Road controlling authority - information pack for VDAM Rule 2016

Last update: 21 March 2017

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INTRODUCTION

The new VDAM Rule requires you to take action

Over the past two years Government has consulted with the public to review and create a new Vehicle Dimensions and Mass (VDAM) Rule. The intent of the review was to set a reasonable balance between the risks that heavy vehicles present to public safety and the efficient operation of the heavy vehicle fleet, within the constraints imposed by the road network.

The new 2016 VDAM Rule has now been gazetted and takes effect on 1 February 2017. Some changes to the rule require action from road controlling authorities (RCAs). The purpose of this document is to ensure that, as an RCA, you are aware of the actions required and the support available to do them.

More information on the 2016 VDAM Rule is available at nzta.govt.nz/vdamrule2016.

Overview of the main changes to the VDAM Rule

The main changes to the rule are:

- Width and height changes
- Reduced weighing tolerances
- Changes to management of overdimension vehicles and loads
- Increased gross mass to 45/46 tonnes for 7/8 axles of specified lengths (phased introduction)
- Introduction of specialist vehicle permit category
- Increased axle mass for some buses operating on public transport routes (delayed introduction).

A high level summary of the main changes is available in Appendix A.

This document focuses on the changes to gross and axle mass limits as there is action required from each RCA. It also provides information on new and updated permitting details and RCA actions required.

Summary of actions required

Rule change	Action required by RCAs	By when	More detail
1. Gross mass limit increases to 45/46 tonnes at 1 February 2017. Under permit unless using routes specified on new map (initially based on state highway approved routes).	Email the NZ Transport Agency to inform whether own 50MAX road network can be added to the new 45/46 tonne map.	Anytime up to 1 December 2017. Ideal to open as many routes as possible early 2017.	See section: 45/46 tonne gross mass limit; Stage 1 *(page 3)*
2. Gross mass limits of 45/46 tonnes on specified vehicles become general access at 1 December 2017.	Conduct assessments of bridges and structures for the new mass limits to ensure road safety is maintained, and post any restrictions.	1 December 2017	See section: 45/46 tonnes gross mass limits; Stage 2 *(page 3)*
3. Passenger service vehicles operating up to 9 tonne axle limits on public transport networks become general access from 1 December 2018.	Conduct assessments of bridges and structures on public transport networks for the new axle limits to ensure road safety is maintained. Post any restrictions.	1 December 2018	See section: Public transport buses *(page 4)*
4. Axle mass limits for specialist vehicles available under permit.*	Understand new permit process and make changes to own permitting information and processes as required.	From 1 February 2017	See section: New permit process *(page 5)*

*Specialist vehicles include passenger service vehicles (buses), rubbish trucks with compactors, concrete trucks and ground-spreader trucks.

GENERAL ACCESS CHANGES REQUIRING ACTION

45/46 tonne gross mass limits

The VDAM Rule 2016 allows for new gross mass limits of:

- 45,000kg (45 tonne) for 7-axle combinations with a minimum wheelbase of 16.8m.
- 46,000kg (46 tonne) for 8-axle combinations with a minimum wheelbase of 17.4m.

The new gross mass limits will be phased in:

1. From 1 February 2017 until 30 November 2017, vehicles utilising the new gross mass limits will be able to operate the vehicles on routes approved by RCAs and published on the NZ Transport Agency website.

2. From 1 December 2017, vehicles at the new limits will have general access on all local roads and state highways.

The two-stage approach provides time for bridge and structure assessments to be completed, to identify any route restrictions and bridge postings required prior to the new limits becoming general access on 1 December 2017.

Stage 1: Preparing for route defined access at 1 February 2017

As RCAs, our role is to provide suitable access to the road network and maintain road safety.

The NZ Transport Agency hosts a 45/46 tonne map showing approved routes, based on the 50MAX network. Access to all other routes will require a permit from RCAs.

We are seeking support from RCAs to allow their 50MAX routes to be shown as accessible on the 45/46 tonne map. This will reduce enquiries and administration for RCAs, and make the information easily accessible for operators.

- ACTION: All RCAs are asked to respond, by email, indicating whether or not authorisation is given to allow the use of the local 50MAX network by 45/46 tonne vehicles, subject to any road/structure/bridge restrictions notified.

- Please send your email to VDAM2016@nzta.govt.nz, by Wednesday, 15 February 2017, with the subject line "VDAM 45/46 tonne network agreement". After this date, please send your email to frr@nzta.govt.nz

  Note: NZ Transport Agency has authorised use of the state highway 50MAX and high productivity motor vehicle (HPMV) networks for the 45/46 tonne map.

Stage 2: preparing for general access at 1 December 2017

By 1 December 2017, all bridges and structures must be assessed for the increased gross mass limits. The posting regulations (Heavy Vehicle Regulations 1974) require annual gazetting and physical posting of signage at the bridge or structure. Any not capable of carrying 45/46 tonne loads will be posted at 44 tonnes or alternatively, must be upgraded to accommodate the new loads.

To support the requirement, NZ Transport Agency will provide 100% funding for:

- the bridge screening process
- selective investigations of individual bridges where this is seen to be a critical restriction
- physical posting of restrictive bridges.

This funding does not cover any upgrade work required to bridges or structures. Additional funding for such work will be considered separately.

Funding details

This funding will be managed by the NZ Transport Agency National Structures Manager, Barry Wright, and bridge analysis must be carried out by assigned consultants from either Opus or Beca. RCAs may use another bridge consultant but no funding is provided for this.

- Action: To take up the NZ Transport Agency's offer of funding for bridge screenings and postings please contact one of our three assigned contractors:

  Darren Goodall, Opus, Wellington
  Email: Darren.goodall@opus.co.nz
  Ph: 04 471 7144; Mob: 027 705 9475

  Andrew Ball, Beca, Tauranga
  Email: Andrew.ball@beca.com
  Ph: 07 577 1128 Mob: 027 498 6718

  Jeremy Waldin, Opus, Christchurch
  Email: Jeremy.waldin@opus.co.nz
  Ph: 03 363 5537, Mob: 027 224 8389

For more information on funding, please contact Barry Wright on email at Barry.Wright@nzta.govt.nz

More information regarding the bridge screening process

In 2015, a general screening process was developed for identifying bridges that are restrictive to 50MAX vehicles. The same process is applicable to the 45/46 tonne general access requirement. Bridges identified as being restrictive to 50MAX will also be restrictive to the 45/46 tonne. A copy of the process is provided in Appendix B.

It may be possible to remove some 50MAX restrictions for the 45/46 tonne access, through more detailed engineering assessments of individual bridges. This will be funded if it is considered good value for money.

Public transport buses

From 1 February, public transport buses wanting to operate at axle mass limits above the current general access of 8.2 tonnes will require a permit (refer 'New permit process for specialist vehicles').

In addition, from 1 December 2018, buses with a twin-tyred single axle operating on a public transport route identified in a regional public transport plan will be able to operate up to 9 tonne axle weight without a permit. This timeframe allows RCAs to assess bridges and structures on public transport routes and post or upgrade those not able to accommodate the new general access limit. At the same time, it is recommended RCAs assess structures, pavements and economic implications, to determine what level of access can be safely allowed under permit across the different parts of their network, and inform future investments.

To support the requirement, NZTA will provide 100% funding for:

- The bridge screening process to determine what access can be provided for buses on the public transport network. This will involve:
  - an assessment for double decker buses on limited main centre PT arterials
  - an assessment of the wider PT network for the 9 tonne single axle access provision
  - potentially more detailed assessments of bridges that are restrictive and are critical.

This funding will be managed by the NZ Transport Agency National Structures Manager, Barry Wright, and bridge analysis must be carried out by either Opus or Beca to minimise costs and create uniformity.

RCAs may use other bridge consultants but no funding is provided for this.

- ACTION: Please see 'Funding details' section above for action points and contacts.

Guidance notes are attached on the engineering assessment of bridges for specialist vehicle permits – see Appendix C.

Bridges and structures on impacted routes must be assessed for the 9 tonne single axle provision. Any restrictions must be posted, or upgrades completed to accommodate the new loads, by 1 December 2018.

PERMITTING REGIME CHANGES REQUIRING ACTION

New permit process for specialist vehicles

Specialist vehicles is a new vehicle type introduced into the VDAM Rule 2016 and includes passenger service vehicles (buses), rubbish trucks with compactors, concrete trucks and ground-spreader trucks.

The rule allows for increased axle mass limits for specialist vehicles under permit. While increases are allowed for single and tandem axles, there is no provision for increase in allowable gross masses. Refer to Table 3.6 of the rule for specific details.

The potential increases are significant and include:

- Single axle with twin tyres increase up to 12 tonne.
- Two axles in a tandem set with twin tyres up to 18 tonne (refer to the rule for further detail).

The NZ Transport Agency has updated its permit process and the basic steps are outlined in Appendix D: Specialist vehicle permit process flow charts. A revised version of the permitting manual will be available on our website from late January.

It is recognised that the largest proportion of specialist permits are likely to be sought for public transport or utility purposes in metro areas. Therefore our communications will encourage operators to submit a specialist vehicle permit application to the RCA(s) of the road network(s) they want to use, or through the NZ Transport Agency's online permit portal.

1. If an application is submitted directly to a local RCA, the local RCA will communicate the application outcome for the local route(s) to the customer. If the route also includes part of the state highway network, the local RCA will forward the application to the NZ Transport Agency for consideration. Notifications should be emailed to frr@nzta.govt.nz.

2. If submitted through the portal, the NZ Transport Agency will forward the application to the relevant road controlling authorities who will need to complete an assessment for their portion of the route(s) requested, and communicate the outcome directly to the customer and the NZ Transport Agency. If the application includes a state highway component, the NZ Transport Agency will make an assessment and liaise with other RCAs involved to ensure the permit application outcomes are aligned before communicating with the customer.

A small number of specialist vehicle applications will be predominately on State Highway networks – likely to be long distance buses operating between cities. In these situations, operators are encouraged to apply through the permit portal. The NZ Transport Agency will coordinate assessment with other RCAs involved and communicate the outcome of long distance permits to the customer.

This process for providing specialist vehicle permits is different to that for HPMV permits because of the likely greater focus on local road networks. We are keen to work with you to evolve and refine the process so it supports and enables you to manage your networks effectively and efficiently. We also consider it beneficial for our processes to be aligned and similar so that operators know what to do and find it easy to apply for a permit. An example of how we can support this is that NZTA may be able to

delegate some state highway specialist vehicle permitting decisions to a local authority – for example for public transport routes.

Support

Riccardo Areosa from the NZ Transport Agency is available to answer questions regarding the new process. We would also appreciate your help in collating a contact list for on-going support purposes.

- Action: Please provide contact details (name, email, phone number) for the people who both manage and administer permit applications. Contact details should be emailed to:

  Riccardo Areosa
  Email: riccardo.areosa@nzta.govt.nz

Permit duration

The standard duration of a permit is 24 months. However, RCAs can consider aligning specialist vehicle permit durations with any contracts that may be in place. For example, public transport bus service permits can be aligned with the public transport contract expiration. Likewise, the same may apply for rubbish pick-up contracts.

Each application will be assessed on its own merits.

Multiple vehicles on one permit

Customers need to easily manage permits and compliance. RCAs should encourage operators who have several of the same vehicle type using the same route to submit one permit application that covers all vehicles. Each vehicle registration must be listed on the permit. This may give the opportunity to reduce the fee to operators.

Other considerations

Pavements

Higher gross and axle masses can result in increased pavement damage and associated maintenance costs. RCAs will need to make their own assessments of these effects on their pavements when considering permit applications and determining what access they will permit across the different parts of the network. A national analysis of pavement costs is available as a guide for RCAs.

An excel spread sheet is being developed that will help with assessing the effect on individual networks and will be available on our website once completed.

NZ Transport Agency has determined that the strength of state highway pavements is such that Vehicle Axle Indices (VAI) of up to 1.5 can be accommodated on its state highway network without special consideration. The maximum VAI allowed by the new rule under the Special Vehicle permits is 1.46. Therefore there will be no restrictions to specialist vehicle permits on state highways because of pavement considerations.

Temporary road user charges for specialist vehicles

With the introduction of the specialist vehicle category and the ability to issue permits to these vehicles when operating above general access limits, new temporary road user charges (RUC) are being set. The new rates will be available early 2017.

OTHER CHANGES TO THE VDAM RULE

Overdimension vehicles and loads

The current process where the NZ Transport Agency manages overdimension permits is not changing. However, there are several changes in the rule that RCAs should be aware of:

1. For Category 4 vehicles, permit applications must include a statement that the route has been assessed and the load can be safely managed by piloting and other risk management measures as stated. Loads that exceed the Category 4A limit are also required to undertake an engineering assessment.
2. An on-road Supervisor (new role) needs to be appointed for each movement of an overdimension load that requires more than one pilot vehicle. The on-road Supervisor has responsibility for ensuring the pilots and driver are briefed, the vehicle is operated in compliance with the rule, and notice is given where the Rule requires it.
3. Changes to travel zones for category 4 vehicles/loads, restricted travel areas and travel time restrictions should be noted in terms of detailing the movement of overdimension loads. For example when ANZAC day falls on a Saturday, travel is restricted on that Saturday.
4. Inclusion of discretionary operator safety checks which look at traffic offence history and the operator's history of compliance with previous permits.
5. Crane booms can be disassembled to be stacked to 3.1m wide and 4.5m high (within Category 1 parameters). This can significantly reduce the number of heavy vehicle trips needed to move crane components.
6. There are new critical conditions that will be listed on all overdimension permits:
   (a) the vehicle or its load must not exceed the lesser of –
      i. the dimension limits for its category stated in the permit, or
      ii. if the permit states the maximum width, a width of that maximum plus 0.5m
   (b) the operator must ensure pilots as specified on the permit are provided or, if not specified on the permit, as required by this rule.

Of particular note for RCAs are points 1 and 2. They offer the added assurance that the operator has assessed the route being travelled, as well as providing a contact person (the on-road Supervisor) should there be any issues on local roads while the overdimension vehicle or load is travelling.

Towing of disabled vehicles

Historically there has been no formal provision for the towing of disabled vehicles when the vehicle tow combination exceeds the legal mass requirements. The 2016 Rule now includes the towing of a disabled vehicle within the definition of "indivisible" so that overweight permits can be formally issued for this occurrence.

The NZ Transport Agency have carried out overweight permit trials for the towing of disabled vehicles on the state highway and are doing further work in an attempt to simplify this permit process. This relates solely to mass issues and does not specifically cover over dimension issues but it is acknowledged that these are a separate consideration.

Overweight permits for the towing of disabled vehicles need to be issued as Area Wide permits in advance of any incident. The details of the disabled vehicle will not therefore be available. Trials have been undertaken by using a series of pro forma vehicles behind the nominated tow truck. It was found that the primary issue is the mass on the rear axles of the tow truck and this was then used to determine permit limits and bridge crossing conditions.

The permit assessment will be for a specific tow truck but will need to cover a range of possible disabled vehicles. If there are bridge restrictions in place on the network covered, drivers must be qualified in bridge engineering self-supervision (BESS).

APPENDIX A: VDAM RULE 2016 MAIN CHANGES

The table below is a summary only. Please refer to the rule for full detail.

GENERAL ACCESS

GROSS MASS LIMITS

For	From	To
7-axle combinations with a minimum wheelbase of 16.8m	44,000kg	45,000kg
8-axle combinations with a minimum wheelbase of 17.4m	44,000kg	46,000kg

NOTE: Until 1 December 2017, these increases will be available only on routes shown on a dedicated NZTA map to allow bridge surveys to be completed. The routes will be based on current state highway HPMV and 50MAX routes.

WEIGHING TOLERANCES

From	To
• 500kg – for weights up to 11,000kg • 1,000kg – weights from 11,000kg - 33,000kg • 1,500kg – weights heavier than 33,000kg • 300kg – for front steer axles	• 500kg for all individual axles and gross mass limits. • 1,000 kg for axle sets (e.g. a tri-axle set at the of a semi-trailer) other than steer axles.

WIDTH

From	To
2.50m width (no additional allowance for load securing devices)	2.55m width (inclusive of load securing devices)

Exceptions:

There are some exemptions to width. Please refer to the full rule for details.

HEIGHT

From	To
4.25 m height (plus the 25mm allowed for load securing devices)	4.30m height (inclusive of load securing devices)

Exceptions:

Allow operators with suitable technology to temporarily exceed the 4.30m height limit when raising the vehicle to clear obstacles on the road.

PERMITTING

Permits for Specialist Vehicles: a new category which comprises passenger service vehicles, concrete mixers, rubbish trucks and ground-spreader trucks.

From (currently available for buses only)	To
• 8,800kg - twin-tyred axle in any set • 14,600 - twin-tyred axle with a single large-tyred axle in a tandem axle set and a 60/40 load share • 16,000 - twin-tyred axle with a single large-tyred axle in a tandem axle set and a 55/45 load share	• 12,000kg • 16,000kg • 18,000kg • NEW: 17,000kg - two twin-tyred axles in a tandem axle set spaced less than 1.3m apart • NEW: 18,000kg - two twin-tyred axles in a tandem axle set greater than 1.3m apart

NOTE: From 1 December 2018, the axle mass limit of up to 9,000 kg for 2-axle buses becomes available for operation without permit on public transport routes.

Overweight Permitting (HPMV):

- Over-length vehicles (up to 23.0m long) able to temporarily operate unladen without a permit when moving between manufacturer and customer or manufacturer and a vehicle compliance certifier.

MANAGEMENT OF OVERDIMENSION LOADS

- Allow the Agency to check traffic offending history when considering a permit application.
- Create critical conditions for overdimension permits.
- The VDAM Rule will indicate matters that may be included as conditions.
- Clarify the responsibilities of operators and pilots.
- Allow crane booms to be disassembled and transported stacked side by side as an over-dimension load.

APPENDIX B: 45/46 TONNE SCREENING PROCESS

The purpose of these guidance notes is to provide information to road controlling authorities (RCAs) for the assessment of bridges for vehicles with gross mass limits of:

- 45,000kg for 7-axle combinations with a minimum wheelbase of 16.8m
- 46,000kg for 8-axle combinations with a minimum wheelbase of 17.4m.

The 45/46 tonne screening process is based on the successful 50MAX HPMV process introduced in 2013. Below are details of the 50MAX process.

Background

The 2010 Vehicle Dimension and Mass Rule Amendment allowed vehicle operators to apply for HPMV permits for vehicles with divisible loads, provided their axle and gross masses were within specified limits.

Vehicles loaded to the "Full HPMV" limits created demands in excess of the current Class 1 loadings, and strengthening of bridges was necessary to support these loads.

The capability of various bridge designs is:

Design Loading	Construction Date	Acceptable span range	
		50MAX	Full HPMV
HN-HO-72	1972-	All spans	All spans
H20-S16-T16	1961-1971	0-40m	0-30m
H20-S16-44	1944-1960	0-25m*	0-16m
H20-S16-41	1943	0-25m*	0-14m
Traction Engine	1933-1942	0-25m*	-

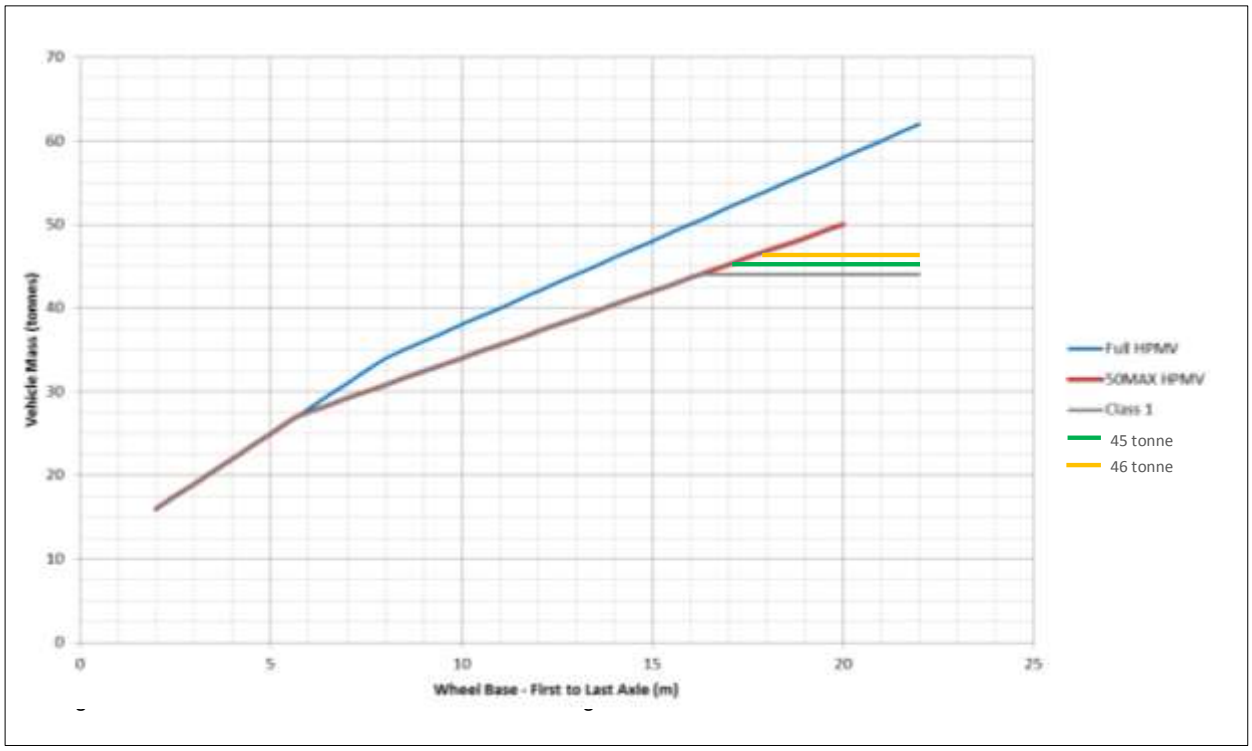
**Provided bridge is unposted and is assessed as being able to safely support Class 1 vehicles*

The 45/46 tonne loading curve is the same as the 50MAX loading curve which was developed to provide a significant gain in freight efficiency without increasing the loads on pavements. It enabled 50MAX HPMV vehicles to cross most existing bridges without the need for strengthening.

An increase in vehicle loading was achieved by extending the existing Class 1 Gross Weight loading curve beyond the existing 44 tonne cap, to a maximum of 50 tonnes, as shown in Graph 1. Essentially, this maintained the existing Class 1 axle loads and spacings but increased the allowable total mass by up to 6 tonnes.

50MAX individual and axle set mass limits are identical to the Class 1 limits.

Graph 1: Gross weight loading curve



50MAX load effect bridge analysis

Detailed analysis work was previously undertaken to assess the effect of 50MAX HPMV loading on bridge structures –the same analysis can be applied to 45/46 tonnes. The analysis concluded that very few bridges would experience increased loading demands beyond current Class 1 legal loadings, and therefore most bridges could safely support 50MAX HPMV loading. The exceptions identified at the time were:

- Older bridges with simply supported spans greater than 25m length
- Older bridges with both flexural continuity between spans and span lengths greater than 13m
- Posted bridges.

Guidance is provided below to assist in the current required screening of structures falling into category (a), to meet VDAM Rule 2016 general access dates. A detailed review of structures in categories (b) and (c) is recommended to determine whether 45/46 tonne loading can be safely supported.

Capacity assessment of bridges based on design loading

Bridge capacity assessments should be carried out by an experienced bridge structural engineer. Detailed assessments, where required, must be carried out in accordance with Section 7 of the NZ Transport Agency Bridge Manual 3rd Edition (available on nzta.govt.nz).

Where construction drawings for a bridge are not available, an accurate determination of load carrying capacity is likely to require significant engineering input, including site investigation, materials testing, structural analysis or proof loading.

The adequacy of a bridge with simply supported spans can initially be assessed based on the original design loading and/or date of construction. Where no other information is available, such data may provide guidance to allow a decision on the adequacy of a bridge to carry 45/46 tonnes prior to more detailed information being obtained. To aid this process, Figure 2 provides guidance on the likely bridge span ranges than can adequately support 50MAX HPMV, and consequently, 45/46 tonnes.

Figure 2 – supported span range for 50MAX HPMV vehicles

Design Loading	Construction Date	50MAX HPMV Acceptable Span Range
HN-HO-72	1972 – present day	All spans
H20-S16-T16	1961-1971	0-40m
H20-S16-44	1944-1960	0-25m*
H20-S16-41	1943	0-25m*
Traction Engine	1933-1942	0-25m*

** Provided bridge is unposted and is assessed as being able to safely support class 1 vehicles*

Note that Figure 2 should only be used by experienced structural engineers, in conjunction with a review of the bridge condition, structural form and failure mechanisms. It should not be relied upon for a structure that contains any critical structural weaknesses that could create a non-ductile failure mechanism under live loading.

APPENDIX C: SPECIALIST VEHICLE SCREENING PROCESS

The purpose of these guidance notes is to provide information to road controlling authorities (RCAs) for the assessment of bridges for specialist vehicles (SVs).

Background

The Vehicle Dimension and Mass (VDAM) Rule 2016 allows vehicle operators to apply for SV permits provided vehicles fit within specified vehicle types (passenger service vehicles, concrete mixers, ground-spreader trucks, rubbish trucks with compactors), and their axle masses are within specified limits.

The increased axle mass provisions were developed in recognition that the existing limits could be restrictive for certain vehicle types with only two axle sets. The increases only relate to twin tyred axles, and tandem axle sets with twin tyred and single large tyred axles. The gross mass limits for SVs remain restricted by the existing Class 1 limits (now in Part 2, table 2.1 of the VDAM Rule 2016).

As such, the main structural bridge elements affected by the axle weight increases are:

- Decks
- Transverse elements (i.e. transoms, pier caps)
- Longitudinal elements (i.e. beams, slabs) for bridges with spans less than 10m long.

The new axle weight limits for SVs are shown in Table 1 (only limits that have changed for SVs have been shown).

Vehicles loaded to the 'full SV' limits can create demands well in excess of the current Class 1 and HPMV loadings, and some bridges may be unable to support these loads without strengthening.

Table 1: Axle mass limits for various vehicle types

Type of axle set	Class 1 Axle Limits (kg)	HPMV Axle Limits (kg)	Specialist Vehicle Axle Limits (kg)
Twin-tyred axle in any axle set	8,200	8,800	12,000
For a passenger services vehicles, two axles in a tandem axle set comprising—			
(a) a twin-tyred axle with a single standard-tyred axle and a 60/40 load share	14,500		
(b) a twin-tyred axle with a single large-tyred axle, or a single mega-tyred axle and a load share between 60/40 and 55/45	14,500		
For any other vehicle, two axles in a tandem axle set comprising—			
(c) a twin-tyred axle with a single large-tyred axle and a 60/40 load share	13,600	13,600	16,000*
(d) a twin-tyred axle with a single large-tyred axle and a 55/45 load share	14,500	14,500	18,000*
*Includes passenger services vehicles			

Two twin-tyred axles—			
(a) spaced less than 1.3 m from the first axle to the last axle	14,500	15,000	17,000
(b) spaced 1.3 m or more but less than 1.8m from the first axle to the last axle	15,000	16,000	18,000
(c) spaced 1.8 m or more from the first axle to the last axle	15,500	16,000	18,000

Modern bridges

All bridges designed to support the current HN-HO-72 or HN-72 design loading are expected to be able to support full SV axle limits, provided they have been designed correctly and have no condition issues affecting their structural capacity. Therefore, the majority of bridges built over the past 40 years (designed post-1972) should be unrestrictive to these vehicles.

Older bridges

Older bridges may not have the capacity to support SVs up to their maximum axle limits. This includes bridges designed prior to 1972, and more modern bridges designed to loadings less than HN-72 (i.e. design to Class 1 loading, or 0.85HN in accordance with Appendix D of the NZ Transport Agency Bridge Manual).

Given many bridges have now been assessed against HPMV loading, Table 2 has been developed to provide guidance on axle load effects in comparison to HPMV Loading. Figures shown in the 'HPMV equivalent axle mass' column have been assessed to cause load effects on bridge elements that are no worse than the various HPMV axle limits. Therefore, where a bridge has been assessed as being able to support 'Full HPMV' loading (i.e. in accordance with Section 7 of the NZ Transport Agency Bridge Manual, 3rd Edition), it should be able to support SV axle loads up to the limits in the final column of Table 2. For axle masses greater than these, an independent assessment of the bridge for these loads should be undertaken.

Table 2: Axle masses causing load effects equivalent to HPMVs

Type of axle set	Spacing between tandem axles (m)	HPMV Axle Limits (kg)	Specialist Vehicle Mass Limits (kg)	Maximum SV Mass Equivalent to HPMV (kg)
Twin-tyred axle in any axle set	-	8,800	12,000	8,800
Two axles in a tandem axle set comprising:	≥1.0	13,600	16,000	13,600
(a) a twin-tyred axle with a single large-tyred axle and a 60/40 load share	≥1.1	13,600	16,000	14,200
	≥1.2	13,600	16,000	14,700
(b) a twin-tyred axle with a single large-tyred axle and a 55/45 load share	≥1.3	13,600	16,000	15,200
	≥1.0	14,500	18,000	14,500
	≥1.1	14,500	18,000	15,000
	≥1.2	14,500	18,000	15,400
	≥1.3	14,500	18,000	15,700
Two twin-tyred axles:				
(a) spaced less than 1.3 m from the first axle to the last axle	≥1.0	15,000	17,000	15,000
	≥1.1	15,000	17,000	15,300
	≥1.2	15,000	17,000	15,600
(b) spaced more than 1.3 m from the first axle to the last axle	≥1.3	16,000	18,000	16,000

Note: decisions on permitting of specialist vehicles over bridges should only be undertaken by experienced structural engineers, in conjunction with a review of the condition of the bridge.

APPENDIX D: SPECIALIST VEHICLE PERMIT PROCESS FLOW CHARTS