



Helping New Zealanders Build & Modify Safe Vehicles

LVV Operating Requirements Schedule

Chapter 1 Background to the LVV Certification System

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Approval Record

Signed in accordance with clause 1.3(5) of the Low Volume Vehicle Code of LVVTA, on by:			
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Name	Signature	Name	Signature
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Note 2	Text highlighted in grey shows amendments that have been made subsequent to the previous version of this chapter, and a grey vertical stroke to the left of the text denotes important new or changed information (which may include information which has been removed).		

About the LVV Operating Requirements Schedule

The LVV Operating Requirements Schedule (LVV ORS), and its sub-set of LVV ORS chapters (the chapters) set out the operational systems and processes which enables the LVV certification system to function effectively. Whereas the *Low Volume Vehicle Code* provides the legal platform upon which the LVV certification system operates, the LVV ORS provides robust operational systems and processes to ensure that LVV certification outcomes are consistent, fair, transparent, and of a high quality.

Author, Publisher, & Owner

This chapter is authored, published, and owned by the Low Volume Vehicle Technical Association Incorporated (LVVTA). LVVTA is an incorporated society established in 1992, that represents a group of specialist automotive organisations (in turn representing approximately 150,000 members) who are dedicated to ensuring that vehicles, when scratch-built or modified, meet the highest practicable safety standards.

The information in this chapter has stemmed from work undertaken by LVVTA founding member organisations that commenced in 1989 and has been progressively developed as an integral part of the New Zealand Government’s land transport regulatory system, by agreement and in consultation with the New Zealand Transport Agency (NZTA).

As a result, the considerable experience in specialist certification management built up by LVVTA and the specialist automotive member groups over the past several decades can be of benefit to members of the New Zealand public who also wish to build or modify motor vehicles.

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User's Feedback

This chapter is constantly undergoing an evolutionary development process in order to keep pace with changing trends and technology. To assist in this, LVVTA invites users of the chapter to engage in an ongoing consultation process with us by making submissions for any changes, additions, or clarifications which might improve the chapter, at any time.

Any submissions made via this rolling consultation process will be thoroughly considered, and incorporated, where appropriate, at the next available amendment opportunity.

Submissions should be made to submission@lvvta.org.nz, with the name of this chapter in the Subject line.

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Chapter 1

Background to the LVV Certification System

Purpose of this Chapter

The purpose of this LVV Operating Requirements Schedule chapter (the chapter) is to provide some background information about the LVV certification system, including why it is necessary, how it works in simple terms, the role that LVVTA plays within the LVV certification system, and the outcomes which have been achieved.

Italics are used throughout this chapter when referencing 'external documents' that are not part of this chapter.

Section 1 Why LVV Certification is Necessary

1.1 One of three specialist certification types

LVV certification is a 'specialist certification' type, and is one of three specialist certification regimes that the New Zealand Transport Agency (NZTA) is responsible for. The other two specialist certification types are 'Heavy Vehicle Certification' and 'Repair Certification'.

LVV certification is the Government-mandated certification process to ensure that light motor vehicles (generally, those with a gross vehicle mass of less than 3500 kilograms) which have been modified or individually constructed, are safe, and comply with applicable requirements.

1.2 An inherently high level of safety risk

The LVV environment is highly complex and diverse, and carries a significant degree of potential safety risk. It involves approving modifications that have been carried out to production vehicles (which have had multi-millions of research and development dollars invested into them) by unqualified persons, often in an entirely unsupervised environment - 'backyard' modification is the unkind but never-the-less true term applied to it. This lack of relevant formal qualification even applies to the LVV Certifiers and the staff of LVVTA.

This lack of qualification doesn't exist because anyone is lazy or negligent, but because it's a simple fact that there is no formal qualification or trade that supports the modification and individual construction of motor vehicles.

1.3 Mitigating the safety risk

Being a motor mechanic does not, in itself, provide the necessary background from which to safely modify or build motor vehicles, or to be an LVV Certifier. Neither does a formal engineering qualification. A motor mechanic's trade certification is an ideal platform, however the real essence of becoming skilled in the role of a modifier or an LVV Certifier is having a massive amount of knowledge and practical hands-on experience, developed over a lifetime of immersion in the vehicle modification and construction environment.

Even with the right background, a very high degree of potential safety risk still exists, and this risk must be mitigated by the implementation of many safe-guards, including the careful selection and appointment of the right people to become LVV Certifiers, highly-robust technical requirements that are applied by the modifiers and the LVV Certifiers, and equally high-quality training, coaching, mentoring, technical support, and auditing of the LVV Certifiers.

This is the environment in which LVVTA has been immersed during the past 30-plus years.

Section 2 The Origins of LVV Certification

2.1 Government-mandated rules on the horizon

During the late 1980s, the Ministry of Transport (before the Land Transport Safety Authority and its successors were established) was preparing for the implementation of the *Transport (Vehicle Standards) Regulations 1990 (VSRs)* into New Zealand transport law, for introduction in 1991.

This new legislation, primarily aimed at mass-produced vehicles, also ushered in the requirement (for the first time in New Zealand) for modified and individually constructed vehicles to be subjected to some sort of independent expert safety assessment.

If you talk to anyone who was heavily involved in motor vehicle modification and construction during the 1980s and earlier, they'll tell you there was a need for a certification system to make sure that modified and individually constructed vehicles are safe.

The Ministry of Transport's proposed method of regulating modified and individually constructed vehicles within the implementation of the *VSRs* was to be the adoption of the *Australian Design Rules (ADRs)*, with the inspections against the *ADRs* to be carried out by heavy transport engineers.

2.2 The proposal for 'self-governance'

The New Zealand Hot Rod Association (NZHRA) engaged with the Ministry in 1989 to gain an understanding of the proposed legislation, and upon learning about it, developed serious concerns about its potential impact on their members' vehicles. NZHRA commenced discussions with the Ministry in 1989 to encourage consideration of better alternatives.

After a lengthy 'education and negotiation' period, and having developed a good working relationship with some key senior managers within the Ministry, the NZHRA's representatives proposed a 'self-governance' concept as an alternative to the Ministry's plan.

The NZHRA's 'self-governance' proposal was based around writing their own (more relevant) technical rules, and using their own highly experienced car builders as the 'inspectors'.

NZHRA's self-governance proposal was eventually approved by the Ministry, and over an 18-month period, NZHRA set to work to create the humble beginnings of a national certification system.

This was an immense project for a group of enthusiasts without experience or funding, but despite the circumstances, NZHRA managed to develop their '*Code of Construction Manual*', created operational processes, appointed inspectors and trained them, and certified their first vehicle in April 1992.

The legal mechanism which enabled LVV certification to kick-off came via the development of the first '*Low Volume Vehicle Code*' (*LVV Code*), jointly developed by the Ministry and NZHRA.

Other enthusiast groups followed the NZHRA's lead and lobbied the Ministry for the same concession during the early 1990s, and in a short space of time a number of different enthusiast group-based LVV certification systems were in operation, based on the NZHRA's highly successful self-governance concept.

Each enthusiast group developed their own set of requirements, appointed their own inspectors, and established their own systems.

Section 3 LVVTA's Involvement

3.1 Establishment of LVVTA

In 1992 the Low Volume Vehicle Technical Association Incorporated (LVVTA) was established by the same enthusiast groups who had set up their own LVV certification systems, in order to provide a cohesive connection between the enthusiast groups and the Ministry. This initiative, led by NZHRA, enabled the Ministry to deal with one body representing the needs of all of the enthusiast groups, and provided better consistency in communications.

The other important early role LVVTA played was to produce and issue the LVV certification plates, introduced as a means of showing the Warrant of Fitness inspectors that a vehicle to which an LVV certification plate was fitted had been inspected and approved to the *LVV Code*.

3.2 LVVTA's increasing responsibilities

By the mid-1990s, the newly formed Land Transport Safety Authority (established to look after certain regulatory functions on behalf of the Ministry) began to task LVVTA with the management of other aspects of the LVV certification regime. LVVTA began to oversee the LVV certification processes being applied by the different enthusiast groups and became responsible for developing a series of technical standards (known as *LVV Standards*) to be applied across New Zealand's fledgling LVV certification industry in order to improve consistency of outcomes between the various groups' LVV Inspectors.

In 1996, to further improve consistency, LVVTA amalgamated the individual LVV certification systems being operated by the individual enthusiast groups into one 'single certification system', with all of the club-based 'Inspectors' becoming 'LVV Certifiers', and working to a common set of requirements based on the NZHRA certification system and LVVTA's *LVV Standards*.

LVVTA, along with the early technical standards, had, by the late 1990s, become incorporated by reference into New Zealand's Land Transport regulatory framework, via being referenced within the Land Transport Rules which were being developed at the time to replace the *Transport (Vehicle Standards) Regulations 1990*.

LVVTA's roles and responsibilities continued to ramp up during the early 2000s, which included developing the operational processes necessary for the basic operation of the LVV certification system, and providing technical support and training to the LVV Certifiers in the application of the *LVV Code* and the *LVV Standards*.

The basic set-up of the LVV certification system took place in the fifteen-year period between 1992 and 2007. Progress was slow, as everything was hampered by a lack of any kind of funding other than the minimal 'certification plate fee' applied to each LVV certification. Because of this lack of resources, the LVV certification system, with the development and implementation of its attendant technical *LVV Standards*, *LVV Code*, *LVV Operating Requirements Schedule*, and various systems and processes including providing basic technical support and training to the LVV Certifiers, was all carried out by a staff of one to two for the first seven years, and then three to six staff for the next seven years.

This all occurred reasonably well considering the funding constraints and small staff numbers.

3.3 Supporting LVV Certifier performance

By the late 2000s it became increasingly apparent that there was a worrying lack of consistency in the quality of LVV certification inspections taking place around the country.

LVVTA became aware that its efforts needed to be prioritised towards applying a greater focus on improving the overall quality of LVV certification decisions by LVV Certifiers, and improving the consistency between LVV Certifiers, so as to achieve similar LVV certification outcomes from Whangarei to Invercargill. Most LVV Certifiers were doing a good job, but in this highly complex and diverse environment, they needed and wanted a greater level of support.

In pursuit of this new focus, a considerable number of new safety-related responsibilities in the area of managing the LVV Certifiers, and ensuring a high and consistent level of inspection quality, was undertaken by LVVTA. This included the implementation of an LVV File Review System (a desk-top auditing process), and greater levels of coaching and more targeted training, all based on the learnings provided by the LVV File Review System.

Error Recording and Error Reporting, and an associated *Error Report Summary* system, was introduced in 2009 to support the LVV File Review process. This provided the LVV certification system with greater transparency, and solid data on the comparative performance of all LVV Certifiers, which could be provided regularly to the regulator (by now the New Zealand Transport Agency) so that it had an awareness of the general LVV certification inspection quality.

3.4 A co-regulatory relationship

Since 2010, these new LVV Certifier oversight processes have been further refined and added to, and have all played a part in significantly improving the overall inspection quality and consistency of LVV certifications.

On occasions that an LVV Certifier has been unable or unwilling to make good LVV certification decisions, LVVTA has been able to provide an effective ‘fire-wall’ to prevent an LVV Certifier’s poor certification decisions leading to unsafe vehicles going on the road (that had been approved by those LVV Certifiers), by withholding the LVV certification plates until evidence provided by the LVV Certifiers showed the vehicles had been made safe and compliant.

In such situations, LVVTA and NZTA have worked together to resolve any significant safety risks.

LVVTA has grown substantially over its first three decades, as it has transitioned from its small hobbyist-based roots into a more commercially oriented organisation. LVVTA now effectively works as a co-regulator with NZTA, and manages most safety-related aspects of the vehicle modification and construction industry, and LVV certification operations, on NZTA’s behalf.

LVVTA’s roles and responsibilities have moved well beyond its original core obligations of simply developing and maintaining the *LVV Code* and *LVV Standards*, and providing technical support and training. Everything that LVVTA does today will always be necessary if the LVV certification system is to continue operating well and minimising safety risk to the motoring public.

A schematic which serves to simply illustrate the ever-increasing roles and responsibilities of LVVTA referred to in this sub-section is shown in ‘APPENDIX 2 – LVVTA EVOLUTIONARY OVERVIEW’ at the back of this chapter.

3.5 Key attributes of LVVTA

Over the past three decades, LVVTA has developed an acute understanding of the low volume vehicle environment, together with its associated inherent risks and challenges.

LVVTA has been able to channel its passion for the low volume vehicle environment, and understanding of it, to develop a very strong safety-focused culture, together with an embedded focus on maintaining a healthy balance between ‘gold-standard’ safety whilst enabling New Zealanders to enjoy the freedom and flexibility of being able to modify and build motor vehicles within a very practically oriented environment.

This is made possible through LVVTA having:

- heavily committed and highly skilled staff; and
- a Technical Advisory Committee (to provide technical support to the LVVTA staff) whose membership includes some of the most highly skilled motor vehicle constructors in New Zealand; and
- a very close working relationship with the national network of LVV Certifiers; and
- a well-established relationship with NZTA (and its predecessors), and the Ministry of Transport; and
- a significant amount of voluntary input from its enthusiast membership; and
- a Board of Directors-based governance structure, comprising a diverse mix of high-level skills; and
- professional offices featuring a vehicle inspection area, training facilities, and New Zealand's only cyclic testing unit developed exclusively for the durability-testing of LVV-related components.

The principal reason for the success of this somewhat unusual specialist certification management model is that LVVTA is an enthusiast-based organisation, which is highly incentivised to succeed.

LVVTA is:

- motivated exclusively by enabling New Zealanders to safely modify and build motor vehicles; and
- is sufficiently small and agile to be able to quickly respond to new safety risks and adapt to changing technology; and
- due to its incorporated society status, not profit-driven.

3.6 LVVTA's income source

LVVTA is funded by a levy applied to each LVV Electronic Data Plate (LVV EDP), or engraved certification plate prior to 1 February 2021, that LVVTA issues. This is a portion of an approved Crown Regulatory Fee. This funding model – which is tied directly to, and limited by, the number of LVV certifications that take place – was a simple, clean, and easy funding model which worked well during the earlier period when LVVTA only had its core responsibilities to worry about.

This 'locked' funding model is, despite the considerable growth of LVVTA's roles and responsibilities, still the primary source of LVVTA's income, however since 2020 NZTA is now contributing toward the public good elements of the LVV certification system operations.

Section 4 How the LVV Certification System Works

4.1 Division of responsibilities

NZTA is responsible for the formal authorisation, disciplinary action, and revocation of the LVV Certifiers, and the application of their auditing operation known as the 'Performance Review System'.

LVVTA is responsible for all other aspects of the development and management of the LVV certification system.

The LVV certification system is governed by LVVTA's '*LVV Certification Manuals*', which is a ten-volume documentation system that provides the legal framework, the operational framework, the technical standards, and other information and support required to enable the LVV certification system to operate effectively.

The ongoing development and application of the LVV certification system has been continued as Government responsibility for motor vehicle certification in New Zealand has transferred over the years from the Ministry of Transport to Land Transport Safety Authority, then to Land Transport New Zealand, and most recently to the New Zealand Transport Agency.

4.2 Basic principles of the LVV certification system

The LVV certification system is intended to ensure that any modifications carried out to a light vehicle are safe, and that the vehicle remains fit for its purpose. The process also applies to individually constructed (scratch-built) light vehicles.

The LVV certification process, broken down into its most basic principles, is as follows:

- Authorised Vehicle Inspectors (AVIs – more commonly known as Warrant of Fitness inspectors) are expected to identify modifications to light vehicles during Warrant of Fitness inspections.
- Upon identifying modifications, AVIs are expected to determine whether the modification is one that is required to be certified to the *LVV Code*. They find this information from within the *LVVTA Modification Threshold Schedule* (this is available to the public, electronically, free of charge, from www.lvvtta.org.nz), which is incorporated within the *Vehicle Inspection Requirements Manual (VIRM)* modification tables. (The *VIRM* is the NZTA-supplied electronic document that provides AVIs with their inspection requirements and processes).
- If a modification is required to be LVV certified, the AVI is expected to inspect the vehicle to determine whether or not an LVV EDP (or an engraved certification plate prior to 1 February 2021) is fitted to the vehicle, and if so, whether or not the LVV EDP (or engraved certification plate) lists all of the modifications present on the vehicle.
- If the vehicle has no LVV EDP (or engraved certification plate), or a plate is present but one or more of the modifications present on the vehicle are not listed on the plate, the AVI is expected to refer the vehicle to an LVV Certifier for LVV certification before the vehicle can be issued with a Warrant of Fitness.
- The vehicle owner contacts an LVV Certifier (detailed on the LVVTA website) who will inspect the vehicle against the *LVV Standards*, *LVV Information Sheets*, the *NZ Car Construction Manual* and *NZ Motorcycle Construction Manual*, and other LVVTA technical information.
- The LVV Certifier will fill out a series of *LVV Base Forms* and *LVV Inspection Form-sets* that support the *LVV Standards* and other documents that directly relate to the modifications present on the vehicle.
- If the vehicle is unsafe or non-compliant, the LVV Certifier will require remedial work to be carried out, and may provide advice on how best to achieve the desired outcome.
- Upon satisfaction that the vehicle is fully safe and compliant, the LVV Certifier will:
 - fit the LVV EDP to the vehicle in the prescribed location; and
 - forward all of the required *LVV Base Forms* and *LVV Inspection Form-sets*, photographs, and other supporting documentation (known as the '*LVV Certification File*') to LVVTA.
- LVVTA will carry out a File Review (a desk-top audit of the File supplied by the LVV Certifier), and if satisfied that the LVV Certifier's obligations are met, and there is no reason to believe that the vehicle is unsafe or non-compliant, LVVTA will:

- electronically ‘activate’ the LVV EDP fitted to the vehicle by entering the modification or construction feature details onto the LVV EDP; and
- notify the LVV Certifier that this has occurred.
- The vehicle will then be re-presented to the AVI, who will, after reviewing the modification or construction feature details listed on the LVV EDP, and becoming satisfied that the information on the LVV EDP correctly reflects the modifications or construction features present on the vehicle, issue the Warrant of Fitness.

LVVTA and NZTA work together to resolve LVV-related problems as they emerge, and to continuously improve the LVV certification system and ensure it remains fit for purpose.

The relationship between the many aspects of the LVV certification system, including the connection between the various participants, the basic document structure, and the way in which the LVV certification system is integrated into the land transport regulatory system is shown in APPENDIX 1 – LVV CERTIFICATION SYSTEM OPERATIONAL OVERVIEW at the back of this chapter.

Section 5 Key Elements of the LVV Certification System

5.1 The Low Volume Vehicle Code

The *LVV Code* provides the legislative framework for the LVV certification system in New Zealand, and is legally empowered through the incorporation by reference of the *LVV Code* into the *Land Transport Rule: Vehicle Standards Compliance 2002*. The *LVV Code* is also incorporated by reference into the other individual land transport equipment rules.

In turn, the *LVV Code* incorporates by reference all of the other primary documents within LVVTA’s specialist certification management system.

The *LVV Code* is developed by LVVTA, in consultation with NZTA, and is available to the public electronically, free of charge, from www.lvvta.org.nz

5.2 LVVTA’s technical requirements

LVVTA’s specialist certification management system incorporates a wide range of detailed technical documents relating to typical vehicle modifications and construction features, which are based on a mixture of ‘best practice based on historical knowledge’, and formal engineering theory.

These technical requirements include:

- a series of *LVV Standards* (technical standards) for the various types of modifications and construction features carried out; and
- a series of *LVV Safety Alerts* which draw attention to identified safety risks and their respective risk-mitigation solutions, for the LVV Certifiers, modification industry, and motoring public; and
- a series of *LVV Information Sheets* which provide technical and procedural information on an as-and-when-needed basis to the LVV Certifiers, modification industry, and motoring public; and
- the *New Zealand Car Construction Manual*, and the *NZ Motorcycle Construction Manual*, which set out legal requirements and best practice methodology for complex modification and scratch-built low volume vehicle construction.

The *LVV Standards*, and *NZ Car Construction Manual* and *NZ Motorcycle Construction Manual*, are developed in consultation with NZTA. All of the LVVTA's technical documents are available to the public electronically, free of charge, from www.lvvta.org.nz.

5.3 LVVTA's operational processes

LVVTA has developed a specialist certification management system for LVV certification, which provides a comprehensive framework of operational processes, all detailed throughout the various sections of this LVV Operating Requirements Schedule (LVV ORS).

The LVV ORS could be thought of as the 'rules of the game' document that the key participants of the LVV certification system – in particular LVVTA and the LVV Certifiers – follow on a day-to-day basis.

The principal operational elements of LVVTA's specialist certification management system contained within the various sections of the LVV ORS include:

- a comprehensive application and assessment process by which to accurately and objectively measure the knowledge and practical experience of a person wishing to become appointed as an LVV Certifier, so as to accurately determine whether or not the applicant will have the appropriate background required to perform successfully; and
- an initial training and mentoring system, which ensures that, from a practical perspective, an applicant (who has passed the assessment process referred to above) is equipped with the necessary skills to commence operation as an LVV Certifier; and
- a robust LVV File Review system (a desk-top auditing process), which provides a thorough every-day-based window into the decisions and general performance of each LVV Certifier, which ensures that all LVV Certifiers are following the required processes and are making sound LVV certification decisions; and
- a one-on-one coaching system to fill any gaps in knowledge of any of the LVV Certifiers, based on learnings from the LVV File Review system; and
- various elements of formal training for LVV Certifiers, provided in order to continuously improve the overall competence and consistency of decisions across all LVV Certifiers; and
- an error-recording system which objectively and transparently records all LVV Certifiers' technical and procedural errors (via a graphed and risk-based representation), which provides factoring for the volume and complexity of certifications undertaken, so that each LVV Certifier's performance can be measured against all other LVV Certifiers; and
- an error-reporting system for notifying NZTA on a regular basis of all errors (both technical and procedural) made by all LVV Certifiers, which shows NZTA which LVV Certifiers, if any, are not performing well, or are performing in a way that is inconsistent with the other LVV Certifiers; and
- regular meetings with NZTA via various working groups, to ensure that LVVTA's approach and thinking on both policy and technical matters is aligned with that of NZTA; and
- a performance management system which provides various processes by which to support and help LVV Certifiers, where necessary, to improve their performance, including 'Monitoring', 'Mentoring', 'Peer Review Assessment', and 'Competence Reassessment'; and
- a complaint process which provides detailed evidence-based information about any LVV Certifiers who, despite LVVTA's best efforts to coach, mentor, and train, continue to present an unacceptable level of safety risk to the motoring public, so as to enable NZTA to take any necessary disciplinary action.

These operational processes are developed in consultation with NZTA. All of LVVTA's operational processes are captured within the relevant chapters of the LVV ORS.

These LVV ORS chapters are available (either as individual chapters or as a complete document) to the public electronically, free of charge, from www.lvta.org.nz.

The principal legal, technical, and operational elements of LVVTA's specialist certification management system summarised above collectively ensure that the LVV certification system in New Zealand operates efficiently, effectively, and to a very high safety standard, thereby minimising safety risk to the motoring public.

Section 6 Outcomes Achieved by the LVV Certification System

6.1 A successful specialist certification management model

Over 200,000 low volume vehicles have been LVV certified through this system since 1992, and currently, between 6000 and 6500 vehicles are LVV certified each year.

The high regard in which New Zealand's LVV certification system is held comes as a result of the many safe-guards that LVVTA has developed and introduced over the years – particularly the rigorous assessment process for people who wish to become LVV Certifiers, and the vigilant LVV File Review (desk-top auditing) system.

New Zealand's LVV certification system is now widely regarded as a world-best system for modified and individually constructed vehicles, both for the regulator (because the system is robust and heavily safety oriented), and for the consumer (because the system is practically oriented and provides achievable compliance for both the modification industry and the home-enthusiast).

The LVV certification system is also widely held as an ideal model of good government/industry collaboration.

In an independent report (known as the *Crequer & Gow Report*) commissioned by the Access and Use Group of NZTA in 2011 (to gain an industry insight of the performance of the Access and Use Group), the authors of the report stated “...we consider that this (the LVVTA regulatory model) should be applied much more to the wider industry, and this is a strongly held industry view”.

6.2 The need to protect the future

The end result, over 30 years from the beginning of LVV-time, is a comprehensive compilation of best practice technical requirements which have been based on historical knowledge, that has kept New Zealand motorists safe, and protected our ability to build and modify vehicles.

It is important that these safeguards continue to be applied diligently in order to continue mitigating the inherently high safety risk that exists within the vehicle modification and construction environment.

If vigilance is dropped, the ultimate price could be that New Zealanders' ability to build and modify cars is severely compromised.

Section 7 New Challenges for the LVV Certification System

7.1 Unsafe aftermarket automotive parts

A new challenge that has absorbed a disproportionate amount of LVVTA's resources in recent years is the proliferation of unsafe aftermarket automotive components that are flooding the parts market, which can be purchased easily and cheaply by anyone, through the internet.

While the internet has meant that more choice is available than ever to the potential purchaser, the main consequence of this plethora of options is the compulsion for online retailers to undercut each other on price (normally achieved through reduction in production costs), meaning that the bulk of this choice of parts are those of inferior quality.

After all, when a person can only look at a picture of a product, its price becomes the significant deciding factor.

In days of old, the only option was to go to a local performance parts retailer and buy something off the shelf. Because they had a reputation to keep (in order to stay afloat as a retailer), they would normally make sure that the parts they sold were of a reasonable standard, and would stop selling anything that they found wasn't any good. This ensured that aftermarket parts available to the public were of a reasonable standard of quality.

There is not the same recourse to an overseas website however, and anecdotal evidence suggests they are unlikely to care what a person from a small country at the bottom of the world thinks of their product. Their main motive is profit – as long as they can keep selling their wares to consumers worldwide, at a price that their reduced manufacturing quality and economies of scale permit (that is lower than their competitors, including the aforementioned small local parts retailer), their profits will continue to grow.

This degradation of quality driven by cost-cutting on the part of the online parts retailer creates a race-to-the-bottom scenario, where LVVTA is left to literally pick up the (broken) pieces.

LVVTA has been effectively forced – by default in that no other organisation has taken responsibility (or is required to take responsibility) – to take on a 'watchdog' role in this area.

As a result, LVVTA is now heavily involved in product assessment and testing, having identified 400 unsafe aftermarket automotive components on the market in 2019 alone. In each case, it is necessary to go through a process of learning about the component (which can include inspection and testing), analysing the level of risk, and then communicating information about those products that are determined to be unsafe out to the industry and enthusiast sector via LVVTA's own communication channels and via the specialist automotive media.

Terms & Definitions for Chapter 1

ADRs	(Australian Design Rules) means the Government-mandated regulatory system for vehicles in Australia.
Aftermarket	means a component or system made by a manufacturer, other than a high-volume motor vehicle manufacturer, who produces catalogued components or systems on a production-run basis for the mass-market.
Applicable requirements	means any technical or operational requirement referred to in the <i>LVV Code</i> which an LVV must comply with in order to be approved for LVV certification.
AVI	(Authorised Vehicle Inspector) means a person who carries out WoF inspections on behalf of NZTA.
CCM	(NZ Car Construction Manual) means LVVTA's detailed technical standards, incorporated by reference under the <i>LVV Code</i> , which must be met to enable an LVV to comply with applicable requirements. The <i>CCM</i> is referred to by the corresponding <i>LVV Standard</i> .
Crown Regulatory Fee	(also known as the NZTA fee) means the levy charged by NZTA for every LVV certification.

GVM	(Gross Vehicle Mass) means the maximum total weight that a vehicle manufacturer certifies a vehicle, and its payload, for. More detailed information about GVM can be found in <i>Land Transport Rule: Vehicle Standards Compliance 2002</i> .
Inspection	means the vehicle inspection process specified in <i>section 2.4, 2.5, and 2.6</i> of the <i>LVV Code</i> , carried out by an LVV Certifier during the LVV certification of a low volume vehicle.
LVV	(Low Volume Vehicle) means, in simple terms, vehicles which are modified or scratch-built in small numbers, and includes individually modified or scratch-built vehicles. The full definition of an LVV is contained in the <i>LVV Code</i> .
LVV Base Forms	(Low Volume Vehicle Base Forms) means the set of Forms used by an LVV Certifier as part of their inspection of an LVV which are common to all LVV certifications.
LVV Certification	(Low Volume Vehicle Certification) means the process specified by the <i>LVV Code</i> , by which the design of an LVV is determined to comply with any applicable requirements, and, in recognition of which, an LVV EDP is affixed.
LVV Certification File	(Low Volume Vehicle Certification File) means the set of documents, including the <i>LVV Base Forms, LVV Inspection Form-sets</i> , supporting information, and photographic record, which an LVV Certifier is required to collate during an LVV certification inspection process, and submit to LVVTA upon completion.
LVV Certification Manuals	(Low Volume Vehicle Certification Manuals) means LVVTA's set of manuals which house all of LVVTA's legal, operational, and technical certification documents which are incorporated by reference under the <i>LVV Code</i> . The <i>LVV Certification Manuals</i> contain the <i>LVV Code, the LVV ORS, LVV Standards, LVV Base Forms and LVV Inspection Form-sets, Safety Alerts, Information Sheets, Newsletters, and Reference Material</i> .
LVV Certifier	(Low Volume Vehicle Certifier) means a person appointed by NZTA under the provisions of <i>Land Transport Rule: Vehicle Standards Compliance 2002</i> , to carry out certification of modified and scratch-built LVVs, as specified by <i>Part 2</i> of the <i>LVV Code</i> .
LVV Certify	(Low Volume Vehicle Certify) means the same as LVV certification.
LVV Code	(Low Volume Vehicle Code or the Code) means an LVVTA document which is incorporated by reference into the <i>Land Transport Rule: Vehicle Standards Compliance 2002</i> , and all applicable individual <i>Land Transport equipment rules</i> , that provides the legal framework to enable the LVV certification of modified and scratch-built LVVs in New Zealand.
LVV EDP	(Low Volume Vehicle Electronic Data Plate) is an RFID tag, in use from February 2021, fitted to an LVV upon completion of the LVV certification process, which when scanned by an NFC-capable device, displays details and photographs of the modifications and construction features on the LVV to which it is affixed.
LVV File Review System	(Low Volume Vehicle File Review System) means a comprehensive desk-top auditing process applied by LVVTA to a specified percentage of <i>LVV Certification Files</i> submitted by LVV Certifiers, upon completion of their LVV certifications, as an additional step in ensuring safety and compliance of LVVs.
LVV Information Sheets	(Low Volume Vehicle Information Sheets) means <i>Information Sheets</i> incorporated by reference under the <i>LVV Code</i> , which provide or support applicable requirements

LVV Inspection Form-set	(Low Volume Vehicle Inspection Form-set or LVV Form-set) means the check-sheets used by an LVV Certifier to guide and record their inspection of an LVV, and confirm compliance with applicable requirements.
LVV ORS	(Low Volume Vehicle Operating Requirements Schedule or ORS) means the document, incorporated by reference under the <i>LVV Code</i> , which provides LVVTA's operational processes and systems necessary to meet applicable requirements. The <i>LVV ORS</i> sets out the obligations and responsibilities of LVVTA, and the LVV Certifiers.
LVV plate	(Low Volume Vehicle engraved certification plate) is an engraved aluminium plate (approximately 110 mm x 80 mm in size) in use from the commencement of LVV certification in April 1992 to February 2021, which displays a summary of information, via engraving, about the modifications and construction features on the LVV to which it is affixed.
LVV Safety Alerts	(Low Volume Vehicle Safety Alerts or Safety Alerts) means LVVTA's publication system, incorporated by reference under the <i>LVV Code</i> , which is designed to draw attention to unsafe aftermarket automotive components, and which must be met to enable an LVV to comply with applicable requirements.
LVV Standards	(Low Volume Vehicle Standards) means LVVTA's technical standards, incorporated by reference under the <i>LVV Code</i> , that set out the legal requirements which vehicles that are modified and scratch-built in New Zealand must meet. Each <i>LVV Standard</i> refers to a corresponding <i>CCM</i> or <i>MCM</i> for detailed technical requirements.
LVVTA	(Low Volume Vehicle Technical Association) is an incorporated society comprised of specialist vehicle associations. Established in 1992, its objectives are to represent the interests of vehicle modifiers and builders in New Zealand, and to ensure high safety standards for modified and scratch-built LVVs. The LVVTA owns and administers the <i>LVV Code</i> .
MCM	(NZ Motorcycle Construction Manual) means LVVTA's detailed technical standards, incorporated by reference under the <i>LVV Code</i> , which must be met to enable a low volume motorcycle to comply with applicable requirements. The <i>MCM</i> is referred to by the corresponding <i>LVV Standard</i> .
MDC	(Modification Declaration Certificate) , also known as Declaration or Declaration Certificate), means a document that was issued to modified and scratch-built LVVs between 1991 and 1998, as a record of confirmation that the LVV was built or modified prior to the introduction of the <i>Transport (Vehicle Standards) Regulations 1990</i> , and is therefore not required to be certified to the <i>LVV Code</i> . This is provided that the LVV has been continuously registered and has not been modified further.
Modification	is defined in <i>Land Transport Rule: Vehicle Standards Compliance 2002</i>) to change a vehicle from its original state by altering, substituting, adding or removing any structure, system, component or equipment, but does not include repair. 'Modified' and 'modification' have corresponding meanings.
NFC	(Near Field Communication) means a short-range wireless technology, typically requiring a distance of 40 mm or less to initiate a contact.
NZHRA	(New Zealand Hot Rod Association) is an organisation which administers hot rodding within New Zealand, and is a founding member of the LVVTA.
NZTA	(New Zealand Transport Agency) is a Crown entity responsible for managing New Zealand's land transport system.

Payload	means the maximum weight that a vehicle manufacturer certifies that a vehicle can carry.
PRS	(Performance Review System) is the quality management monitoring tool used by NZTA to measure the performance of all certifiers, including LVV Certifiers.
RFID	(Radio Frequency Identification) is a technology which uses electromagnetic fields to automatically identify and track tags attached to objects. These tags link to electronically stored information, which can be accessed using RFID readers.
Scratch-built (LVV)	means, in simple terms, an LVV which has been individually constructed from unrelated components, or a mass-produced vehicle which has been modified to such an extent that it can no longer be considered to be a modified mass-produced vehicle. The full legal definition of a scratch-built LVV is currently under review, and will be incorporated within the <i>LVV Code</i> once revised.
Tare	means the unladen weight of a vehicle.
VIRM	(Vehicle Inspection Requirements Manual) means NZTA's inspection manuals, used by certifiers for every certification activity except for LVV certification.
VSRs	(Transport [Vehicle Standards] Regulations 1990 or Vehicle Standards Regulations) , which was the NZ Government-mandated regulatory system for motor vehicles in New Zealand prior to the commencement of the current Rules programme.
WoF	(Warrant of Fitness) means a safety inspection and approval process for in-service vehicle, issued by an NZTA-appointed AVI.

APPENDIX 2 – LVVTA EVOLUTIONARY OVERVIEW

