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THE NEWSLETTER OF THE LOW VOLUME VEHICLE TECHNICAL ASSOCIATION (INC)

NZTA-LVVTA CONTRACT FOR SERVICES SIGNED

The second quarter of 2020 was quite a momentous period for LVVTA in that it represented the finalisation, and signing, of a Contract for Services between the Agency and LVVTA. This Contract had its beginnings in October 2018 when the Agency recognised that LVVTA's responsibilities had long since surpassed its resources, and so a concerted effort was then made by the Agency to help LVVTA to become economically-sustainable into the long-term future.

LVVTA was established in 1992, and its core responsibilities then were to develop technical standards (now known as 'LVV Standards') and inspection Form-sets, provide a support mechanism to LVV Certifiers through provision of technical support and training, plus produce and issue the LVV certification plates to the LVV Certifiers. LVVTA's sole income would be a regulated fee for the LVV certification plate, which would be set at such a rate as to enable LVVTA to meet its changing obligations over time. This was a good model for many years – completely free of administrative burden – but LVVTA's obligations and responsibilities to the Agency, the industry, and the public kept increasing at a rate greater than that which a palatable series of plate fee increases could provide for.

It became evident in recent years that LVVTA needed support from the Agency to enable LVVTA to shift away from its traditional (28-year old) modus operandi of 'running on the smell of an oily rag' and become properly funded so that it can operate in a professional and financially-sustainable manner into the long term future.

During 2018 and 2019 the Agency recognised that there was a considerable amount of public good associated with LVVTA's work, and on that basis the full cost of all of the services that LVVTA provides shouldn't necessarily be borne entirely by the system users. Over an 18-month period, LVVTA engaged with the Agency, through its contracted experts Neil Cook and Mike Rudge, to develop a Contract which would identify a group of services which the Agency would be prepared to make a financial contribution towards. In essence, LVVTA's core certification services (much of which is defined as 'private good' services) are met by the system users, and via the Contract for Services, the Agency now contributes towards the 'club good' and the 'public good' services, which are also met in part by the system users. The Contract was signed on the 18th of June, by Kane Patena on behalf of the Agency. *(Cont'd on page 2...)*

Above: After an 18-month journey, the Contract for Services between the NZ Transport Agency and LVVTA was signed on June 18, by (from left) Kane Patena (General Manager of Regulatory Services NZ Transport Agency), Robert Buchanan (LVVTA Board Chair), and Tony Johnson (LVVTA Chief Executive). This is a significant milestone for LVVTA, as the Agency recognises the value LVVTA provides by making an annual financial contribution to the cost of running the LVV certification system.

Absent with Leave

LVVTA offers its apologies for the newsletter's absence for almost 18 months. As people close to LVVTA and the LVV certification system know, LVVTA has, for all of its 29 years, operated very much 'on the smell of an oily rag', with its obligations and responsibilities vastly outstripping its resources. The reason for the newsletter's temporary disappearance was due to the effort being put in behind the scenes developing the NZTA-LVVTA Contract for Services detailed earlier on this page. One of the prices we paid for the substantial amount of time that went into the Contract development was the halt of newsletters for a while, however, this and a few other things that didn't happen during that period will be a small price to pay for ensuring the long-term financial sustainability of LVVTA, and the continued success of the LVV certification system in New Zealand. Some of the news stories contained in this LVVTA Newsletter relate to things which happened last year.

NZTA-LVVTA CONTRACT FOR SERVICES SIGNED (cont'd)

(...Cont'd from page 1) Kane Patena made the following statements when communicating the milestone within the Agency:

"A great relationship with the Low Volume Vehicle Technical Association (LVVTA) was further cemented yesterday when I signed a contract alongside LVVTA board chair Robert Buchanan and chief executive Tony Johnson. This contract formalises a funding agreement from Waka Kotahi [NZ Transport Agency] *to LVVTA and builds on the service that LVVTA has been providing on behalf of Waka Kotahi over almost 30 years as the LVVTA is contracted to administer modified vehicle standards and the Low Volume Vehicle certification system. The signing of the contract today gives us the security of knowing that the LVVTA has got a sustainable funding model and approach for them to continue to make sure the vehicle certification sector functions well and keeps people safe.*

Robert said the long-standing relationship has been a very successful co-regulatory agreement that has worked very well but "in a sense, it outgrew itself. So we've come to the point now where we've caught up with that, it's a mature relationship and we've put it on a sustainable footing going forward and that's going to be in the best interests of both organisations but public safety as well," Robert says.

Tony said the model is regarded as world-best by many people and the LVVTA's strong oversight of certifiers through training, mentoring and coaching plays its part towards a safe New Zealand land transport system. "It's a good outcome for the Transport Agency in terms of taking away headaches and ensuring safer outcomes."

The LVVTA Board and staff are very appreciative of the development of the Contract, and would like to thank Kane and the rest of the Agency staff for their vote of confidence, and their ongoing support of LVVTA and the LVV certification system.

Above: Support from the New Zealand Transport Agency will help LVVTA to continue improving on a modified vehicle certification system that is already considered 'world-best' by many. Visiting American professional hot rod builder and television personality Chip Foose (at right) spoke with LVVTA CEO Tony Johnson (at left) about the New Zealand system when he visited LVVTA's trade site at the CRC Speedshow in 2019. Foose was particularly interested in the unsafe aftermarket parts 'watchdog' role that LVVTA provides, and said "we should have this back in the US. We don't have anyone warning us about all of this dangerous stuff". Analysing and publicising the ceaseless stream of unsafe automotive aftermarket parts coming into the country is one of the areas of LVVTA's ongoing work that will be greatly enhanced by the Transport Agency's support.

MINISTER FAAFOI VISITS LVVTA

The Honorable Kris Faafoi, the Minister of Commerce and Consumer Affairs, and a Member of Parliament for the Mana Electorate, visited the LVVTA office in Porirua. The purpose of his visit was to learn more about organisations operating within his electorate, and to gain an understanding of how the LVV system is impacted by imported goods.

Although pressed for time during his visit, Minister Faafoi was very interested in LVVTA's struggle with poor quality imported vehicle components and the risk they pose to road users. LVVTA's 'table of horrors' (a collection of sub-standard parts) had many examples of particular interest to Mr Faafoi.

The LVVTA staff were all impressed with Minister Faafoi's quest for knowledge and his genuine interest in the concerns of the organisation.

With the focus at that time on the vehicle certification industry (centred more on heavy and repair, rather than LVV), the timing of the visit could not have been better, and Mr Faafoi intends to return for a deeper look into the success of the LVV system as time permits. LVVTA is hopeful that similar visits can be arranged with other Ministers.

LVVTA Operations Manager Ken McAdam (left) gives Minister Faafoi a tour of LVVTA's office.

LVVTA PEOPLE

Double Digits for Dan

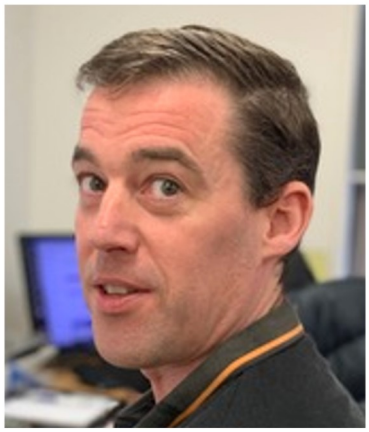
During 2019, LVVTA's Engineer, Dan Myers, passed the milestone of 10 years with LVVTA. In late 2008-early 2009, LVVTA's Management made the call to employ an in-house formally-trained engineer. Prior to this, LVVTA relied primarily on 'best practice' engineering based on our comprehensive historical knowledge (which continues to form the backbone of the system), along with the input of external engineers as required. There was always formal engineering expertise available within the LVVTA member associations, and there is a small number of formally-qualified engineers amongst the LVV Certifiers and within the Technical Advisory Committee. However, relying on people outside LVVTA who had their own responsibilities with limited time available affected our ability to respond as efficiently as we would have liked, and to be able to provide the level of service required. LVVTA didn't have to look hard to find the ideal candidate, as Dan had worked closely with LVVTA through his roles at the Ministry of Transport (MoT) and the NZTA, where he was instrumental in developing the exhaust noise requirements that were adopted into law, which resulted in the LVV Exhaust Noise Emissions Standard and the Objective Noise Testing regime that is still used today.

Dan's vast experience and easy-going nature have been a great asset to LVVTA's Technical Team, even if his love of Audis does make him the butt of many in-house jokes. Dan says "*I came to New Zealand after having worked at Ford for just over 10 years, and after a couple of years in government I can't believe I've now done a decade at LVVTA - time flies. Ford, the Transport Agency, and the MoT, are all large organisations so moving to LVVTA was a big change – only a handful of staff at the time meant everyone had to get involved and take on whatever came along. I've really enjoyed working at LVVTA, though there were some interesting moments early on – many LVV Certifiers didn't know what to make of an imported engineer who had more interest in Audis than yank tanks – some still don't! Everyone at LVVTA has such a passion for modified vehicles, it makes for a motivated atmosphere that you just don't get elsewhere. Tony reckons that we're signed up for life so I guess I'm lucky it's such a great place to be, and a large part of that is thanks to all the people involved".* And of course, we're all equally appreciative of Dan's experience and knowledge of everything engineering, his fair and professional approach, and his very quick sense of humour.

Frances is Back!

From Frances: "*Hi everyone! I'm back! As most of you will know, I have been on maternity leave for the last seven months following the birth of my son, Jay. He was born back in early January and he's a happy, healthy, chatty wee thing who is growing so fast! I have enjoyed my time at home with him, and although I miss him loads, I felt now was a good time to return to work. I started back full-time early July working two days on project work and three days on the plating desk so keep an eye out for emails from me in your inbox. Looking forward to catching up with you all.*"

New Challenge for Brendon



After joining LVVTA 18 months ago as a Technical Advisor, Brendon Norling has just been appointed to a new role of Technical Officer (Certifier Support). This is the role which Ken McAdam originally joined LVVTA for. Ken was appointed Operations Manager at around the same time that Brendon and Chris Smith joined LVVTA, and has managed both roles.

However the time is long overdue that Ken's roles be split out to enable him to focus on the day-to-day management of the growing staff numbers and operational responsibilities at LVVTA. Brendon will become responsible for all of the main LVV Certifier-related activities, including new LVV Certifier assessment, training, coaching, and mentoring, the new On-site Visits and Performance Review Meetings (a new LVV Certifier support initiative being introduced), and general LVV Certifier support. We believe that Brendon's calm, methodical, and fair-minded character is a perfect fit for the role.

Dan Myers at left hits ten years; Frances Tunley makes a welcomed return.

LVVTA PEOPLE (cont'd)

Farewell to Errol Uttinger

It is with great sadness that LVVTA bids a final farewell to one of our longest-standing and loyal supporters and advocates. Errol Uttinger passed away late last year.

Errol (at left) talks to LVV Certifier Noel McMillin, another key player in the formation of the LVV system. Flanking a dark haired Tony Johnson (plain T-shirt) in the 30 year old NZHRA Executive group photo at right, is a young Errol Uttinger and a young Noel McMillin!

An essential part of LVVTA's formation and growth, Errol was one of the original team supporting Tony Johnson to establish the first 'Code of Construction Manual' in 1992. He then assisted with the establishment of the LVVTA 'single-certification system' by making NZHRA's documents & systems available to LVVTA in 1998, and spear-headed the development of the Hobby Car Technical Manual (now the NZ Car Construction Manual) that was completed in 2007.

As the NZHRA delegate to LVVTA, Errol also later played a key role in the sale and transfer of the ownership of the NZ Car Construction Manual to the LVVTA.

Errol represented the NZ Hot Rod Association as the LVVTA Member Association Delegate for 16 years. LVVTA paid recognition to Errol upon his retirement at LVVTA's General Council Meeting on the 25th of November 2014 where Steve Keys (LVVTA President) presented Errol with a plaque, which read: "*In appreciation of your valuable contribution and your commitment to the Low Volume Vehicle Technical Association, whilst representing the New Zealand Hot Rod Association, over a sixteen year period, from 1998 to 2014. Many thanks from the Management Committee, Member Association Delegates, and Staff of the Low Volume Vehicle Technical Association Incorporated.*"

Errol rang Tony from the hospital one day last September - where the doctors were in the process of sorting out the best way to deal with some heart issues caused by his life-long Type-1 Diabetes - on the night before he died. He sounded fine and in good spirits, but was keen for the Doctors to get on with it because he'd been there for a week and he wanted to get home. Errol talked to Tony about calling time on holding the authority for approving Fender Exemptions on NZHRA's behalf (which he'd done for more than 20 years), and he wanted to bounce around ideas with Tony about who best to take over from him. The next morning Errol suffered a huge heart attack and died at midday.

It's been guys like Errol who have helped build the LVV system; solid, practical, dependable blokes, who have just got on with it and got things done. LVVTA will always be indebted to Errol for his commitment to helping the hobby, and supporting the LVV system.

INDUSTRY SUPPORT

LVVTA Engineer Dan Myers held a disability transportation-related workshop at the LVVTA office last year with the Ministry of Education, to discuss the use of wheelchair restraints in school buses. Also present were NZ Transport Agency staff, training staff from disability vehicle modifier Braiden International, and representatives from Tranzit and Cross Country Rentals. Concerns had been expressed to LVVTA by the industry about the lack of understanding in the use of wheelchair restraints by vehicle users, leading to varying restraining techniques being used between different transportation providers. The Ministry of Education is working on bringing a consistent approach to the use of restraints, and ensuring the safe transport of passengers at all times. LVVTA, along with disability transportation experts, will be working with the Ministry to achieve this. During the workshop, feedback was also provided to LVVTA on potential improvements to the Disability Transportation Standard, which will be considered next time the standard is updated.

LVVTA is looking forward to furthering this valuable working relationship with the Ministry of Education and disability transportation providers, and supporting them into the future.

Upcoming Digital Plating System

Since instituting the LVV certification system in 1992, engraved LVV certification plates have been used to record identifying information about the vehicles they are attached to, including an abbreviated list of certified modifications. LVV certification plates are an essential part of an LVV certification, as they show interested parties such as Warrant of Fitness Inspectors, Police, Entry Certifiers and insurance companies that the vehicle has been inspected, and the modifications are certified as safe for use on NZ roads as determined by the LVV Code and LVV Standards.

After 28 years of success with engraved certification plates, LVVTA is in the process of transitioning to digital Electronic Data Plates.

An Electronic Data Plate is a plastic disc that provides a digital gateway to the vehicle's electronically-stored records rather than the current method of displaying the information on an engraved certification plate. The Electronic Data Plates utilise contactless Radio Frequency Identification (RFID) technology, in much the same way that a PayWave credit card, or a building access fob works. RFID tags contain a chip and antenna for wireless identification of the objects to which they are either attached or imbedded into. The RFID tags used within the Electronic Data Plate work maintenance-free without battery power, indefinitely.

The process at this stage of development is as follows: To access the data on the Electronic Data Plate, an RFID reader (such as that contained within many newer smartphones) will be required. Alternatively, as each Electronic Data Plate carries a unique identifier similar to the current engraved certification plate (with the last six digits of the vehicle's VIN number), the identifier may be entered into the appropriate section of LVVTA's website. Both methods will link to the information and photographs recorded on the Electronic Data Plate. It's important to note that while the information stored on the Electronic Data Plate can be viewed by anyone with an RFID reader, or accessed through LVVTA's website with the appropriate identifier information, only LVVTA's Plating Team have access to edit the data recorded on the plate.

Every scan of an Electronic Data Plate instantly sends a web link with a constantly changing cryptographic code to the scanning device being used, including links to all the relevant data and photos.

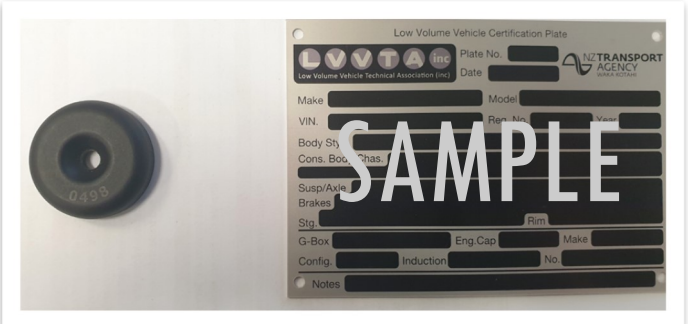
This cryptographic functionality prevents multiple manual searches being used without a physical scan and makes the Electronic Data Plate impossible to clone, as each code can only be used once.

Digital security and data encryption have evolved to the point where holding this information electronically no longer poses an increased risk of counterfeits being produced. The type of Electronic Data Plate to be used by LVVTA for LVV certification has undergone extensive security testing and has been proven to meet stringent security requirements around the world, as insisted on by various governments and their agencies.

As the RFID chip within each Electronic Data Plate emits a low frequency, the RFID reader must be in close proximity to enable scanning of the chip. This means the data can only be read by a person who has full access to the vehicle, as is the case with engraved LVV certification plates. The security used in the software of the Electronic Data Plate records an electronic trail every time data is accessed, including the date, time, and GPS location when available.

Every time an Electronic Data Plate is accessed it goes through to the tag provider's servers and the URL is authenticated before redirecting and loading the vehicle information, which is a simple but effective way to ensure Electronic Data Plates are not cloned.

The main advantage of the transition to Electronic Data Plates is the large amount of data that can be captured for each LVV certified vehicle, as the Electronic Data Plate can be configured to include an almost limitless amount of information. As the complexity of modifications has increased over the years, it has become necessary for the LVVTA Plating Team to include a growing number of abbreviations on the engraved plates. With the implementation of Electronic Data Plates, these abbreviations will no longer be required, photographs of the vehicle in its 'as certified' configuration will be stored with the data, and complex modifications will be recorded in detail.



This photograph shows the comparison in size between the new Electronic Data Plate and the traditional LVV certification plate. The dramatically-reduced size will be one of the big advantages of the new system as modern cars and motorcycles make an LVV Certifier's life ever-more difficult in trying to fit the engraved aluminium LVV certification plate.

Historically, hard copies of certification documentation and photographs have been stored in a secure document management facility, resulting in delays when it is necessary to access any information beyond that which is recorded on the engraved plate. While the original complete documentation will still be stored in this manner, the amount of data able to be recorded on the Electronic Data Plate will significantly reduce the number of times the stored information needs to be accessed. *(Cont'd on page 6...)*

NEW TECHNOLOGY (cont'd)

Upcoming Digital Plating System (cont'd)

(...Cont'd from page 5) There are also advantages for vehicle owners. The small size of the Electronic Data Plate allows it to be easily fitted in modern vehicles with full engine bays, and attached to motorcycle frames which have limited space. Also, with the increased use of Ultra High Strength Steel (UHSS) in modern vehicles, the reduction in the number of attachment points required to fit the Electronic Data Plate simplifies the fitting procedure. The LVV certification inspection process also becomes much more streamlined for the LVV Certifiers, as the Electronic Data Plate can be fitted at the time of inspection, and electronically activated by LVVTA upon the certification being audited and processed, eliminating the need for the LVV Certifier to see the vehicle again to fit the plate.

LVVTA initially intended to transition to the Electronic Data Plate system during the first half of 2020, however the COVID-19 pandemic has seen this time-frame shift slightly. Once the Electronic Data Plates are introduced, all new LVV certifications (and all vehicles previously fitted with an engraved certification plate that under-go re-certification for further modifications), will be issued with an Electronic Data Plate.

It's important to note that the two systems can exist in parallel, so there is no requirement for engraved certification plates to be replaced with an Electronic Data Plate on a vehicle that is not further modified.

NEW LVVTA TESTING PROCESSES

New LVVTA Aftermarket Spindle Testing Process

During 2019, LVVTA released a Safety Alert regarding Superbell-branded spindles (also referred to as 'stub axles'). The Safety Alert was produced after it was found that some one-piece stub axles produced for early Fords (1928-1948) were made from ductile cast iron, a semi-brittle material much weaker than required for this type of component, which is subjected to high cyclic loadings. Creating a stub axle from ductile cast iron is poor engineering practice and LVVTA are aware of stub axles made from this material failing.

Manufacturing highly loaded critical function components like stub axles using a semi-brittle material such as cast iron is poor engineering practice. Original Equipment Manufacturers (OEM) typically produce these components using heat-treated carbon steel and a forging process, to ensure the components can withstand the cyclic loadings and rigours of day-to-day motoring that they are subjected to over the lifetime of the vehicle.

As a result of these known failures, fitment of stub axles (or 'uprights') made from ductile cast iron is disallowed in the NZCCM (see the note-box below for clarification on this.)

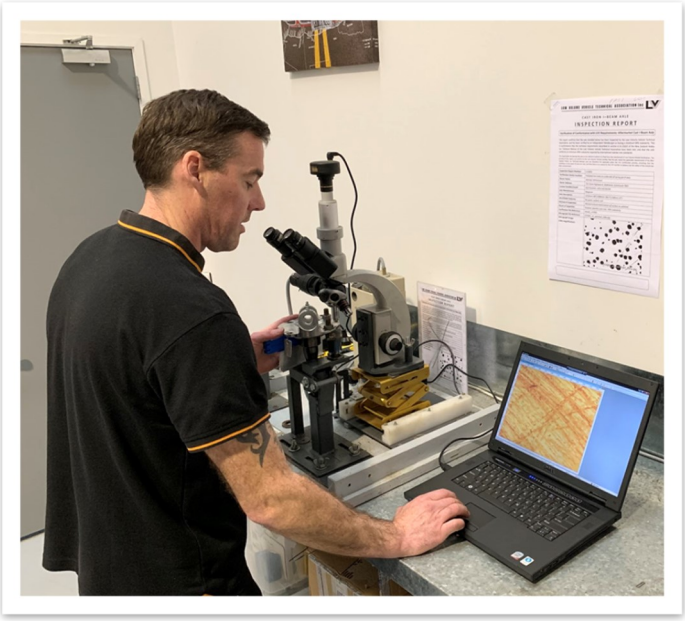
To clarify which components are disallowed: - the area of concern relates to the 'spindle' section of a stub axle. The main body of a two-piece stub axle made from ductile cast iron is less of a concern provided that the spindle section is made from an appropriate material.

The requirement is that a ductile cast iron spindle (in the case of a pressed in 'pin' as a separate part of a stub axle), or a complete one-piece stub axle which is manufactured from ductile cast iron, can not be used.

Even more concerning, these substandard stub axles were marketed on an American website, Speedway Motors, as being manufactured from 'forged steel'. Many owners who purchase these stub axles will be unaware that they are in fact ductile cast iron, not forged steel.

Since the release of the Safety Alert, LVVTA has become aware of other manufacturers producing cast iron stub axles, including (but not limited to) Magnum Force, Speedway Motors, and Total Cost Involved (TCI).

LVVTA recommends that owners of vehicles fitted with this style of stub axle take steps to verify that the components fitted to their vehicle are not manufactured from ductile cast iron.



To assist with this verification process, LVVTA has created a quick in-house metallurgical test to determine whether or not aftermarket early Ford V8-style stub axles are made from cast iron. The test is based on a simplified version of the same process used to confirm the nodularity, and acceptability, of cast I-beam axles. The service is charged on a cost-recovery only (or no charge if it fails) basis. *(Cont'd on page 7...)*

NEW LVVTA TESTING PROCESSES (cont'd)

New Aftermarket Stub Axle Testing Process (cont'd)

(...Cont'd from page 6) A $50 per stub axle fee is payable only if the stub axles are found to be produced from a material other than cast-iron. In these cases, a unique serial number will be stamped onto each stub axle, and a certificate will be issued. If the stub axle is found to be produced from cast iron, no fee will be charged; - however, the stub axle will be disposed of by LVVTA and not returned to the owner. This will need to be agreed in writing in each case, prior to any testing taking place.

This approach to only charging a fee for compliant stub axles means that non-compliant stub axles will be immediately removed from circulation and that owners of non-compliant stub axles do not have to pay for both the testing and replacement of the stub axles.

Due to the very high level of risk that cast-iron stub axles present to road user safety, LVVTA strongly encourages all potentially-affected vehicle owners to go through this testing procedure, or replace any unknown stub axles with known forged steel items. The testing process is available to owners of all vehicles fitted with early Ford V8-style stub axles, and the service is not limited to just vehicles currently going through LVV certification. It is hoped that by offering such an affordable testing process, all owners of potentially affected vehicles will take up the offer.

For further information, see Safety Alert - 03-2019 - 'Superbell'-brand Ductile Cast Iron Spindles. An Information Sheet will be released soon which expands on the warning in the Safety Alert.

For details on having your stub axles tested, visit https://lvvta.org.nz/approvals.html#spindle-testing

The 'LVV' logo in the circle, and the individual number, both clearly visible in the photograph above, are both stamped into a micro-polished section of the stub axle (also shown on the right side of the two stub axles in the right-hand side photograph).

LVVTA Four Wheel Drive Stability Calculation Process

The question of how high is too high has historically been a difficult one to answer when it comes to suspension and body lifts in four-wheel drive vehicles. However, a research project into raised vehicle stability that is underway will provide a sensible solution. Currently, when presented with a vehicle that has been raised over 50mm in any one of the three following areas - tyre height, suspension height, or body-lift - LVV Certifiers are being asked to provide additional information to the LVVTA to enable the Technical Team to perform stability calculations. A vehicle with more than a 50mm increase in any of these areas must be assessed by the LVVTA Technical Team. A vehicle where none of the areas are raised by more than 50mm may be assessed by the LVV Certifier. Where stability calculations are required, the information supplied by the LVV Certifier is assessed by the LVVTA Technical Team against unmodified vehicle data to confirm what percentage of the vehicle's original stability is retained. In many instances, increasing the vehicle's wheel track by the addition of wheel spacers or higher-offset wheels is enough to bring the static stability factor back to satisfactory levels.

It is expected that, over time, this data will help LVVTA to develop new standards for raised vehicles. In the meantime, for more information, contact the LVVTA Technical Team on tech@lvvta.org.nz or 04 238 4343.

New LVV Certifier Category Training & Appointments

An intensive three-day training course was held at LVVTA's office for current LVV Certifiers wishing to obtain 1C (Modified Production - Structures) and 1D (Modified Production – Advanced & Scratch-built) certification categories. The course was run by LVVTA's Justin Hansen, Dan Myers, and Ken McAdam, with highly respected vehicle fabricator Terry Bowden, and experienced race car engineer and 1D category LVV Certifier Steve Hildred, as guest trainers.

The first day of training focused on category 1C, covering vehicle structure-related topics such as motorhome, utility vehicle and limousine conversions. Mitsubishi Motors NZ supplied several late-model vehicle body sections, as well as technical information regarding the various types of steel used in their construction. Having physical examples provided a great insight into what LVV Certifiers may find on the job when assessing modifications like roof chops.

Following the training session, individual training and assessments have taken place, and a number of LVV Certifiers have been appointed with the additional certification categories during early 2020, including:

• Colin Prouse	(Rotorua)	1C, 1D
• Gareth Court	(West Auckland)	1C
• Ian McLachlan	(Christchurch)	1C
• Kane Marsden	(Hamilton)	1C
• Matt Tasker	(Palmerston North)	1C
• Maurice Thompson	(Te Awamutu)	1C
• Mike Owen	(East Auckland)	1C, 3A
• Mike Reid	(Bay of Plenty)	1C
• Paul Urquhart	(North Auckland)	1C, 3A
• Steve Grant	(Middlemarch)	1C

The second and third days of the course was dedicated to category 1D modifications. This was split between classroom-based theory and workshop-based practical components. The range of topics included various styles of chassis construction, complex suspension system design and construction, as well as steering system modifications. Feedback from LVV Certifiers who attended the course was very positive, with all in attendance agreeing that the knowledge they gained from the course will be invaluable on the front line.

These additional category appointments are expected to help relieve pressure on existing LVV Certifiers as well as reducing waiting times and traveling distances for vehicle owners and modifiers.

You can see a full list of LVV Certifiers and their certification categories at: https://www.lvvta.org.nz/documents/suplementary_information/CertifierList-Website.pdf

PROCEDURES

Watch for GVM Overloading

LVV Certifiers are seeing an increase in the number of vehicles which exceed or are very close to their Gross Vehicle Mass (GVM). A GVM is the vehicle's maximum operating weight and cannot legally be exceeded. The GVM includes the physical weight of the vehicle, a weight allowance for passengers (per seating position) and any additional equipment, such as water tanks on motorhomes. Affected vehicles are generally motorhomes, or utility vehicles fitted with camper bodies or custom trays with equipment for commercial work.

To follow is an example of a motorhome recently presented for LVV certification with a manufacturer's GVM of 3300kg. The owner supplied a weighbridge certificate stating that the vehicle weighed 2900kg. The vehicle had four seating positions so the provision for four occupants at 80kg each (the universally-accepted weight) added 320kg. The motorhome was also equipped with a 75-litre water tank, which, when added, brought the total vehicle weight to 3295kg. This only left 5kg between the vehicle's driven weight and its maximum allowable weight. Adding luggage for four people would certainly push this vehicle over its GVM.

Utility vehicles such as these are increasingly exceeding the manufacturer-issued GVM rating when laden. GVM upgrade kits can be fitted and LVV certified, however the wheels and tyres must also be rated to at least that of the upgraded GVM rating.

Another example is a motorhome recently LVV certified. The vehicle was so close to the GVM that the owner was unable to fit the extra seating position they required, meaning the vehicle was of no use to them as they had specifically purchased it intending to add a seat to take their grandchildren away with them.

While GVM upgrades can be LVV certified on some vehicles, anyone thinking of purchasing a camper, or utility vehicle fitted with heavy equipment, should ensure that the vehicle is suitable for their needs prior to purchasing. The only GVM upgrade kits that can be LVV certified are those that are ADR-Approved and sold as a catalogued kit for the specific vehicle make and model to which they are fitted.

Vehicle owners, WoF Inspectors, and LVV Certifiers are also reminded to check the vehicle's wheel and tyre ratings to confirm they are suitable for the GVM rating of the vehicle to which they are fitted. LVVTA was recently contacted regarding a series of utility vehicles belonging to a chain of tyre stores, which had each been fitted with a GVM upgrade kit. The kits were designed and complied to work with the vehicle's OE wheels and a specific tyre, however the wheels and tyres had been changed to aftermarket items with a lower rating than the upgraded GVM rating, meaning the wheels and tyres were below specification and not fit for purpose, and as such could not be LVV certified.

OLD CHEVIOT TRIDEN WHEEL MYSTERY SOLVED!

Many readers will be old enough to remember 'Cheviot Triden' Wheels (most often incorrectly called 'Tridents'). Early batches of these wheels featured wording that states 'EXPORT OR OFF ROAD USE ONLY' which understandably stumps most people. Recently LVVTA discussed these wheels with their original supplier, Geoff Dixon of BG World Wheels, who explained the reason behind the wording; "*Back in the day, various States of Australia had different rules regarding wheel fitment. An 8-inch wide wheel could be considered to be too wide for the street, so Export or off-road use on the back of the wheel was a disclaimer of sorts. I don't believe it was ever challenged in Aussie, as the 14x8-inch Triden was* ***the wheel*** *for Fords, Holdens, and Valiants — a hell of a wheel on both sides of the Tasman.*" So, if you have a set of these wheels, or if any LVV Certifiers are presented with a vehicle fitted with them, from here-on, and providing they meet all other LVV requirements, they can be LVV certified despite the wording, which only ever applied to Australia.

What car guy or girl over 40 hasn't owned a set of Cheviot Tridens?!

DOCUMENTS

Modification Threshold Schedule Updates

After plenty of behind-the-scenes work between the New Zealand Transport Agency (NZTA) and the Low Volume Vehicle Technical Association (LVVTA), and consultation with the automotive industry, NZTA introduced a series of updates to the VIRM Modification Threshold in late April. Two sections of the VIRM have been amended; the 'Modification Threshold' tables, and the 'Reasons for Rejection' tables.

10-1 Tyres and wheels

All sections updated (modifications may have additional criteria in each section).

Fitting of or modification to:	LVV certification not required provided that:
Wheels	• the wheels: ○ are of a known and reputable brand, and ○ would be considered an appropriate fitment for the vehicle type by the wheel manufacturer, and ○ are not modified, and ○ do not have spacers or adaptors fitted, and ○ have a load rating acceptable for the axle rating (or vehicle GVM where axle rating is not available) Note: Where the wheel load rating is not visible a note should be made on the WoF/CoF checksheet and the operator should be informed to have the load rating checked. Insufficient load rating is only a reason for rejection if the load rating is visible and not sufficient.
Tyres	• the tyres: – have an outer circumference that is no more than 5% greater than OE, and – are an appropriate selection for rim width (see https://www.lvvta.org.nz/documents/infosheets/LVVTA_Info_01-2009_V3_Tyre_Size_to_Wheel_Size_Compatibility_Guide.pdf, and – have a load rating suitable for the axle (or vehicle where axle mass is not available) – have a speed rating suitable for the vehicle • the tyre tread does not protrude beyond: – in the case of a vehicle that **is not** a class NA or class MC vehicle, the unmodified original body panels or factory fitted mudguard extension/flare; or – in the case of an class NA or class MC vehicle, 25mm outside of the unmodified original body panels, provided that a flare or wheel arch extension covers the full width of the tyre tread. Note: an original full-size spare wheel/tyre can be used for comparison of tyre size

All modifications to light vehicles must meet WoF/CoF requirements, however not every modification requires LVV certification, as there are a number of modifications that are deemed 'under threshold'. These are listed in the Modification Threshold tables, which provide vehicle inspectors with a list of modifications that do not require LVV certification, and the point at which a modified light vehicle must be LVV certified.

The amendments that affect modified vehicles are mainly within these 'Modification Threshold' tables. In summary, the main changes to the Modification Threshold are related to the following topics:

1) Tyre and wheel fitment including protrusion of tyres beyond mudguards
2) Springs and shock absorbers
3) Items moved from the 'certification never required' to 'certification not required provided that' box
4) Tightening of the threshold for fuel systems
5) Future treatment of utility vehicles with wide trays
6) 'Grandfather rights' for vehicles re-entering the fleet
7) Clarity around modifications that affect structure and present a danger to pedestrians
8) Steering wheels and attachment

Don't forget, there are also some changes in the individual 'Reasons for Rejection' sections. These are located throughout the various sections in the VIRM under the 'Reasons for Rejection' tab.

10-3 Mudguards

(modifications may have additional criteria in each section).

Fitting of or modification to:	LVV certification not required provided that:
Mudguards and mudguard extensions	• A mudguard has not been cut during modification, and • modified mudguards or extensions have no sharp protrusions, and • mudguard extensions are securely attached to the vehicle, and • the mudguard/mud flap is no less effective than OE. Note 1: Mudguards flared via rolling do not require certification.

Explanation of these changes can be found under the 'News' tab of the LVVTA website (www.lvvta.org.nz). There are also many improvements to the wording in the new threshold which are not included in the news item, as they are considered minor.

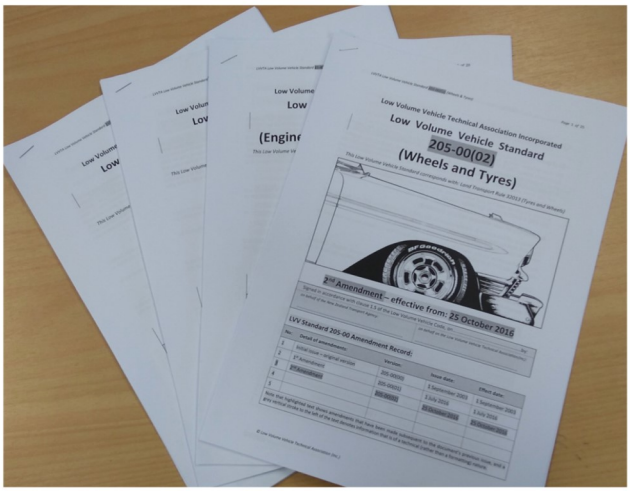
Please note that the LVVTA Modification Threshold document does not include modification thresholds for motorcycles, such as those around handlebar modifications. These thresholds can be found in the NZTA's motorcycle VIRM.

Progress on LVV Standard Amendments

During 2019, LVVTA sought feedback from vehicle owners, modifiers, and LVV Certifiers on four LVV Standards. Those standards include LVV Standard 85-40 (Engine and Drive-train), LVV Standard 205-00 (Wheels and Tyres), LVV Standard 195-00 (Suspension Systems), and LVV Standard 35-00 (Braking Systems). The consultation period for each standard spanned approximately two months, enabling any interested parties the chance to provide feedback on the current standards, which could then be analysed and included where appropriate, into an applicable update.

Although the process of updating the Standards has been delayed due to a number of more urgent projects taking place, all four updates are well on the way to completion. All going well, the finalised Standards will be released during 2020.

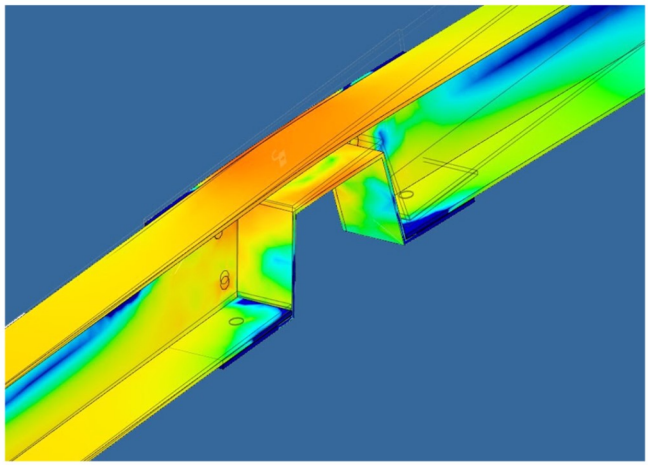
If you wish to be alerted of any future consultation processes for LVV standards, please ensure you subscribe to LVVTA's newsletters, here: www.lvvta.org.nz/signup.



TECHNICAL

Chassis C-Notch Analysis Work

LVVTA engineer Dan Myers recently investigated the potential impact that C-notches can have on chassis strength. During his research, Dan uncovered an American Engineer's Finite Element Analysis (FEA) data on several varying C-notch designs. The results showed how much strength was lost when a range of different styles of C-notches were analysed, and which methods of reinstating lost strength. The information was peer-reviewed in house, where LVVTA's results agreed with those of the international study. An Information Sheet is currently under development to pass the specific results of this study on to members of the public, along with helpful advice on how to create an acceptable C-notch.



One of Dan Myers' Finite Element Analysis images of a typical chassis C-notch, which shows unacceptable chassis weakening.

The results of the investigation were passed on to LVV Certifiers during LVV Certifier Training in 2019, and they are now applying this new knowledge regarding the strength (or lack thereof) provided by some styles of C-notches when inspecting vehicles. The assessment process for C-notched vehicles has not changed (The NZCCM requires that *'…the chassis immediately adjacent to the 'C'-notch must be suitably reinforced in order to reinstate the strength and rigidity lost in that area of the chassis as a result of the modification').*

A typical bolt-in C-notch such as this can weaken a chassis by as much as 70% and cannot be LVV certified without significant strengthening of the affected area.

The topic of C-notches on front-wheel drive vehicles has also been discussed in depth, with the modification becoming more common on vehicles such as lowered VW Golfs, which suffer from front half-shaft to chassis-rail fouling. C-notching these types of vehicles can only be performed if the vehicle pre-dates frontal impact requirements, and when it can be assessed that the strength of the chassis has been reinstated.

All other requirements of the NZCCM also apply, and LVV Certifiers are encouraged to discuss such modifications with the LVVTA Technical Team prior to approving them.

If members of the public are performing any type of C-notch, on either a front or rear-wheel drive vehicle, LVVTA recommends they contact their local LVV Certifier in the first instance for advice on the correct method to use, and to keep an eye out on the LVVTA website for the upcoming LVVTA Information Sheet.

Complex Aftermarket Suspension Arms

Increasingly complex aftermarket suspension arms are becoming more common on vehicles presented for LVV certification. To give more adjustability, these arms are either made from numerous individual components, or designed in such an unusual and complex way that they do not meet the criteria provided in item 2.2(31) of the LVV Suspension Systems Standard. 2.2(31) states: *"A suspension arm that is fitted to a low volume vehicle which is a volume-produced aftermarket bolt-in type, and which is mounted directly to the vehicle's unmodified original suspension attachment points, therefore, maintaining all original suspension geometry other than to allow additional adjustability, must: (a) follow sound time-proven designs, and be consistent with the common time-proven makes…."*

As the style of suspension arm shown here is not time-proven and can be built up from individually-purchased components from different sources (therefore identifying them as custom-made suspension arms), Design Approval is required. When researching this style of suspension arm, the LVVTA Technical Team discovered several failures can occur when the components are not assembled and installed correctly, rendering them unfit for road use.

Complex suspension arms such as this one that do not follow time-proven designs are required to be inspected by a 1D-category LVV Certifier and are required to undergo Design Approval before they can be LVV certified.

THE NOT-SO-GOOD, THE BAD, & THE UGLY...

Just 'cos you can... don't mean you should.

Yup... maybe a little too much Nitro that time...

All I can say is someone sure can tie down a tractor...

Hooked up the earth?

At least they put on safety chains!