nicolee (2007) Restrictions on Young Drivers Under the Transport Legislation and Another Act Amendment Act 2007 (Qld): Queensland Parliamentary Library Research Brief No 2007/12

²⁸ Senserrick T & Haworth N, (2005) Review Of Literature Regarding National and International Young Driver Training, Licensing And Regulatory Systems, Monash University Accident Research Centre

Australia (though its statistical power was weak), has also been influential.

DRAFT

Australian Light Vehicle Power Restrictions

State	Date introduced	Restricted Vehicles	Exceptions	Applies to
All Four States		<ul style="list-style-type: none"> • eight or more cylinders • turbochargers or superchargers (except diesels) • modifications that require certification 		P1
New South Wales 'Prohibited vehicles'	2005	<ul style="list-style-type: none"> • Specified 6-cylinder vehicles 	<ul style="list-style-type: none"> • Suzuki Cappuccino, Daihatsu Copen and Smart (all models) 	P2
Queensland 'High-powered (performance) vehicles'	2007	<ul style="list-style-type: none"> • an engine that has a power output of more than 200 kW as per the manufacturer's specifications • a rotary engine that has an engine capacity of more than 1146cc as per the manufacturer's specifications 	<ul style="list-style-type: none"> • Suzuki Cappuccino, Daihatsu Copen and Smart (all models) 	P2
South Australia 'High-powered vehicles'	2010	<ul style="list-style-type: none"> • Specified high-performance vehicles 	<ul style="list-style-type: none"> • Over 2000 specified vehicles, including lower powered turbos 	P-plate holders under 25
Victoria 'probationary prohibited vehicles'	1991, modified 2007	<ul style="list-style-type: none"> • Specified 6-cylinder vehicles 	<ul style="list-style-type: none"> • Specified turbo- and supercharged models • Specified 'lower performance turbocharged and supercharged vehicles' (assessed against complicated criteria) which can be driven with an exemption 	P2

Significant Research

Paper	Findings
<p>Clarke DD, Ward P, Truman W (2002) In-depth accident causation study of young drivers, <i>TRL Report TRL542</i>. Transport Research Laboratory, Crowthorne, UK.</p>	<ul style="list-style-type: none"> • Large study of UK data covering drivers aged 17-25 from 1994-1996. • Investigated the extent to which crashes by young drivers were caused by skill deficits or by attitude. • Found young drivers had a higher crash risk in vehicles of above average performance. • Found that such drivers tended to have higher skills than other drivers, but were more likely to engage in risky behaviour. • Also noted that crashes in high-performance vehicles were associated with recreational driving at night and with passengers – factors which are known to independently increase risk.
<p>Drummond AE (1994) Young driver research program: A technical and strategic overview of exposure reduction measures as a means of reducing young driver crashes, CR 130. Federal Office of Road Safety, Canberra.</p>	<ul style="list-style-type: none"> • Overview of measures that might reduce risk for young drivers, including elements of a graduated licence system. • A 1986 study by Drummond and Healy found a higher risk for young drivers in vehicles with > 150 bhp (112 kW). That study was apparently cited by Victoria as significant support for its power restrictions. Drummond points out that those data do not provide sufficient justification for such a policy as the sample size was small and the conclusions tentative. • The 1986 study also found that drivers of high-powered vehicles in their second and third years had a lower crash risk than young drivers of lower-powered vehicles. • Estimates a "marginal" potential safety benefit from power restrictions as a likely crash reduction of less than 2% among drivers in their first year of driving; however, it notes that if safety risk is transferred with the driver, there could be no benefit. • Concludes that, given the low potential benefit, further research should be a low priority. • This paper was part of a major series of review papers summarised by Triggs, TJ, & KB Smith, <i>Young Driver Research Program: Digest of Reports and Principal Findings of the Research</i>, report no. CR164, Federal Office of Road Safety, Canberra, February 1996
<p>Horswill MS, Coster ME (2002): The effect of vehicle characteristics on drivers' risk-taking behaviour, <i>Ergonomics</i>, 45:2, 85-104</p>	<ul style="list-style-type: none"> • Tests a sample of drivers and finds several correlations between vehicle type and risky behaviour. • Uses analysis of responses to hypothetical driving situations to show that drivers intending to engage in more risky behaviour prefer higher performance vehicles.

	<ul style="list-style-type: none"> • Is noteworthy for also investigating, and finding, a causal effect of vehicle performance on risk-taking. • This was not a study of young drivers; the sample included all ages. • Also found a positive relationship between the number of safety features a vehicle had, and higher risk-taking intentions.
<p>Keall M, Newstead S (Forthcoming)</p> <p>Potential safety benefits of restricting young drivers from driving high performance vehicles, Monash University Accident Research Centre</p>	<ul style="list-style-type: none"> • The most thorough and most recent study. Uses Australian and New Zealand data from 2004-2009. Identifies high-powered vehicles according to Australian definitions. • Finds an increased risk of crash and injury for high-powered vehicles owned by 15-19 year-olds compared to lower powered vehicles owned by that age group. • High-powered vehicles owned by older drivers had a slightly lower risk than lower-powered vehicles. • The available data are not able to account for high-powered vehicles that might be driven but not owned by young drivers. • Estimates that in New Zealand, vehicle restrictions could save 0.4% of injuries from crashes involving drivers under 20 – <i>if</i> compliance is high, and <i>if</i> no risk is transferred with the driver. • Notes that this estimate is optimistic as some risk is likely to be with the driver and there is evidence that compliance may be low. • Concludes that "Such a safety gain is modest in comparison to what could be achieved from putting the same legislative and enforcement effort into reducing crashes due to speeding and alcohol, for example".
<p>Palamara P, Gavin A (2005) The Relationship Between Vehicle Power-to-Weight Ratio and Young Driver Crash Involvement, Report No. RR157, Report to the Road Safety Council of Western Australia. Injury Research Centre, The University of Western Australia.</p>	<ul style="list-style-type: none"> • Case-control study of young drivers which found no correlation between vehicle power-to-weight ratio and crash risk for drivers in their first two years of licensing. It concluded that the data provided no support for a safety benefit from vehicle power restrictions. • A potentially useful aspect of this study is that it looked for any correlation between risk and power-to-weight ratio, rather than using an arbitrary threshold for high vehicle performance. Unfortunately, the power of this study to identify any correlation was hindered by a very low response rate from the control group. • Notes that an obstacle to this sort of study was the difficulty of establishing power-to-weight ratio for crashed vehicles and suggested that this could usefully be recorded on the vehicle register. • Recommends better enforcement of speeding itself, rather than possible vehicle influences on speeding. Also recommends improving advice to young drivers about vehicle crashworthiness.