

Mandating safer braking systems for motorcycles

Advising agencies	<i>Ministry of Transport, New Zealand Transport Agency</i>
Decision sought	<i>To approve consultation on a draft Land Transport Rule to mandate the fitting of anti-lock braking systems for motorcycles from 2019 onwards</i>
Proposing Ministers	<i>Minister Julie Anne Genter</i>

Summary: Problem and Proposed Approach

<p>Problem Definition</p> <p>What problem or opportunity does this proposal seek to address? Why is Government intervention required?</p>
<p><i>Summarise in one or two sentences</i></p>
<p>The problem that this proposal seeks to address is the high number of motorcyclists being killed or seriously injured on New Zealand’s roads. There is an opportunity to significantly increase the safety of New Zealand’s motorcycle fleet, and decrease the likelihood of on-road fatalities, by mandating safer braking systems for motorcycles.</p>

<p>Proposed Approach</p> <p>How will Government intervention work to bring about the desired change? How is this the best option?</p>
<p><i>Summarise in one or two sentences</i></p>
<p>We propose making anti-lock braking systems (ABS, sometimes called Advanced Breaking Systems) mandatory for motorcycles 125cc and over, and making either ABS or a combined braking system (CBS) mandatory for motorcycles¹ between 50cc and 125cc. These systems benefit safety by improving stability, and by preventing loss of traction/control during heavy braking.</p> <p>This rule would apply to new and imported used vehicles entering the fleet after a specified date.</p>

Section B: Summary Impacts: Benefits and costs

<p>Who are the main expected beneficiaries and what is the nature of the expected benefit?</p>

¹For simplicity, the term motorcycle is assumed to include all formats of three-wheeled motorcycles, unless the context requires otherwise. By definition, mopeds have motors smaller than 50cc, so are not affected by this proposal.

Monetised and non-monetised benefits

The total monetised benefit of our preferred option is \$191.00 million, due to the reduction in social cost of road crashes.

Where do the costs fall?

Monetised and non-monetised costs; for example, to local government, to regulated parties

The total costs imposed by the preferred option are \$4.3 million. The majority of these costs are imposed on motorcycle suppliers. The New Zealand Transport Agency (NZ Transport Agency) will incur a cost of approximately \$90,000 for advertising and updating vehicle inspection checklists.

What are the likely risks and unintended impacts, how significant are they and how will they be minimised or mitigated?

Because this will impact the risk incurred by motorcyclists there may be some expectation to reduce the current motorcycle safety levy. Any change to the levy would need to be made by the ACC.

Identify any significant incompatibility with the Government's 'Expectations for the design of regulatory systems'.

The preferred option is consistent with the Government's expectations for the design of regulatory systems.

Section C: Evidence certainty and quality assurance

Agency rating of evidence certainty?

How confident are you of the evidence base?

We have good information about the number of motorcycles and the number of crashes. We do not currently have accurate information about the level of uptake of ABS or CBS.

To be completed by quality assurers:

Quality Assurance Reviewing Agency:

Ministry of Transport RIS Panel

Quality Assurance Assessment:

Partially meets criteria.

Reviewer Comments and Recommendations:

The Panel assessed the RIS as partially meeting the quality assurance criteria. This is because the proposal has not been consulted on publicly. The impacts of this intervention, and the paper itself, should be further strengthened following consultation.

Section 1: General information

Purpose

The Ministry is solely responsible for the analysis and advice set out in this Regulatory Impact Statement, except as otherwise explicitly indicated. This analysis and advice has been produced for the purpose of informing policy decisions to be taken by Cabinet.

It provides an analysis of options to improve motorcycle safety and decrease the number of deaths and serious injuries caused by loss of control and increased stopping distance.

This analysis proposes to mandate the fitting of ABS for motorcycles 125cc and over, and either an ABS or a simpler version referred to as a CBS for motorcycles between 50cc and 125cc that enter the fleet after a specified date. (For simplicity, the paper refers to both ABS and CBS systems as ABS, unless the context requires otherwise. Where the paper refers to motorcycles alone it is also assumed to include three-wheeled variants unless the context requires otherwise).

ABS systems help improve the safety of braking by preventing loss of traction during heavy braking and improve stability generally. The policy would significantly increase the safety of New Zealand's motorcycle fleet and decrease the likelihood of on-road fatalities.

It is not considered practical to retrofit ABS to motorcycles where it is not factory fitted, though it may be theoretically possible. For this reason the option to retrofit ABS to existing motorcycles has not been included in this analysis.

The Safer Journeys Action Plan 2016 – 2020 included a recommendation to investigate the option of mandating ABS. There is therefore general awareness that the option will be considered. Several groups advocating motorcycle safety have approached the Ministry asking the Government to mandate the technology.

Key Limitations or Constraints on Analysis

This is a preliminary regulatory impact assessment prepared for the purpose of public consultation. A full regulatory impact assessment incorporating stakeholder perspectives will be prepared post-consultation. Further evidence and information gathered through consultation could impact on the analysis and preferred options in the full regulatory impact assessment.

In general, we have good data on road safety and motorcycles. We lack data on the rates of ABS fitted to different classes of motorcycle and consultation is expected to assist with this. We also lack detailed information about price differentials at this time. Again, consultation is expected to assist with this.

A separate cost-benefit analysis is attached.

Responsible Manager (signature and date):

Brent Johnston
Manager, Mobility and Safety
Ministry of Transport

Section 2: Problem definition and objectives

2.1 What is the context within which action is proposed?

Motorcyclists are disproportionately represented in New Zealand's road safety statistics. In 2017, motorcyclists accounted for 12% of total annual road deaths despite making up less than 4% of road users. The risk of being killed or injured in road crashes is 21 times higher for motorcyclists than for car drivers over the same distance.²

The Safer Journey's 2010-2020 road safety strategy highlighted the need to focus on improving motorcycle safety. The Safer Journey's Action plan 2016-2020 committed the Ministry of Transport to explore initiatives to increase the safety of motorcyclists in New Zealand. This action plan identified the ABS as a technology with significant potential to improve road safety outcomes for motorcyclists.

ABS is a closed-loop part of the braking system which prevents wheel lock during braking. This results in improved vehicle stability, and potentially reduced stopping distance³. ABS has been available for light vehicles (cars) since the early 1970s, and has become widespread since the 1990s. The increased level of ABS fitted in light vehicles has led to significant safety benefits. ABS was first introduced on motorcycles in the early 1990s, but has only been offered across all brands since the late 2000s.

International research has overwhelmingly concluded that ABS has significant safety benefits for motorcyclists, reducing severe injury crashes by over a third. The fitting of ABS for motorcycles is increasingly being mandated internationally. In Europe (2017), Brazil (2019), India (2019), Japan (2021) and Australia (2021) all new and used motorcycle models will be required to have ABS fitted. The implementation dates refer to dates for full implementation. We are unaware of any jurisdiction that regulate used motorcycles separately from new motorcycles, as they are not a significant part of import volumes.

Current uptake of ABS within the motorcycle market

ABS is becoming increasingly available to the New Zealand market in both new, and to a lesser extent, used motorcycles. This is, in part, due to the increasing international trend towards mandating it. We expect this growth in the fitting of ABS to continue. However, unless the fitting of ABS is at some point made mandatory, there will continue to be a

² <https://www.transport.govt.nz/assets/Uploads/Research/Documents/Motorcycles-2017.pdf>.

³ Fildes, B., Newstead, S., Rizzi, M., Fitzharris, M., & Budd, L. (2015). Evaluation of the effectiveness of anti-lock braking systems on motorcycle safety in Australia. Monash University. September 2015. Report No.327

significant portion of the market, especially on lower priced, imported used and smaller bikes, that lack ABS. Making the technology mandatory is expected to prevent New Zealand becoming a dumping ground for older model motorcycles that do not have the technology.

An analysis of registrations in 2017 found that new motorcycles made up three quarters of the market with the remaining quarter made up of used models, the majority of which are over 125cc.

Figure 1: Registrations of motorcycles by engine capacity

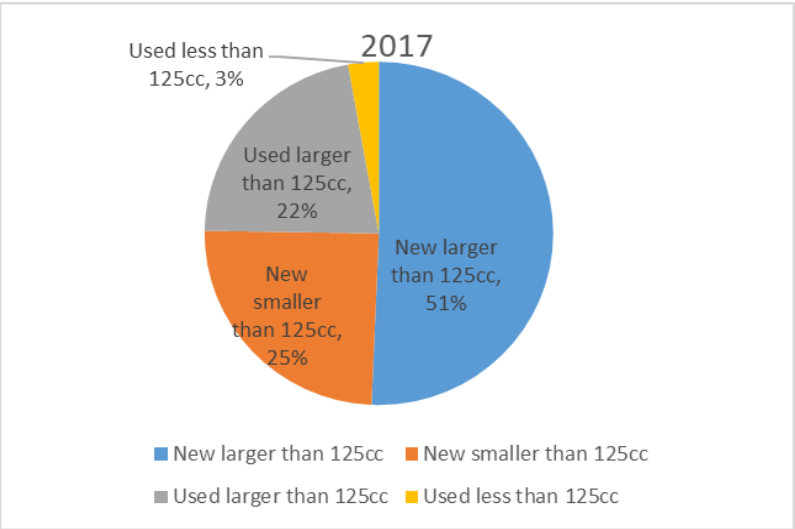


Figure 2: Total number of motorcycles entering the fleet

Type	2015	2016	2017
New, larger than 125cc	7184	7023	6740
New, smaller than 125cc	5017	3825	3267
Used, larger than 125cc	2788	2583	2915
Used, less than 125cc	413	504	377
Total	15402	13935	13299

The motorcycle fleet differs markedly from passenger vehicles, as motorcycles exit the fleet in large numbers when relatively young. In 2016, the number of motorcycles that were less than 10 years old, which were deregistered was equivalent to 25% of registrations. This is compared to less than 5% for passenger vehicles. It is unclear from the data available why these motorcycles were deregistered.

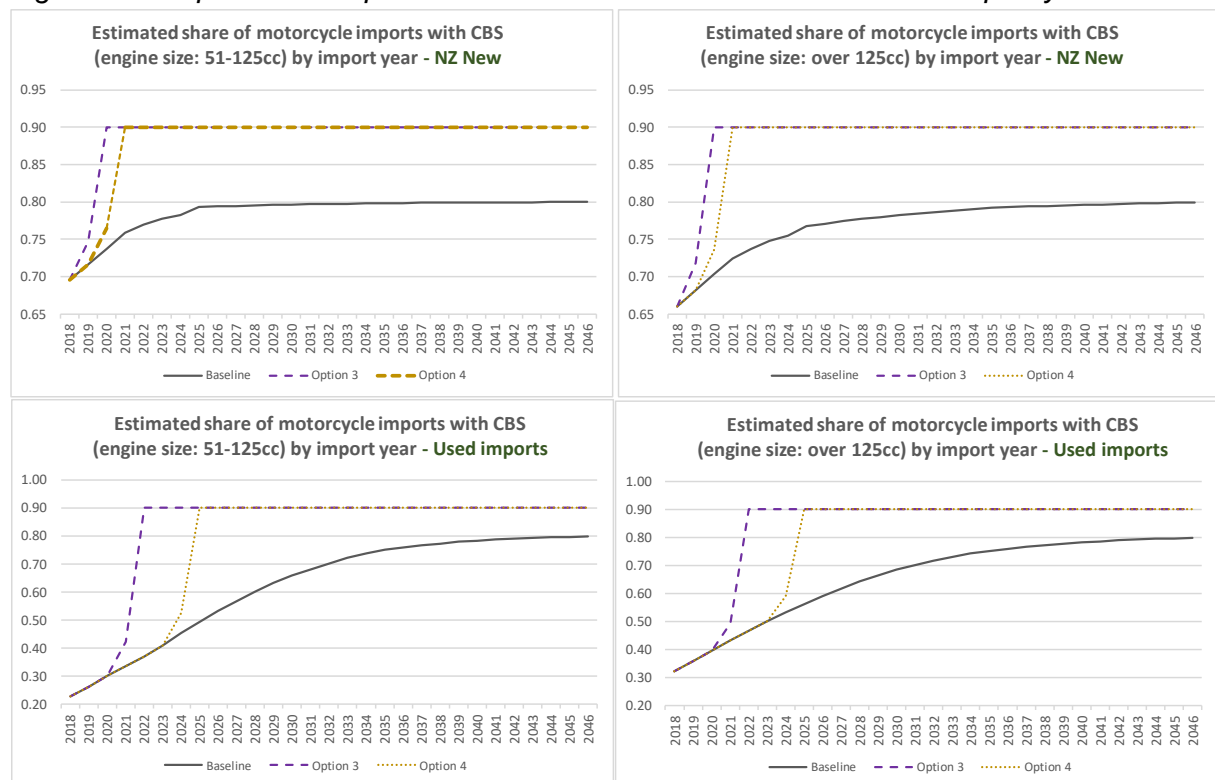
Because of their smaller size, it is more common to store motorcycles unused for long periods, and failure to reregister motorcycles may have inflated the number of motorcycles appearing to exit the fleet. However, the large amount of turnover in the motorcycle fleet indicates that any Government action to increase the uptake of ABS should produce a

significant safety impact within 10 years.

To assist in considering whether to proceed to mandating ABS for motorcycles, the Ministry commissioned the New Zealand Institute of Economic Research (NZIER) to conduct an initial Cost-Benefit assessment as part of a broader package of work. NZIER’s analysis was consistent with international research (refer to section 2.3), and found that through mandating ABS there would be a significant increase in the amount fitted with ABS compared to the baseline and a significant improvement in road safety.

The Ministry’s preliminary cost-benefit analysis of mandating the ABS found that there would be a significant increase in the fitting of ABS compared to the baseline for new and used motorcycles.

Figure 3: Comparison of expected ABS/CBS fitment rates with and without policy intervention



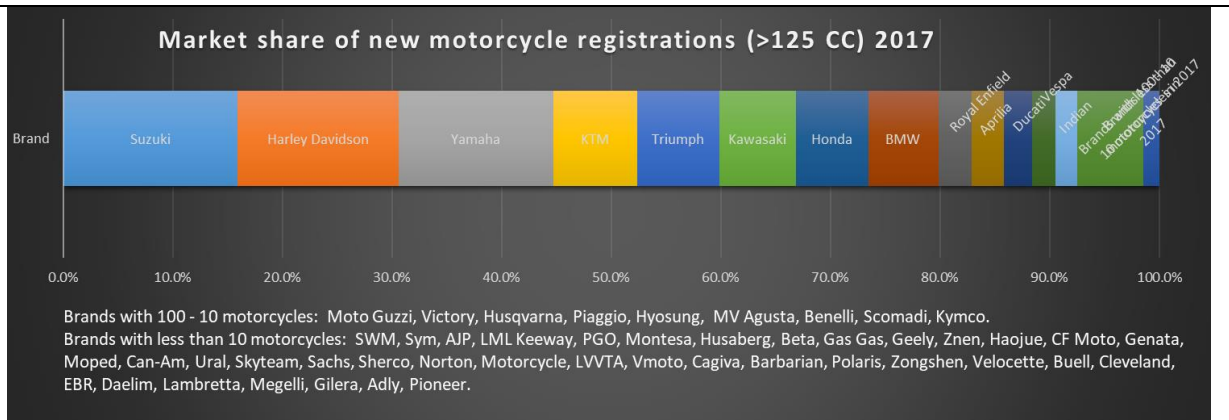
Source: Mandating advanced braking systems for motorcycles: Preliminary Cost benefit analysis⁴

New motorcycles

The majority of the New Zealand market for motorcycles 125cc and over are supplied by four brands: Suzuki, Harley Davidson, Yamaha, and KTM. Close to 90% of the total market is supplied by just 13 brands.

Figure 4: Market share of new motorcycle registrations (>125 CC) 2017

4 Ministry of Transport. (2018). Mandating advancing braking systems for motorcycles: Preliminary Cost Benefit Analysis

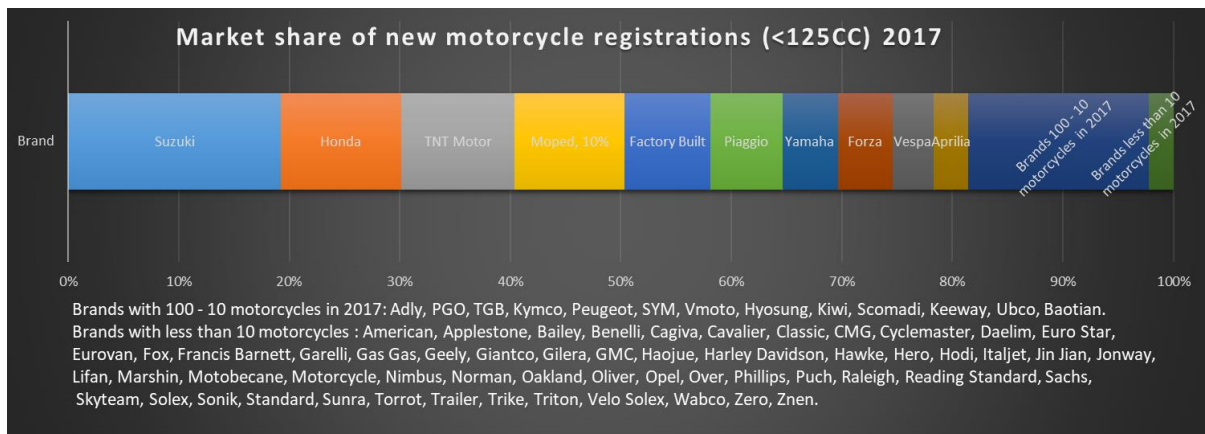


Informal surveying of the leading motorcycle suppliers in New Zealand indicated that the majority of the larger motorcycle brands already offer, or will shortly be offering, models which have ABS fitted as standard. The New Zealand representatives of Harley Davidson, Honda, BMW, Polaris, Ducati, and Suzuki have indicated that they already provide ABS to all their new road motorcycles as a matter of company policy.

The last portion of the new motorcycle market is comprised of a large number (up to 50) of smaller, usually less well-known brands. We have very little information about the safety technology of these motorcycles. We are operating under the assumption that some of these brands may offer ABS as standard or as an option, but there would be a significant portion that would not.

These trends are broadly the same for motorcycles under 125cc. A large proportion of motorcycles are supplied by five brands: Suzuki, Honda, TNT Motor, Piaggio, and Yamaha.⁵

Figure 5: Market share of new motorcycle registrations (<125 CC) 2017



We have received very little information about the level of ABS fitted for motorcycles under 125cc from our initial survey of the motorcycle market. Because of the large number of smaller motorcycles entering the market, we have included these models within the scope of our analysis.

Used motorcycles

⁵ Factory built is a catch all term for small volume imports of brands not recorded elsewhere.

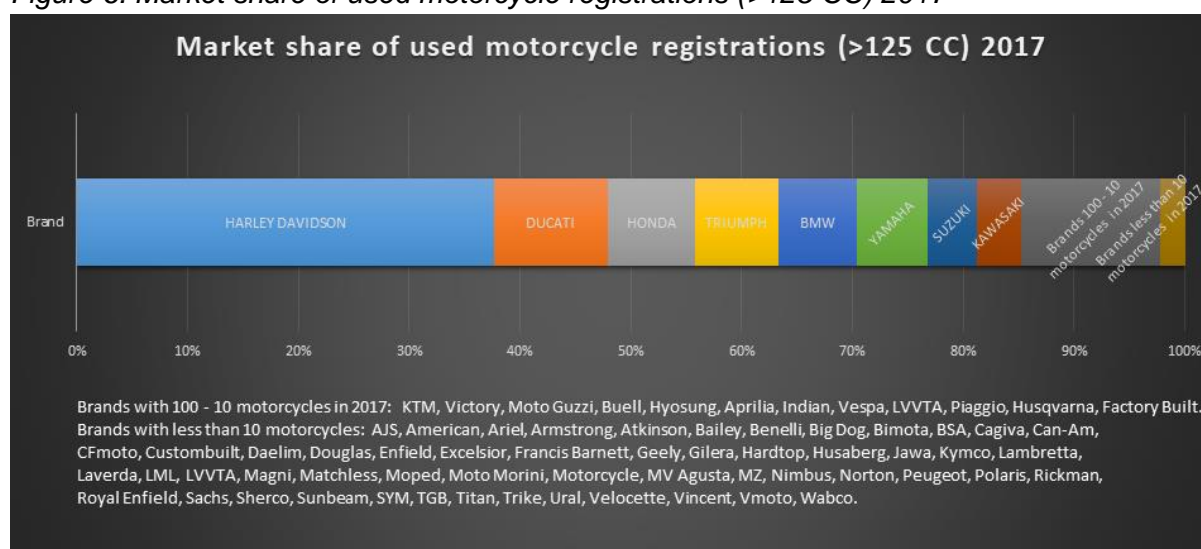
Analysis of market trends

The current level of ABS fitted to motorcycles in the used motorcycle market is unknown. However, an initial analysis from the New Zealand Institute of Economic Research found that due to regulation offshore, ABS would be more common in both new and used motorcycles entering the fleet. This conclusion is based on the fact that Europe, which has had mandatory ABS for motorcycles since 2016, is the origin of 34% of new and 47% of used motorcycles 125cc and over that are imported into New Zealand⁶.

For the purpose of this analysis, it is assumed that used motorcycles that are imported from Europe and manufactured after 2016 will have ABS. Similarly, Japan, which is the largest single country of origin for new motorcycles entering the fleet, will mandate ABS for new motorcycles from October 2018, with all models to comply from October 2021. Considering both Europe and Japan provide a significant portion of New Zealand's used motorcycles, with ABS becoming mandatory in these countries, it can be assumed that ABS will become standard in used imports from these countries from 2029. This is based on the average age of used imports as 10 years.

The United States of America does not currently mandate that motorcycles manufactured for its domestic market be fitted with ABS. There has also been no official indication that the United States is considering mandating ABS for motorcycles in the near future, though recent media reports indicate that it may be about to do so⁷. Because the United States is the country of origin for a large proportion of New Zealand's used motorcycle imports (Harley Davidson alone are 37% of the used motorcycle market), there would be a significant amount of the motorcycle fleet which will not be fitted with ABS without regulation. However, to comply with regulation in Japan, Europe, and Australia, and for domestic demand, motorcycle brands like Harley Davidson and other United States brands will manufacture more motorcycles with ABS fitted, or as an option in the United States.

Figure 6: Market share of used motorcycle registrations (>125 CC) 2017



⁶ NZIER (2018), Vehicle Technologies and Standards: A preliminary assessment for prioritisation. April 2018.

⁷ <https://www.jsonline.com/story/money/business/2018/09/12/safety-agency-seeks-mandate-anti-lock-brakes-new-motorcycles/1279068002/>

Mandating ABS would have a significant impact on the supply of used motorcycles in the short term. For consumers who desire motorcycles made prior to the requirements for ABS in Europe and Japan, or that are manufactured in the United States and are not fitted with ABS; these motorcycles will not be able to be registered in New Zealand. The reduction of supply in the market may limit the amount of motorcycles available in the short-term. This could have unintended consequence of driving some motorcyclists from the road, or causing motorcyclists to hold onto their older models without ABS for longer. However, the market, over time, will adjust to the new restrictions, and consumers will have other options available with ABS for which to substitute.

Independent of mandating ABS on new motorcycles, ABS will become more common in the motorcycle fleet. However, if used motorcycles were exempted from a mandate, this would leave a significant portion of the motorcycle fleet without ABS for the foreseeable future (used motorcycles represent 25% of the vehicle fleet). This could create an incentive for some importers to import comparatively lower priced motorcycles without ABS. This would reduce the social benefit of ABS diffusing throughout the fleet, and delay the uptake of ABS across the entire fleet by up to several decades. This could result in a significant number of motorcyclists killed or seriously injured compared to a scenario with ABS mandated.

2.2 What regulatory system, or systems, are already in place?

The key regulatory framework is the Land Transport rule system, which set out the requirements for vehicle standards in New Zealand.

The objective is to improve motorcycle safety and reduce the number of serious injuries and fatalities.

In this case, Government regulation is preferable because otherwise people will continue to buy lower cost less safe motorcycles. There is no obvious alternative method to increase the amount of motorcycles fitted with ABS across the New Zealand market.

Government regulation is preferable, as this will achieve the positive road safety outcome in a faster timeframe. Motorcycle safety is a key priority in the Safer Journey's Action Plan 2016-2020.

Motorcycle Safety has been a key priority of the Government's road safety strategy: Safer Journey's 2010-2020 since it was prepared in 2010. Consistent with this approach, the Safer Journey's 2016-2020 Action Plan highlighted increasing the safety of motorcyclists as one of its key actions and recommended that the Ministry of Transport investigate options to increase the uptake of ABS.

Investigating increasing the uptake of ABS was selected due to the increasing level of international evidence outlining its impact on improving motorcycle safety, along with the increasing trend internationally to propose regulation of the fitting of this technology.

2.3 What is the policy problem or opportunity?

What is the problem?

Crashes involving motorcyclists are a disproportionate contributor to deaths and injuries on New Zealand roads. In 2017, 45 motorcyclists died and a further 1,283 were injured in road crashes. This was 12 percent of all deaths and 10 percent of all reported injuries on our roads. However, motorcyclists make up less than 4 percent of the vehicle fleet and less than 2 percent of all travel. The risk of being killed or injured in road crashes is 21 times higher for motorcyclists than for car drivers over the same distance.⁸

Between 2015 and 2017, motorcyclists were involved in 3,803 reported crashes. These crashes resulted in 155 deaths, 1,441 serious injuries and 2,526 minor injuries. The estimated social cost of the crashes was \$2.23 billion for the three-year period.

What is the underlying cause of this problem?

An Austroads report identified several key factors contributing to the significantly higher proportion of motorcyclist fatalities. This included the lack of protection from injury in the event of collision with other vehicles and the inherent instability of motorcycles relative to cars⁹.

Excessive wheel skidding under brake application is known to destabilise a motorcycle and increase stopping distances. Conversely, where a rider hesitates to brake sufficiently close to the tyres' tractive limit (to try to avoid skidding), stopping distances also increase.

As noted in section 2.1, ABS is a closed-loop part of the braking system that prevents wheel lock during braking resulting in improved vehicle stability, and potentially reduced stopping distance¹⁰. If the wheels are about to lock due to hard braking or slippery road conditions, the ABS hydraulic unit momentarily reduces brake pressure so the wheels continue to rotate.

While braking, the on board computer measures wheel speed and intervenes to adjust the brake pressure if it detects that a wheel is about to stop rotating. A rider should not notice this during normal, non-emergency braking but can be confident that during an emergency braking situation that the wheels will not lock up.

A preliminary cost-benefit analysis of ABS and CBS prepared by the Ministry found a significant safety benefit in mandating the fitting of ABS and CBS. The Ministry concluded that mandating the fitting of these technologies would return a significantly positive benefit-cost ratio (BCR) of between 37.0 and 43.8 depending on the date of implementation (mid-range estimates)¹¹. This finding is consistent with comparable international research, which found that ABS has a significant impact on improving motorcycling safety outcomes (see below). The high benefit reflects that ABS technology is now a relatively small cost compared

⁸ <https://www.transport.govt.nz/assets/Uploads/Research/Documents/Motorcycles-2017.pdf>.

⁹ Austroads (2014). A Discussion Paper on Elements of Graduated Licensing Systems for Motorcycle Riders. Austroads Limited. Sydney.

¹⁰ Fildes, B., Newstead, S., Rizzi, M., Fitzharris, M., & Budd, L. (2015). Evaluation of the effectiveness of anti-lock braking systems on motorcycle safety in Australia. Monash University. September 2015. Report No.327

¹¹ Ministry of Transport (2018). Mandating advanced braking systems for motorcycles: Preliminary Cost Benefit Analysis

to its benefits and to the costs of a new motorcycle.

Effectiveness of ABS/CBS - International findings

Source	Country	Crash type	Effectiveness
DIRD (2017)	Australia	CBS (<125 cc) all injury crashes	26%
Monash (2015)	Australia	ABS sensitive crashes	33%
		All injury crashes	30.7%
HLDI (2013) ¹²	United States	All crashes (overall losses)	20.3%
Rizzi et al. (2013) ¹³	Sweden	All injury crashes	34%
	Spain	All injury crashes	29%
	Italy	All injury crashes	24%
Rizzi et al. (2009) ¹⁴	Sweden	All injury crashes	39%
Smith et al (2009) ¹⁵	United Kingdom	ABS effects – all fatalities	9% - 36%
		ABS effects – all severities	1% - 10%
		CBS effects – all fatalities	6% - 26%
		CBS effects – all severities	1% - 7%

Source: Mandating advanced braking systems for motorcycles: Preliminary Cost benefit analysis¹⁶

The consistency of the findings gives us confidence in a significant safety improvement for motorcyclists with the fitting of ABS.

The preliminary cost-benefit analysis found that mandating the fitting of ABS in motorcycles 50cc and over could potentially reduce the number of deaths by 34, serious injuries by 375 and minor injuries by 656 between 2019 and 2046¹⁷.

Recent estimates of the cost of ABS per motorcycle ranges from \$350-\$650 (depending on the size and power displacement of the motorcycle)¹⁸. For motorcycles between 50cc and 125cc, ABS may not be able to be equipped due to the weight and the relative cost of a motorcycle. For this reason, the Australian Design Rule allowed for motorcycles between 50cc and 125cc to be equipped with ABS or a CBS. The cost of fitting CBS per motorcycle is estimated to be between \$250 and \$450.

A CBS is a service brake system where brakes on both wheels can be operated by the use

¹² Highway Loss Data Institute (HLDI) (2013), "Evaluation of motorcycle antilock braking systems, alone and in conjunction with combined control braking systems", Bulletin Volume 30, No 10.

¹³ Rizzi, M, Strandroth, J, Kullgren, A, Tingvall, C and Fildes, B (2013), "Effectiveness of anti-lock brakes (ABS) on motorcycles in reducing crashes – A multi-national study". In Proceeding of ESV conference (pp.1-12).

¹⁴ Rizzi, M, Strandroth, J, and Tingvall, C (2009), "The effectiveness of anti-lock brake systems on motorcycles in reducing real-life crashes and injuries". Traffic Injury Prevention, 10(5), pp.479-487.

¹⁵ Smith, TL, Gibson, T and McCarthy, M (2009), "Development of a methodology for the evaluation of safety systems for powered-two-wheelers: Final report", Transport Research Laboratory, Crowthorne, UK.

¹⁶ Ministry of Transport (2018). Mandating advancing braking systems for motorcycles: Preliminary Cost Benefit Analysis

¹⁷ Ministry of Transport(2018). Mandating advancing braking systems for motorcycles: Preliminary Cost Benefit Analysis

¹⁸ <https://ris.pmc.gov.au/2018/01/12/australian-design-rule-3301-%E2%80%93-brake-systems-motorcycles-and-mopeds>

of a single control. During emergency braking, CBS alleviates the rider from having to balance front and rear brake force manually, eliminating compromised braking due to inappropriate (panicked) rider braking. It has also been shown to reduce stopping distances¹⁹. The main benefit is that CBS stops the bike from up-ending and in some instances, reduces braking distance.

CBS does not provide the same benefits as ABS, but is an economical way to improve the safety standard of small motorcycles.

Why can the market not be expected to address this problem?

New Zealand's motorcycle fleet, like its passenger vehicle fleet, is imported from overseas. This makes us reliant on the advancement and fitting of safety technologies on vehicles constructed overseas to overseas standards.

As outlined in section 2.1, ABS is becoming increasingly available to the New Zealand market in both new and used motorcycles. However, there will continue to be a portion of the market that lacks ABS.

This is because there is a financial incentive for new motorcycle suppliers to provide cheaper, but less safe products to the market (i.e. without ABS). There will continue to be a large supply of these less safe products as the United States and other jurisdictions from which used motorcycles are currently imported have not legally mandated ABS for motorcycles. This will especially be true in the used market, where second hand imports from the United States, and older used motorcycles from any source, will be unlikely to be fitted with ABS.

Other jurisdictions have recognised the need to mandate these systems to maximise the opportunities that would not arise without government intervention. The European Union mandated that all motorcycles 125cc and over are required to be fitted with ABS from 2017, and Australia has mandated that all new motorcycles will be required to be fitted with ABS from November 2019. Unlike Europe, the Australian regulation also includes requirements for motorcycles under 125cc with a similar, but simpler technology²⁰.

With ABS becoming standard in Australia, as well as in many other overseas jurisdictions, including Europe, there is a risk that New Zealand inadvertently becomes a market for overseas stock that can no longer be sold under current or incoming regulations. As noted above, this would put downward pressure on the demand for motorcycles equipped with ABS, particularly in the used market, and slow the uptake of ABS equipped motorcycles.

¹⁹ D Green, National Highway Traffic Safety Administration, "A Comparison of Stopping Distance Performance for Motorcycles Equipped with ABS, CBS and Conventional Hydraulic Brake Systems," October 2006.

²⁰ A moped is a two-wheeled motor vehicle with an engine capacity of no more than 50cc or which has an alternative power source (for example, electricity). Its maximum speed capability is no more than 50km/h. This definition also includes three-wheeled vehicles registered as mopeds before 10 May 2011.

2.4 Are there any constraints on the scope for decision making?

There are no obvious constraints on decision making.

2.5 What do stakeholders think?

The main stakeholders who would be impacted by the decision are New Zealand motorcyclists and the motorcycle industry. There are several motorcycle interest groups representing different user groups. The Automobile Association of New Zealand, along with ACC are supportive of Government action to increase the uptake of ABS on motorcycles. Most importers of new motorcycles are members of the Motor Industry Association which has also indicated its support of mandating this technology.

There is also a Government appointed Motorcycle Safety Advisory Council that advises ACC on motorcycle safety expenditure. The Council have listed mandating ABS as one of their key policy demands for the Government²¹ and they have indicated initial support for the proposal.

We have also requested initial data from importers of new motorcycles. The following motorcycle importers have indicated that all or the majority of their imported stock is currently fitted with ABS:

- Harley Davidson New Zealand
- Suzuki
- Honda
- Triumph
- KTM
- Polaris
- BMW
- Ducati

We have been unable to collect importation data around the rates of motorcycles fitted with ABS from many of the smaller importers of new motorcycles.

Some manufactures have raised concerns about mandating ABS for trail motorcycles²², and one supplier indicated a preference that ABS should not be mandated for any motorcycle 250cc and below. This supplier felt that Australasia's low market power meant that both New Zealand and Australia would miss out on some models, and indicated that currently New Zealand imports a number of models that are not available in Australia.

The Ministry's analysis of the market found that there were sufficient models below 250cc available to the market fitted with ABS to justify intervention. Mandating the fitting of ABS for models over 125cc is also consistent with overseas practice, as noted in section 2.3.

²¹ Motorcycle Safety Advisory Council (2018) Briefing to the National Road Safety Management Group

²² Trail bikes are designed to be used both off-road and on-road, and are equipped with indicators and a headlight for street use. Trail bikes are not built to perform as efficiently as road bikes in city or highway traffic. The brakes may not be as powerful and off-road tyres do not grip wet or slippery road surfaces as well as most road tyres.

The draft amendment Rule, regulatory impact statement and Cost benefit analysis will be released for public comment. As per normal practice the consultation will be advertised in major daily newspapers and in the New Zealand Gazette. It will also be the subject of a press release from the Associate Minister of Transport announcing the consultation, the documents will also be made available on the websites of the Ministry of Transport and the NZ Transport Agency.

The consultation process is intended to take place over 6-8 weeks.

Section 3: Options identification

3.1 What options are available to address the problem?

The impact of any decision regarding motorcycles will vary considerably on the new and used motorcycle market. We are proposing a different set of dates for mandating new and used motorcycles. This will allow decision makers to consider the benefits and costs their decisions will have on the different parts of the market, rather than just the motorcycle fleet as a whole.

Options for increasing the uptake of safer braking systems

Option 1 - Advertising Campaign to provide more information to motorcyclists about the safety benefits of ABS.

Option 2 – Mandate the fitting of an anti-lock braking system for motorcycles 125cc and over and either an anti-lock braking system or a combined braking system for motorcycles over 50cc. This would be mandatory for all new-model new motorcycles entering the fleet from November 2019 and for all used motorcycles entering the fleet from November 2021.

Option 3 – Mandate the fitting of an anti-lock braking system for motorcycles 125cc and over and either an anti-lock braking system or a combined braking system for motorcycles over 50cc. This would be mandatory for all existing-model new motorcycles entering the fleet from November 2020 and for all used motorcycles entering the fleet from November 2024.

Exceptions from the Rule

Creating a fixed exception date for the requirements for ABS

There are a relatively large number of used motorcycles entering the fleet that were manufactured and which are unlikely to be fitted with ABS. In 2017, 31 percent of used motorcycle registrations (8 percent of total registrations or around 1,100 motorcycles) were manufactured in or before 1997. Given their age, many of these older motorcycles are assumed to be 'classic' or 'collectable' models not intended for regular use. Travel data shows these motorcycles generally travel small distances and so pose a limited safety risk.

There would be an exception which will automatically allow motorcycle purchasers to continue to register used motorcycles that were manufactured prior to 1 January 1990. These would otherwise not be able to comply with the proposed Rule. This date was selected because after this point ABS began to be more widely deployed across motorcycle brands, and motorcycles with ABS fitted as an option should be available for import.

A switch to disable ABS on unsealed roads

It was noted during the investigation into ABS in both New Zealand and Australia that there were concerns around the impact ABS could have on motorcyclists operating on unsealed roads and tracks. This is because ABS does not work effectively on unsealed surfaces and may actually worsen stopping distances. To mitigate this, there would be an exception to allow motorcycles to be equipped with a switch to temporarily disable ABS. This option would enable riders to choose to turn off the feature whilst operating off-road or on an unsealed road. This option is consistent with the requirements of the Australian Design Rule (ADR 33/01).

Trial and endurance motorcycles

There are a small group of road-registered motorcycles primarily used in off-road or motocross events but which occasionally travel on road. For these models of motorcycles, it would not be practical to be fitted with ABS or CBS. To allow these motorcycles to continue to operate, we would use the Australian Design Rule definitions to create trial and endurance classes. These classes of motorcycles would be exempt from the requirement to be fitted with ABS. This is consistent with the regulatory system in Australia and would have little impact on road safety as these motorcycles are driven primarily off-road.

Create a new “special interest motorcycle” permit process for “collectable” motorcycles

To allow for motorcyclists to continue to import “collectable” motorcycles, a new exemption process will be created. Under this process, applicants would be able to apply to the New Zealand Transport Agency for an exemption, which would allow the motorcycle to be granted entry to New Zealand without meeting all the requirements set out in existing rules. These motorcycles will not be required to meet the requirement to be fitted with ABS. This will only be available for motorcycles where there is no option for the model to have ABS fitted. The New Zealand Transport Agency would limit the amount of special interest permits to 100 per year.

3.2 What criteria, in addition to monetary costs and benefits, have been used to assess the likely impacts of the options under consideration?

The overarching objective is reducing the amount of motorcyclists being killed or seriously injured on New Zealand’s roads.

The options have been assessed against the objective and the following criteria:

- **Effectiveness:** The policy should maximise the safety benefit to New Zealand.
- **Efficiency:** The achievement of road safety goals and benefits in relation to the costs
- **Market Impact:** Minimise any disruption to the supply and trade of motorcycles.
- **Equity:** The costs of the options should be fairly distributed and not fall disproportionately on smaller businesses or lower income motorcyclists.

Overlaps between criteria

There is likely to be an overlap between the market impact and equity. In the short-term,

increasing the proportion of motorcycles with ABS though mandating the technology will cause disruption to the used motorcycle market. This will impact primarily on motorcyclists with lower-incomes who may not be able to purchase models with ABS.

Any decisions on whether to mandate this technology will need to be balanced with the impact of any increase in cost. If an increase in costs causes changes in motorcyclists buying behaviour (i.e. holding onto older models for longer) this may negate some of the benefits found from mandating this technology.

3.3 What other options have been ruled out of scope, or not considered, and why?

Tax on motorcycles without ABS:

As an alternative to mandating ABS for motorcycles, we considered an option to impose a tax or an additional ACC levy upon those motorcycles that did not have ABS. This would aim to increase the uptake of motorcycles with ABS in the fleet by changing consumers' purchasing behaviour, rather than mandating the makeup of the fleet.

This would have passed the cost onto the consumer, rather than the supplier. However, this was ruled out of scope, as there is not enough data available to indicate that consumers chose to purchase motorcycles due to the presence of ABS. This meant that the outcome of the changes could not be predicted.

It was also concluded that the safety benefits of ABS was so clear-cut, that the social cost of partial adoption was too great. The administrative costs to deploy this would be significant, including an expected cost of \$270,000 to update the Motor Vehicle Register.

Voluntary code of practice

Introducing a voluntary code of practice would include involving the industry to agree to a set of standards. This would require a close working relationship between business, government, and safety advocates, as part of a wider effort to increase motorcycle standards and safety.

For most importers of new motorcycles, agreeing to a voluntary code of practice would impose little cost or changes in behaviour as the market is already providing new motorcycles with ABS in large numbers. The issue identified in this approach is that there is no large representative association representing the majority of the used motorcycle importers. For used motorcycle importers, particularly those importing models from the United States, there is little incentive for them to agree to a voluntary code of practice, as this would impact on their ability to supply motorcycles currently sought by the market.

Because increasing the uptake of ABS is a critical safety issue, voluntary codes of practice were found to not be practical for the used motorcycle market.

Section 4: Impact Analysis

4.1 – Options analysis – Increasing ABS fitted on motorcycles					
	Criteria 1 (Effectiveness): The policy should maximise the safety benefit to New Zealand	Criteria 2 (Efficiency) The achievement of road safety goals and benefits in relation to the costs.	Criteria 3 (Market impact): Minimise any disruption to the supply and trade of motorcycles.	Criteria 4 (Equity): The social allocation of burdens and benefits	Overall Assessment
Option 1 Advertising	Low – Advertising the benefits of ABS would likely lead to a small increase in the uptake of motorcycles with ABS over and above the status quo. However, this number is unlikely to be significantly above the baseline, and there would still be a significant amount of motorcycles that do not have ABS entering the fleet.	Low – The projected cost of an advertising campaign needed to produce a measurable increased safety benefit would be significant. This is because the motorcycle sector is largely aware of the safety benefits of ABS. This would result in a low safety benefit compared to the cost.	Low – Advertising would be expected to have some impact on the market, but encouraging the uptake of some models or brands, but would not have any major effect. Costs of advertising are estimated to impose a minimum cost of \$2.3 million between 2019 and 2046 and would be borne by the Government.	Low – Advertising would target certain groups, but would not impose a burden on any social group. There would be an ongoing social cost from deaths and serious injuries due to ongoing sale of comparatively less-safe motorcycles.	The evidence suggests that this option would lead to a positive safety outcome, but one that is lower than the other options considered. This is discussed in detailed in section 9 of the attached cost-benefit analysis.
Option 2 Mandate the fitting of ABS for motorcycles 125cc and over and either an ABS system or a CBS for new-model new ²³ motorcycles over 50cc. This would be mandatory for new motorcycles imported by November 2019 and for all motorcycles including existing model new motorcycles and all used motorcycles entering the fleet from November 2021.	High - The cost-benefit analysis estimates that this option would prevent 34 fatalities, 375 serious injuries and 656 minor injuries between 2019 and 2046 This option would have the largest impact on reducing the amount of motorcycle injuries and fatalities of the options considered.	High – This option would provide an estimated \$186.6 million reduction in social costs Because there is already high uptake of ABS in new motorcycles, there is a low cost relative to the safety benefit expected.	Medium – This option would impose an additional \$4.25 million in motorcycle purchasing costs. Preliminary feedback suggests the majority of the new motorcycle market offers ABS to the majority of its products. There will likely be some impact on the amount of new and used motorcycles available and could increase the cost of those remaining in the short term.	Medium – The cost-benefit analysis was not able to quantify equity impacts of this option The availability of some lower cost and most used motorcycles will be significantly restricted, compared to the other options	This option returned a benefit-cost ratio of 43.8 Mandating ABS at the earliest possible date provides the largest benefit-cost ratio and safety benefits.
Option 3 Mandate the fitting of ABS for new-model new motorcycles 125cc and over and either an ABS system or a CBS for motorcycles over 50cc. This would be mandatory for new-model new motorcycles imported by November 2020 and for all motorcycles including existing model new motorcycles and all used motorcycles entering the fleet from November 2024.	Medium – The cost-benefit analysis estimates that this option would prevent 26 fatalities, 284 serious injuries and 452 minor injuries between 2019 and 2046 With the implementation date set to 2024, the expected safety impact would be delayed and more limited. Additional Less safe motorcycles would be imported to New Zealand in the intervening period.	Medium – This option would provide an estimated \$130.3 million reduction in social costs This option would lessen the economic cost on suppliers, but would also lessen (delay) the expected safety benefit.	High – This option would minimise costs and disruption to importers and purchasers compared to option 3. It would impose an additional \$3.53 million in motorcycle purchasing costs over the status quo The extended timeframe for compliance would allow the used motorcycle market a longer timeframe in order to adjust their supply and impose the least amount of disruption on the used market.	Medium – The cost-benefit analysis was not able to quantify equity impacts of this option. As noted above, mandating ABS would have an impact on used motorcycle suppliers and purchasers. The extended timeframe would give new and used motorcycle suppliers more time to source compliant models, and therefore lessen the cost passed onto the consumer There would be a higher ongoing social cost from deaths and serious injuries due to ongoing sale of comparatively less-safe motorcycles than option 3	This option returned a benefit-cost ratio of 37.0 Delaying the implementation date provides a significant, but slightly smaller benefit-cost ratio and safety benefit compared to option 3.

²³ New-model motor cycles are those that have not previously been sold. Existing-models are those that were already available for sale at the time the Rule came into effect. The delay is intended to allow importers to sell older stock.

Section 5: Conclusions

5.1 What option, or combination of options, is likely best to address the problem, meet the policy objectives and deliver the highest net benefits?

Our initial analysis suggests that mandating ABS for imported new motorcycles in late 2019 (one year from the expected date of the Rule coming into effect) and for imported used motorcycles in 2021 (option 3) would provide the largest overall benefit. This is based on the fact that a cost-benefit analysis of option 3 shows that it provides the largest safety benefit (\$186.6 million), and a BCR of 43.8. The safety benefits are increased by mandating the fitting of ABS across the motorcycle fleet at the earliest possible date.

From our initial analysis, the majority of the new motorcycle imports would be able to adjust to a mandated requirement for motorcycles to be fitted with ABS if they are provided adequate notice. There will likely be some reduction in supply in a small number of new and used motorcycle models, especially from less well known and lower priced brands. We would expect that this would be more than offset by the expected reduction in social cost by the fewer number of motorcycle deaths and injuries compared to the status quo.

We have high confidence in the expected safety benefits of mandating this technology. The consistent safety benefits found by international research, alongside the Ministry's cost-benefit analysis, are compelling.

The majority of stakeholders have indicated support or acceptance of the proposal to mandate ABS during initial informal consultation.

5.2 Summary table of costs and benefits of the preferred approach

Affected parties (identify)	Comment: nature of cost or benefit (eg ongoing, one-off), evidence and assumption (eg compliance rates), risks	Impact \$m present value, for monetised impacts; high, medium or low for non-monetised impacts	Evidence certainty (High, medium or low)
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Additional costs of proposed approach, compared to taking no action (2019-2046)

Regulated parties	Additional motorcycle purchasing costs due to the presence of an additional safety feature	\$4.2 million	High
Regulators	Costs to the NZ Transport Agency would include amendments to the Vehicle Inspection Portal (VIRM) and checklists. The New Zealand Transport Agency would need to deliver communications to the industry to inform interested parties of the changes	\$90,000	High
Wider			

government			
Other parties	Change in user benefits due to changes in mobility, if some motorcycle buyers decided not to purchase a motorcycle or to downsize (to motorcycles to less than 50 cc engine)	\$20,000	High
Total Monetised Cost		\$4.3 million	High
Non-monetised costs		Low	Medium

Expected benefits of proposed approach, compared to taking no action (2019-2046)

Regulated parties			
Regulators			
Wider government	Reduction in social cost of road crashes	\$191.00 million	High
Other parties			
Total Monetised Benefit	Additional road safety improvement due to an increase in the number of motorcycles to be equipped with advanced braking systems	\$186.6 million	High
Non-monetised benefits		<i>(High, medium or low)</i>	

5.3 What other impacts is this approach likely to have?

Motorcycle Safety levy

The Motorcycle Safety Levy was introduced in 2011, to help pay for safety improvements targeting motorcycle and moped riders, and to contribute to the rehabilitation of injured riders. It was introduced because of the comparatively high risk of injury or death for motorcyclists. This levy is collected from motorcyclists when they register a motorcycle, and is administered and spent by the ACC.

Any decision to mandate ABS would increase the safety of motorcycles and reduce their risk of death and injury. There may be some members of the motorcycle sector who will call for a decrease to the levy after this change has been implemented. This would require amendments by the ACC.

5.4 Is the preferred option compatible with the Government's 'Expectations for the design of regulatory systems'?

The preferred option is consistent with the Government's expectations for the design of regulatory systems.

The preferred approach seeks to reduce the social cost of road safety to New Zealand, but aims to minimise the cost imposed on affected groups.

Section 6: Implementation and operation

6.1 How will the new arrangements work in practice?

The preferred option to mandate ABS for motorcycles over 125cc and either ABS or a CBS for motorcycles over 50cc would require a change to the Light-vehicle Brakes (2002) rule.

Once the consultation has been completed we will work with the NZTA to finalise a communications package to inform affected parties of the planned changes. This will likely involve some level of advertising and engagement with motorcycle importers to make them aware of these requirements.

6.2 What are the implementation risks?

Consultation is yet to take place. The implementation risks will be refined following consultation.

Section 7: Monitoring, evaluation and review

7.1 How will the impact of the new arrangements be monitored?

ABS is considered a proven technology and no specific evaluation is planned to assess its effect after it is mandated. The success of the policy, in the first instance, would be that almost all motorcycles entering the fleet are fitted.

The Ministry does not have specific data outlining the number of crashes caused by motorcycle lacking ABS, (though we do have good data on the types of crashes that ABS should help address). However, the quicker uptake of ABS is expected to contribute to the measurable reduction of motorcyclists' deaths and injuries due to reduced road crashes. We would expect to be able to observe the outcome as part of our continued efforts to monitor and improve road safety.

The risk of mandating ABS is that it could adversely affect the supply or price of some imported used motorcycles. The Ministry monitors the registrations of motorcycles and

evaluates any effects of regulation.

7.2 When and how will the new arrangements be reviewed?

As noted in 7.1, the Ministry monitors the registrations of motorcycles and evaluates the impact of any regulation. If the Ministry found there is a significant disruption to the supply of motorcycles, to the point that it would be negating the modelled reduction in expected benefits, it would consider if additional steps are required to review the design of the rule.

If Cabinet agrees to proceed with the draft rule, it will be released for public consultation, which will allow stakeholders to raise any concerns about the design of the rule.