



## Annual weigh-in-motion (WiM) report 2013



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## 1.0 DISCLAIMER

The traffic data contained in this report is intended to be used as an approximate indication of traffic loading and vehicle weights at weigh-in-motion (WiM) sites. The limitations of the equipment and their installation, congestion effects and various analysis procedures contribute to a level of approximation in the data. These factors should be taken into account when using the data.

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## 2.0 GLOSSARY

<b>44T</b>	Maximum gross weight allowed for standard vehicles in New Zealand.
<b>50MAX</b>	A new generation of truck that allows for safe and more efficient transport of freight goods. These trucks are slightly longer than standard 44 tonne vehicles, have an additional axle (nine in total) and can have a total weight of up to 50 tonnes on certain designated routes.
<b>A Train</b>	A rigid vehicle connected to a semi-trailer that tows a full trailer.
<b>ASTM</b>	American Standard Test Method
<b>AADT</b>	Annual average daily traffic – an estimation of the number of vehicles crossing a site on an average day.
<b>Articulated vehicle</b>	An articulated vehicle has a driver's position, a steering system, motive power and two rigid sections that articulate relative to each other.
<b>B Train</b>	A rigid vehicle attached to two semi-trailers.
<b>Description</b>	The description stated in tables refers to the PAT type illustration by providing indication of the spacing between axles.
<b>ESA</b>	Equivalent Standard Axle
<b>GHVM</b>	Gross heavy vehicle mass
<b>HCV</b>	Heavy commercial vehicle
<b>HPMV</b>	High-productivity motor vehicle is a vehicle permitted to carry a divisible load that may be over-length and /or over-weight but not over-width or over-height.
<b>kN</b>	Kilo newton
<b>MCV</b>	Medium commercial vehicle
<b>Overweight vehicle</b>	A vehicle that exceed its weight restrictions. There are two situations: 1. vehicle without a permit that exceed its standard weight limit 2. vehicle with a permit that exceed its approved weight limit
<b>PAT Class</b>	The scheme used by the Transport Agency's WiM system to uniquely identify axle set configurations according to their space code relating to the axle configuration.
<b>QADT</b>	Quad axle dual tyre
<b>RS</b>	Reference station
<b>Rigid vehicle</b>	A rigid vehicle has two axle sets, a driver's position, a steering system, motive power and a single rigid chassis.
<b>SADT</b>	Single axle dual tyre
<b>SAST</b>	Single axle single tyre
<b>SH</b>	State highway
<b>T&amp;T</b>	Truck and trailer
<b>TADT</b>	Tandem axle dual tyre
<b>TSST</b>	Twin steer single tyre
<b>TRDT</b>	Triple axle dual tyre
<b>Total volume</b>	This indicates the number of heavy vehicles for each PAT class.
<b>VDAM</b>	Vehicle dimension and mass
<b>WiM</b>	Weigh-in-motion system is a device that measures the dynamic axle mass of moving vehicles to estimate the corresponding static axle mass.

### 3.0 EXECUTIVE SUMMARY

All heavy vehicles (with gross mass over 3.5 tonnes) are referred to as vehicles in this report. Those heavy vehicles that exceed one tonne and above from its specified mass limits are stated as overweight heavy vehicles (this includes permitted overweight vehicles such as 50MAX and HPMVs).

Chart 1 | Vehicle percentage distribution by vehicle type

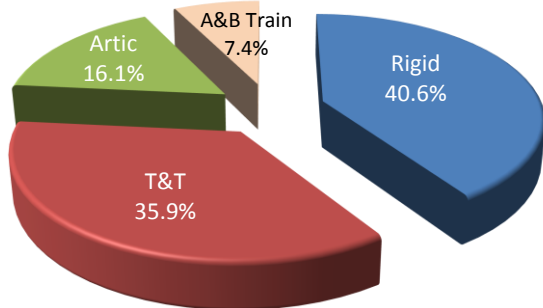


Chart 2 | GHVM percentage distribution by vehicle type

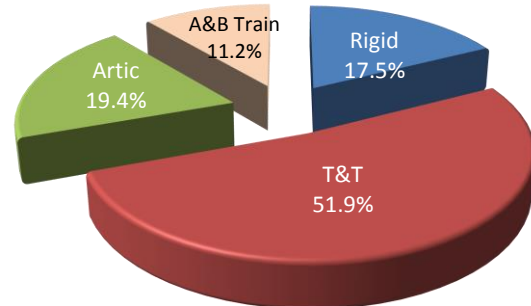


Chart 3 | Overweight percentage distribution by vehicle type

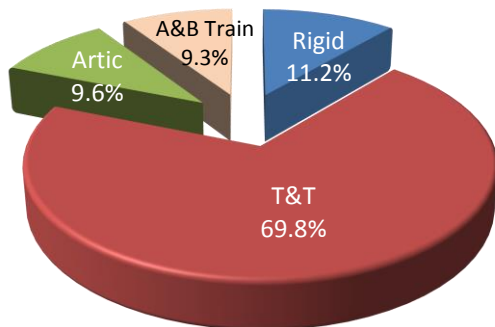


Chart 4 | GHVM percentage distribution of overweight vehicle by vehicle type

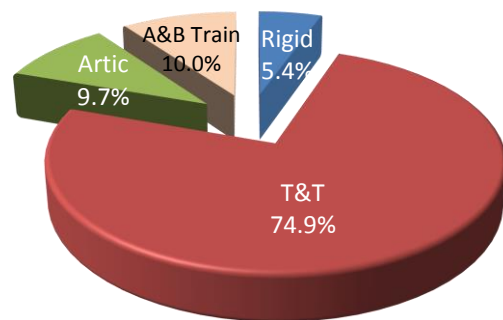


Table 1.0 | Vehicle frequency and estimated GHVM by vehicle type

Vehicle type	Heavy vehicles <sup>(1)</sup>				Overweight heavy vehicles <sup>(2)</sup>				Percentage of overweight over recorded vehicles		Average gross mass per vehicle	
	Recorded		GHVM		Recorded		GHVM		Recorded	Gross Mass	Overall	Overweight
	<i>f</i>	% <sup>(3)</sup>	Tonne	% <sup>(3)</sup>	<i>f</i>	% <sup>(3)</sup>	Tonne	% <sup>(3)</sup>	% <sup>(4)</sup>	% <sup>(4)</sup>	Tonne	Tonne
Rigid	1,294,747	40.6	12,991,881	17.5	32,904	11.2	702,382	5.4	2.5	5.4	10.0	21.3
T&T	1,143,994	35.9	38,491,938	51.9	204,806	69.8	9,665,846	74.9	17.9	25.1	33.6	47.2
Artic	512,587	16.1	14,340,119	19.4	28,241	9.6	1,249,976	9.7	5.5	8.7	28.0	44.3
A&B Train	235,442	7.4	8,280,002	11.2	27,285	9.3	1,283,839	10.0	11.6	15.5	35.2	47.1
Total	3,186,770	100.0	74,103,939	100.0	293,236	100.0	12,902,042	100.0	9.2	17.4	23.3	44.0

- Note:**
- <sup>1</sup>Total number of vehicles recorded or the estimated gross mass (both vehicle and load mass) during the accepted days of operations.
  - <sup>2</sup>Total number of vehicles recorded and the estimated gross mass (both vehicle and load mass) that exceed their maximum limit of each PAT class during the accepted days of operations.
  - <sup>3</sup>The proportion of each vehicle type from the given column total. For example, 35.9 percent of the overall total of heavy vehicles recorded as trucks and trailers.
  - <sup>4</sup>The proportion of overweight heavy vehicles over the total heavy vehicles recorded and the total mass of the excess tonne go above the legal limit of each PAT class against the overall gross mass of each vehicle type. For example, approximately 11.6 percent (27,285) of 235,442 A&B Train vehicles were overweight.

Chart 5 | Vehicle frequency distribution by WiM site and by vehicle type

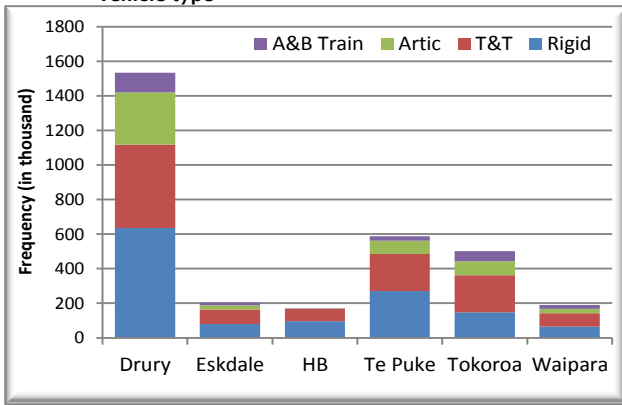
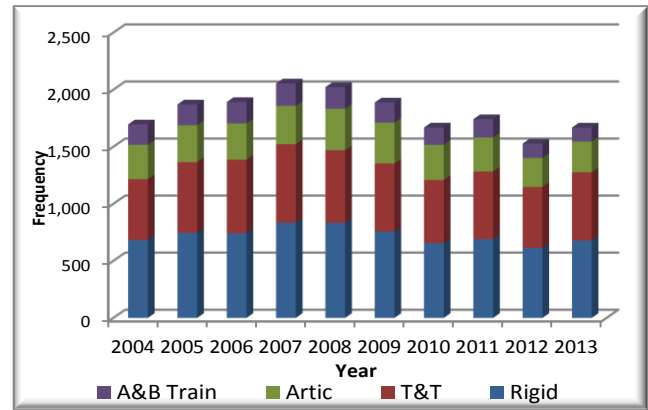


Chart 6 | Vehicle per day frequency distribution by vehicle type



### Vehicle fleet

- The total heavy vehicles recorded over all six WiM site during 2013 was more than three million.
- There were 1668 annual average daily heavy vehicles recorded during the period, which grew by 9.2 percent compared to 2012 with 1528, though this is still lower than the 2000 vehicles per day recorded in 2007.
- Rigid and T&T vehicle types had the highest total number of heavy vehicles recorded across the six WiM sites with 40.6 percent and 35.9 percent, respectively.
- PAT classes 891, 21 and 45 (*see Figure 1 for illustration*) are reported as having the largest proportion of vehicles. Combined, these classes account for approximately 51 percent of the total heavy vehicle fleet (*see Table 7.0*).
- More than half (51.9 percent) of the estimated GHVM was carried by T&T vehicle type, followed by Artic (19.4 percent).
- The overall average estimated GHVM per vehicle is 23.3 tonnes, regardless of vehicle type, while the average estimated GHVM per vehicle carried per day was 38.8 tonnes.



Chart 7 | Overweight vehicle frequency distribution by WiM site and by vehicle type

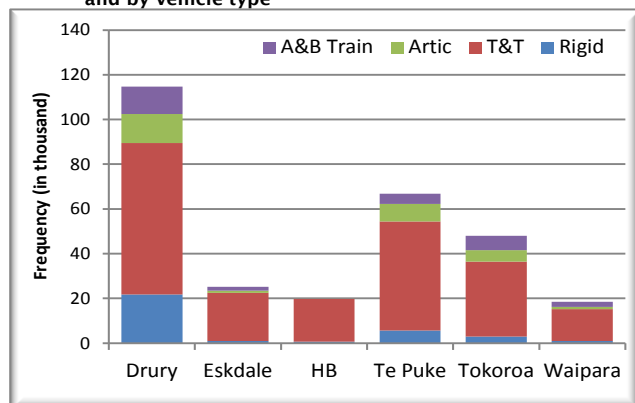
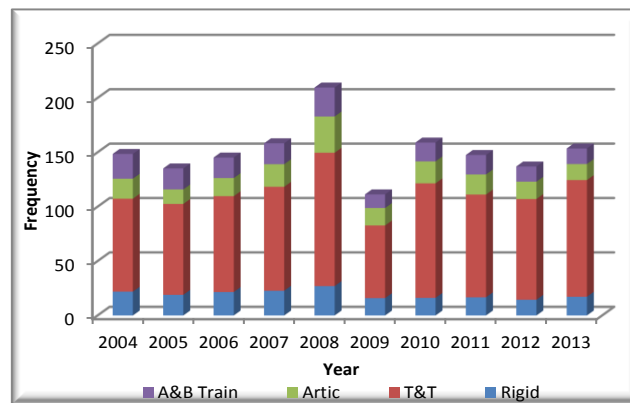


Chart 8 | Vehicle per day frequency distribution by vehicle type



### Vehicle fleet overweight

- There were 293,326 vehicles recorded as overweight across WiM sites. This includes those vehicles that may be permitted to carry weights in excess of the standard weight limits for their class.
- Annual average daily overweight heavy vehicles increased by 12.1 percent to 154 overweight heavy vehicles per day compared to 137 in 2012.
- T&T vehicle type continue to have the highest number of overweight vehicles recorded during 2013 with 61.6 percent of the total overweight vehicles. Of the total number of T&T vehicles recorded, 18 percent were overweight.
- The estimated gross mass for overweight vehicles remained unchanged at 44 tonnes. This gross mass is the maximum legal limit of some vehicles.
- More than 47 tonnes was the estimated average gross mass per overweight T&T and Artic vehicles.
- PAT class 891 (45.7 percent), 751 (13.3 percent) and 31 (10.0 percent) had the largest proportion of vehicles recorded as being over each specific maximum weight limit (combined, these classes account for approximately 69 percent of the total heavy vehicles recorded as overweight). (see Table 11.0)
- Eskdale WiM site had the highest proportion of overweight vehicles with 12.4 percent and Hamanatua Bridge WiM site follows with 11.7 percent. (see Table 2.0).

Table 2 shows the frequency and percentage distributions of total heavy and overweight vehicles by vehicle type and by WiM site.

**Table 2.0 | Vehicle type by WiM site (2013)**

Vehicle type	WiM site						Total
	Drury	Eskdale	Hamanatua Bridge	Te Puke	Tokoroa	Waipara	
<b>Number of heavy vehicles</b>							
Rigid	634,804	79,495	97,095	270,322	147,649	65,382	1,294,747
T&T	483,109	84,823	70,513	213,938	214,142	77,469	1,143,994
Artic	301,719	23,324	2,923	78,062	81,143	25,416	512,587
A&B Train	113,715	16,625	700	24,780	57,748	21,874	235,442
<b>Total</b>	<b>1,533,347</b>	<b>204,267</b>	<b>171,231</b>	<b>587,102</b>	<b>500,682</b>	<b>190,141</b>	<b>3,186,770</b>
<b>Number of overweight vehicles</b>							
Rigid	21,738	969	655	5,697	2,902	943	32,904
T&T	67,752	21,506	19,141	48,644	33,497	14,266	204,806
Artic	12,932	1,019	144	7,944	5,204	998	28,241
A&B Train	12,232	1,747	83	4,488	6,442	2,293	27,285
<b>Total</b>	<b>114,654</b>	<b>25,241</b>	<b>20,023</b>	<b>66,773</b>	<b>48,045</b>	<b>18,500</b>	<b>293,236</b>
<b>Percentage of overweight vehicles (%)</b>							
Rigid	3.4	1.2	0.7	2.1	2.0	1.4	2.5
T&T	14.0	25.4	27.1	22.7	15.6	18.4	17.9
Artic	4.3	4.4	4.9	10.2	6.4	3.9	5.5
A&B Train	10.8	10.5	11.9	18.1	11.2	10.5	11.6
<b>Total</b>	<b>7.5</b>	<b>12.4</b>	<b>11.7</b>	<b>11.4</b>	<b>9.6</b>	<b>9.7</b>	<b>9.2</b>
<b>Estimated gross mass</b>							
Rigid	5,916,764	907,904	1,221,250	2,841,914	1,533,616	570,434	12,991,881
T&T	15,171,842	3,165,424	2,790,299	7,509,176	7,349,519	2,505,680	38,491,938
Artic	8,249,709	659,269	67,365	2,175,448	2,426,979	761,350	14,340,119
A&B Train	3,926,805	584,741	23,848	832,433	2,116,238	795,938	8,280,002
<b>Total</b>	<b>33,265,119</b>	<b>5,317,337</b>	<b>4,102,761</b>	<b>13,358,971</b>	<b>13,426,351</b>	<b>4,633,402</b>	<b>74,103,939</b>
<b>Estimated overweight vehicles gross mass</b>							
Rigid	465,861	20,732	13,613	119,090	63,031	20,057	702,382
T&T	3,199,481	1,006,600	884,087	2,340,262	1,563,499	671,918	9,665,846
Artic	562,933	46,043	6,682	355,271	234,363	44,684	1,249,976
A&B Train	573,735	81,843	3,839	215,502	300,875	108,046	1,283,839
<b>Total</b>	<b>4,802,010</b>	<b>1,155,217</b>	<b>908,220</b>	<b>3,030,125</b>	<b>2,161,768</b>	<b>844,704</b>	<b>12,902,042</b>
<b>Estimated gross mass per vehicle (tonne)</b>							
Rigid	9.3	11.4	12.6	10.5	10.4	8.7	10.0
T&T	31.4	37.3	39.6	35.1	34.3	32.3	33.6
Artic	27.3	28.3	23.0	27.9	29.9	30.0	28.0
A&B Train	34.5	35.2	34.1	33.6	36.6	36.4	35.2
<b>Total</b>	<b>21.7</b>	<b>26.0</b>	<b>24.0</b>	<b>22.8</b>	<b>26.8</b>	<b>24.4</b>	<b>23.3</b>
<b>Estimated overweight vehicles gross mass per vehicle (tonne)</b>							
Rigid	21.4	21.4	20.8	20.9	21.7	21.3	21.3
T&T	47.2	46.8	46.2	48.1	46.7	47.1	47.2
Artic	43.5	45.2	46.4	44.7	45.0	44.8	44.3
A&B Train	46.9	46.8	46.2	48.0	46.7	47.1	47.1
<b>Total</b>	<b>41.9</b>	<b>45.8</b>	<b>45.4</b>	<b>45.4</b>	<b>45.0</b>	<b>45.7</b>	<b>44.0</b>

**Interpretation:**

- Across all WiM sites there were nine overweight vehicles for every 100 heavy vehicles. This is unchanged compared to last year.
- The Drury site had the lowest proportion of overweight vehicles with eight overweight vehicles per 100 heavy vehicles while Eskdale site had the highest with 12 overweight vehicles. Drury also had the lowest estimated gross mass per overweight vehicles with less than 42 tonnes.
- The Hamanatua Bridge and Eskdale had the highest proportion of overweight vehicles for T&T type with 27 and 25 overweight vehicles for every 100 heavy vehicles, respectively.
- A&B vehicle type at the Te Puke WiM site showed the highest estimated gross mass for an overweight vehicle with 48.0 tonnes.

Fig. 1 | PAT type 21, 31, 891, 751 and 851

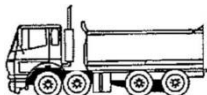
PAT type 21:



PAT type 31:



PAT type 45:



PAT type 891:



PAT type 751:



PAT type 851:



**Vehicle fleet > 44T/50T**

- PAT class 891, 751 and 851 (see tables 14.0 and 14.1) represent the PAT class with highest frequencies of heavy vehicles recorded with >44T. (Combined, they account for over 70 percent of the total heavy vehicles recorded for both >44T).
- For vehicles with estimated gross mass >50 tonnes, the most common PAT classes were 915, 891, and 1020 (approximately 82 percent if combined)

**Time of day**

- Table 3.0 indicates the hours over which the number of overweight vehicles exceeded the hourly average on a regular day at each WiM site:

**Table 3.0 | Overweight above hourly average distribution by WiM site (start to end)**

WiM site	Start	End
Drury	5:00	16:59
Tokoroa	5:00	14:59
Te Puke	6:00	16:59
Waipara	9:00	16:59
Eskdale	5:00	15:59
Hamanatua Bridge	7:00	16:59

- In Drury, Tokoroa and Eskdale WiM sites, the passing overweight heavy vehicles started to peak as early as five in the morning while Waipara started later at 9am. (See Charts 3.0–3.5).

## 4.0 INTRODUCTION

There were six WiM sites in New Zealand collecting axle loading data for traffic monitoring purposes during 2013. An additional source of WiM data is being developed in Auckland and this project will include the provision of loading data to the national system. This data is not included in the 2013 WiM report.

The current sites are as follows:

**Table 4.0 | WiM site location**

Region	SH	RS	Description
02 - Auckland	1N	461	DRURY -Telemetry Site 48 - (WiM Site 1205)
03 - Waikato	1N	625	TOKOROA - Telemetry Site 51 - (WiM Site 421)
04 - Bay of Plenty	2	171	TE PUKE - Telemetry Site 49 - (WiM Site 24)
05 - Gisborne	35	321	HAMANATUA BRIDGE - Telemetry Site 108 (WiM Site)
06 - Hawkes Bay	5	259	ESKDALE - Telemetry Site 101 - (WiM Site 5721)
11 - Canterbury	1S	284	WAIPARA - Telemetry Site 52 - (WiM Site 518)

All data used in this report was collected in the 2013 calendar year and is available to selected users, through the Transport Agency's state highway traffic monitoring system (TMS). This report is intended to provide an insight into available heavy vehicle collected data for further or more detailed analysis by TMS users.

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## 5.0 OTHER DOCUMENTS

The documents below provide information relating to traffic monitoring practices used on state highways by the Transport Agency. These can be downloaded from our website [www.nzta.govt.nz](http://www.nzta.govt.nz)

- State highway traffic volume booklet
- Traffic monitoring for state highways manual SM052

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## 6.0 TECHNOLOGY

The Transport Agency uses PAT bending plate technology at a total of six WiM sites. Two further sites at Auckland Harbour Bridge are used for a special study. All sites are continuously collecting individual vehicle records, and statistics are normally downloaded weekly.

The first system was installed in 1985 at Pukerua Bay near Wellington and then relocated to Te Puke in the Bay of Plenty in 1997. Four of the original bending plates are still in operation.

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## 7.0 DATA QUALITY REQUIREMENTS

Readers of this report should take note of the accuracy tolerances required during the collection of data.

Accuracy is as defined for high speed weigh-in motion in ASTM E1318 (or latest revision):

for 95% of confidence:

Gross Vehicle Weight:  $\pm 10\%$

Axle group load:  $\pm 15\%$

With a good (new) pavement, the above weight errors are reduced by a factor of 1.5

Requisite quality is determined by the final use of data, in simple terms:

- pavement is periodically checked for level and rectified
- calibration is carried out with vehicle of known axle weights and speed.
- data is monitored for errors and deviation.

## 7.0 DATA QUALITY REQUIREMENTS (Continued)

Current use of data:

- average ESAs for pavement design
- load distributions for bridge design
- network loading analysis
- indicators for police enforcement.

Potential future use of data:

- assessments of revenue from road user charges.

Other factors affecting data accuracy

- pavement smoothness as trucks bouncing onto scales will affect accuracy.
- truck driver behavior
- strong winds

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## 8.0 DERIVATIONS

### Overweight

This report contains the number of overweight vehicles data by vehicle type (PAT class rigid, T&T and others). The data has been sourced from the 'Distribution by Gross Vehicle Mass' report in the TMS.

Overweight data in each vehicle fleet category is computed based on a tonne above the specified legal weight limit of the vehicle. For example, vehicle fleet of PAT class 21 legal limit is 14 tonnes. For this PAT class (21) only vehicles with gross mass greater than or equal to 15 tonnes are considered as overweight.

In order to compute the number of overweight vehicles by vehicle type, simply take the sum of the overweight vehicles in all vehicle fleets which belong to a certain vehicle type (*refer to Table 5 for the classification scheme*). For example, in 2013 there were 943 overweight rigid heavy vehicles recorded at the Waipara WiM site. This is the sum of PAT classes 20, 21, 31, 34, 45, 47, 301, and 511, which are under rigid type at that WiM site. For the overall total overweight vehicles, simply add all the overweight vehicles in all WiM sites.

Note that the overweight vehicles comprises vehicles that exceeded specified limits without permit and those permitted vehicles that are allowed to carry over limits.

### Estimated GHVM

The WiM daily weight table in TMS contains the collected GHVM for each WiM site in daily breakdown. However, this information contains mass of PAT classes lower than the PAT class 20. In this report, the estimated GHVM data were derived from WIM Distribution within GHVM Range table. In deriving the estimated GHVM, simply multiply the vehicle frequency to the mass mid-range and sum the product for every PAT class of each WiM site. The same principle is applied for overweight vehicles, except it starts on the above mid-range of the maximum limit of each PAT class.

### Average estimated gross mass per vehicle

To compute the average estimated GHVM per vehicle, divide the computed estimated gross mass over the number of heavy vehicle for given PAT class for each WiM site. This is similar to the computation for overweight vehicles.

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## 9.0 PERMITTED VEHICLES

Heavy vehicles travelling on New Zealand roads must be within certain size and weight capacity requirements. This is important for maintaining road safety on the network. This benefits all road users by increasing productivity by delivering goods and services on time and in good condition, while keeping the network in best condition.

The maximum size and weight dimensions for heavy vehicles are stated in the Land Transport Rule: Vehicle Dimensions and Mass (2002 and 2010) and 50MAX (or visit <http://www.nzta.govt.nz/50MAX>) In the event that a heavy vehicle needs to be larger and carry more loads, the operator must apply for a permit before heading out on road. Three types of permits can be applied for:

- Overweight vehicles – the road user must secure this permit before travelling if the vehicle exceeds the limits of a carrying load or the vehicle's design.
- Over dimension vehicles – when travelling with a longer and wider load.

- High productivity motor vehicles (HPMV/50MAX) – this permit is issued to road user for vehicles that will be used to carry divisible loads, such as logs, milk powder or freight, more productively. Permitted vehicles must also be able to travel on routes that are suitable for the vehicle and load being approved. There are three types of HPMV permit: a) HPMV over mass; b) HPMV over length; and c) both a and b. Most of 50MAX heavy vehicles hold combination permits. (Note: In 2012, HPMV permits were valid only for one year. Permit validity was increased to two years in 2013.)

Any vehicle holding any type of permit as mentioned above is a permitted vehicle. For the number of approved HPMV and 50MAX permits refer to Table 7.

In this report, permitted vehicles were not identified separately. Frequency is the recorded number of heavy vehicles that passed the WiM site, while GHVM is the gross weight of the vehicle mass including the load.

PAT Type 69, six axle artic and the PAT Type 791, seven axle artic are legally limited to below 44 tonne gross, but may be operating on overweight permits at 44 tonne gross.

In 2012, there were 20 PAT classes changed in maximum limits and of those PAT classes 14 decreased.

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## 10.0 CLASSIFICATION SCHEME

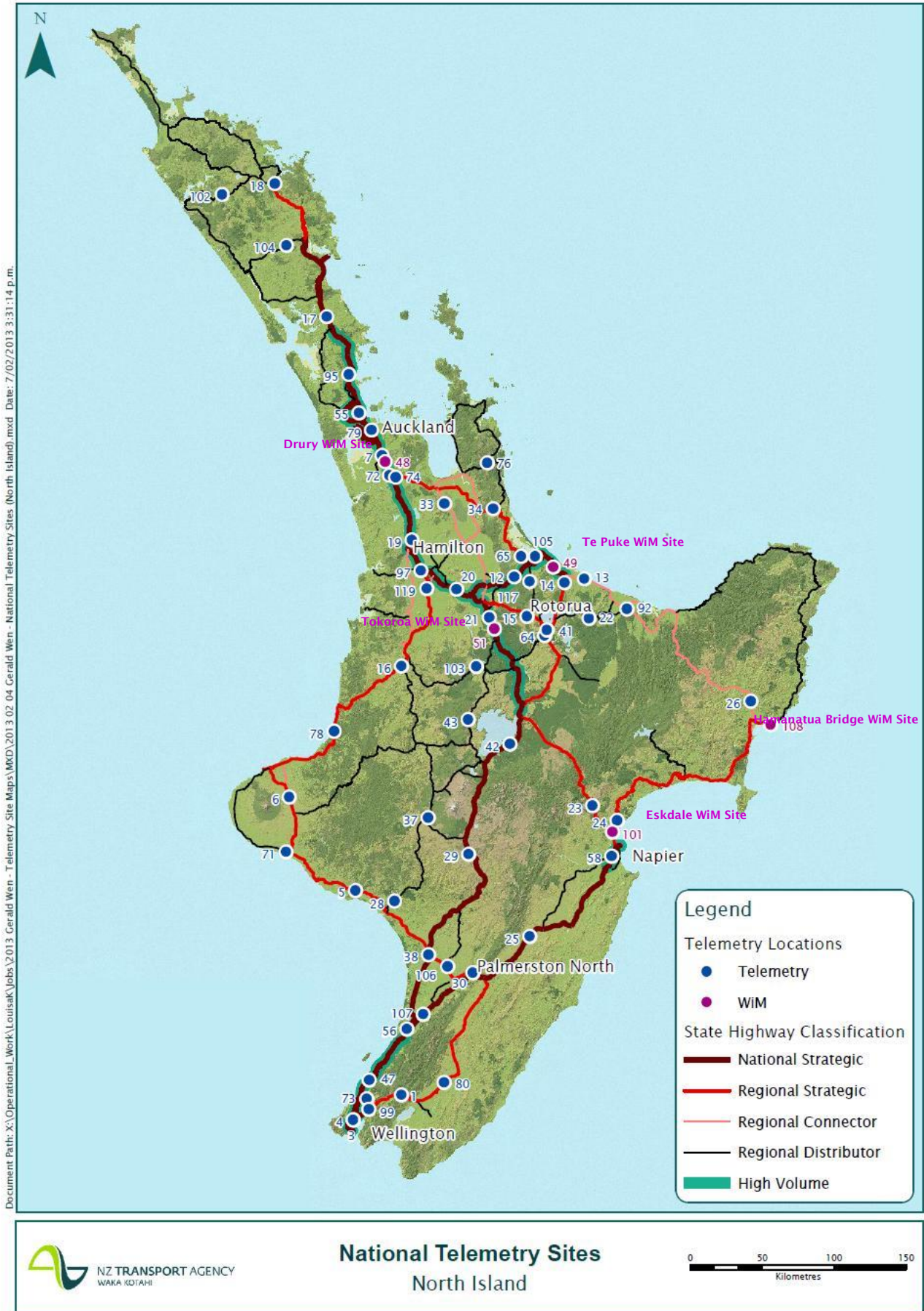
**Table 5.0 | Heavy vehicle classification 2011 scheme**

EEM (PEM) class	Vehicle type group	PAT class	Vehicle types in class	Axles	Group	New max limit	Criteria	
Bus & MCV	Rigid	20	o--o (short truck or bus)	2	2	14	2ax, AS1-2/GVW	
		21	o----o (truck or bus)	2	2	14	2ax AS 1 criterion	
	T&T	300	o--o--o (truck towing light trailer)	3	3	20	3 ax, AS 1,2 criteria	
401		o--o--oo (truck tow light 2 ax trailer)	4	3	18	4 ax, AS 1,3 criteria		
Bus & HCV1	Rigid	31	o--oo (truck or bus/coach)	3	2	18	3 axles, 2 groups	
		301	o--oo (tractor without semi-trailer)	3	2	21	3 axles, 2 groups	
		34	oo--o (twin steer truck)	3	2	19	3 axles, 2 groups	
	T&T	402	o--oo--o (truck tow light 1 ax trailer)	4	3	29	4 ax, AS 1,2,3 criteria	
		44	oo--o--o (twin steer tow 1 ax trailer)	4	3	27	4 ax, AS 1,3 criteria	
		45	oo--oo (heavy truck)	4	2	26		
HCV1	Rigid	47	o--ooo (heavy truck)	4	2	24	4,5 axles, 2 groups	
		511	oo--ooo (heavy truck)	5	2	28		
		30	o--o----o (artic e.g. bread truck)	3	3	26	3 ax, AS 1,2 criteria	
	Artic	41	o--o--oo (artic A1 12)	4	3	29	4 ax, AS 1,2,3 criteria	
		42	o--oo--o (artic A1 21)	4	3	23	4 ax, AS 1,2,3 criteria	
		T&T	40	o--o--o--o (truck tow heavy trailer)	4	4	30	4 axles, 4 groups
	HCV2	Artic	50 <sup>(1)</sup>	o-o-o-o-o (mobile crane)	5	3	40	5 axles
			53	o--oo--oo	5	3	36	5 axles
			57	o--o----ooo	5	3	32	
69			o--oo--ooo	6	3	39		
68			oo--oo--oo	6	3	41		
747			o--ooo--ooo	7	3	42	6-8 axles	
791			o--oo--oooo	7	3	41	3 groups	
713			oo--oo--ooo	7	3	44		
826			oo--oo--oooo	8	3	44		
847		o--ooo--oooo	8	3	44			
A Train		622	o--o--oo--o-o	6	5	39		
		74	o--oo--oo--o-o	7	5	39	(AS 1 criterion)	
		85	o--oo--oo--o-oo	8	5	39	not twin steer	
		89	o--oo--ooo--o-o	8	5	39	(AS 1 criterion)	
		810	o--oo--ooo--o-oo	8	5	39		
B Train		751 <sup>(2)</sup>	o--oo--oo--oo	7	4	44	7 axles, not twin steer	
		851	o--oo--ooo--oo	8	4	44		
		811	o--oo--oo--ooo	8	4	44		
		951	o--oo--ooo--ooo	9	4	44		
		1032	o--oo--ooo--oooo	10	4	44	8-11 axles	
T&T		503	o--oo--oo (truck tow light trailer)	5	3	25		
		52	o--oo--o--o	5	4	37	3,4,5 groups	
		63	o--oo--o--oo	6	4	44		
		66	oo--oo--o--o	6	4	42	6 axles	
		62	o--oo--o--o-o	6	5	42	4,5 groups	
		61	o--o--o--o--oo	6	5	42		
		751 <sup>(2)</sup>	o--oo--oo--oo	7	4	44		
	77	oo--oo--o--oo	7	4	44			
	771	oo--o--oo--oo	7	4	39			
	891	oo--oo--oo--oo	8	4	44			
	915	oo--oo--oo--ooo	9	4	44	7-11 axles		
	914	oo--oo--ooo--oo	9	4	44	twin steer		
	1020	oo--oo--ooo--ooo	10	4	44	(AS 1 criterion)		
	1020	oo--ooo--oo--ooo	10	4	44			
	1133	oo--oo--ooo--oooo	11	4	44			
	x	various (twin steer A train)	7-11	5				
	999	Not classified	any	-		Everything else		

**Symbol:**  - decreased in new maximum limit  
 - increased in new maximum limit

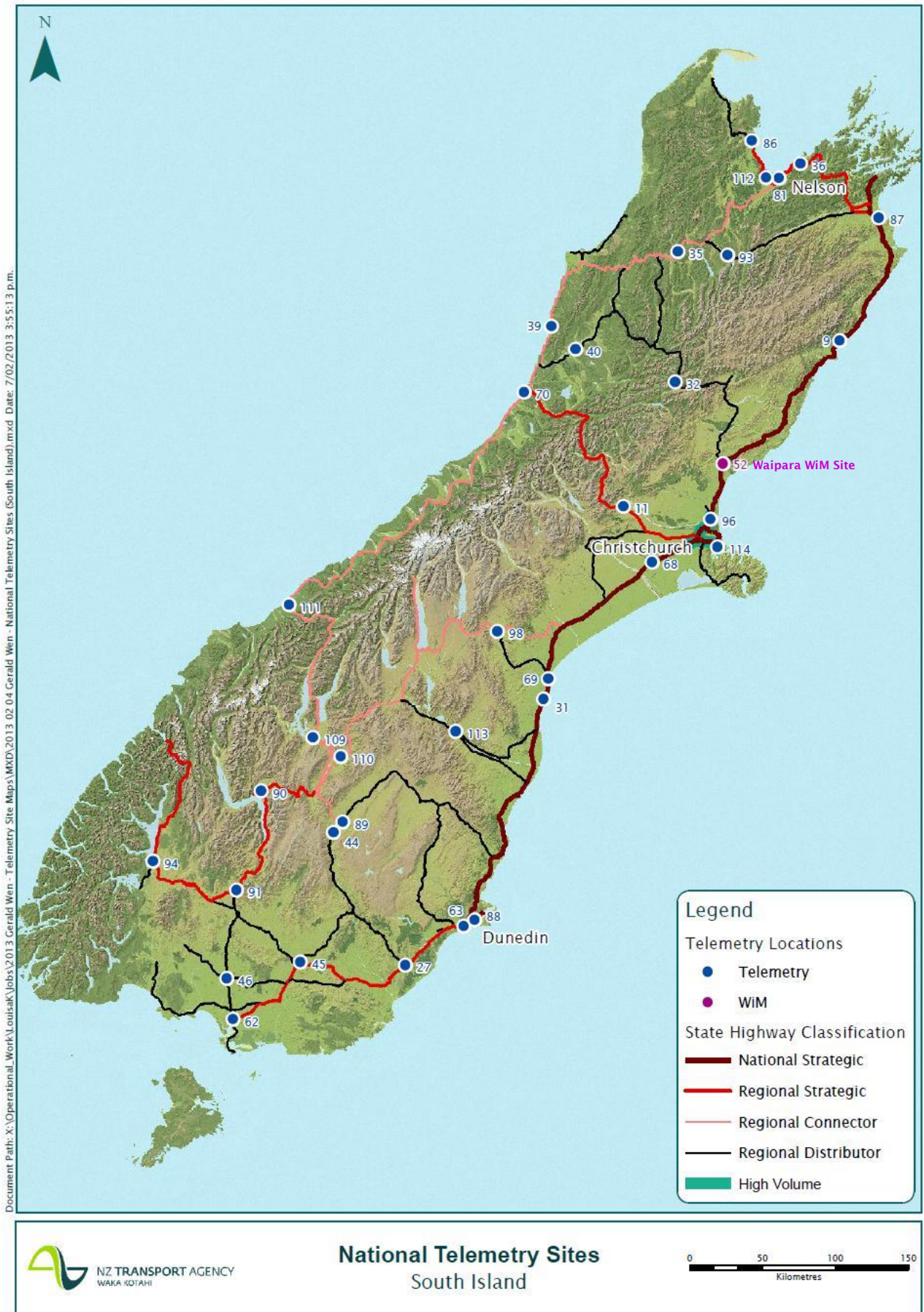
**Note:** <sup>1</sup>PAT class 50 mobile crane is a unique vehicle type but in the table above and succeeding tables this PAT class is included in Artic vehicle category.  
<sup>2</sup>The new Transport Agency 2011 heavy vehicle classification, PAT class 751 has been split in two vehicle type categories, T&T and B Train. This PAT class was tabulated under T&T vehicle type category.

11.0 WiM SITE MAPS





11.0 WiM SITE MAPS (continued)



## 12.0 ANNUAL AVERAGE DAILY TRAFFIC (AADT) BY SITE

Table 6 shows general information of a WiM site, such as the code, state highway number where the WiM site is situated, telemetry site code, AADT, vehicle frequency and proportion of vehicles over AADT.

AADT provides an estimation of the number of all vehicles (light and heavy) crossing a site on an average day.

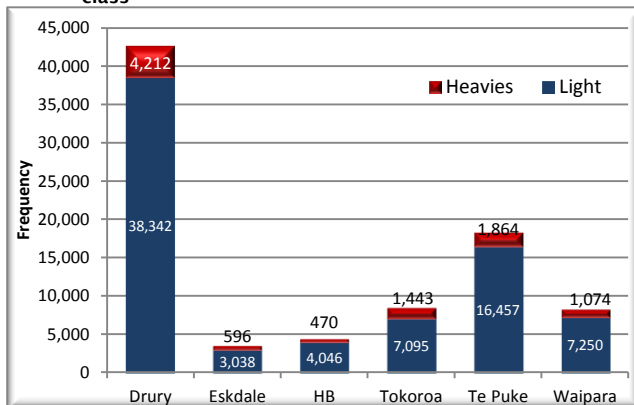
**Table 6.0 | Annual average daily traffic by WiM site**

WiM Site	SH	Description	AADT 2013	Number of heavies per day	% Heavy <sup>(1)</sup>
1205	1N	DRURY -Telemetry Site 48	42,554	4,212	9.9
5721	5	ESKDALE - Telemetry Site 101	3,634	596	16.4
6281	35	HAMANATUA BRIDGE - Telemetry Site 108	4,516	470	10.4
421	1N	TOKOROA - Telemetry Site 51	8,538	1,443	16.9
24	2	TE PUKE - Telemetry Site 49	18,321	1,864	10.2
518	1S	WAIPARA - Telemetry Site 52	8,324	1,074	12.9

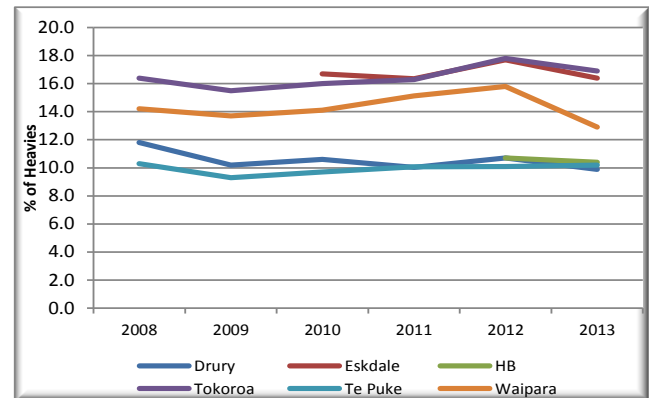
<sup>1</sup>% Heavy - is the estimate of the proportion of the heavy vehicles per day over AADT.

Source: State Highway Traffic Data Booklet 2008-2013, published on April 2014

**Chart 9 | AADT frequency distribution by WiM site and by vehicle class**



**Chart 10 | Heavy vehicles proportion from AADT**



## 13.0 ISSUED PERMIT

There were 2799 approved and issued HPMV permits for the calendar year 2013 across over length, over mass and combined permits.

In October 2013, 50MAX permit was implemented and from this period until 31 December there were 331 permits approved and issued for 216 vehicles. 50MAX permits are island-specific. Hence, some vehicles issued one for the North Island and one for South Island.

**Table 7.0 | 2013 approved and issued permit**

Permit type	North Island	South Island	Total
HPMV			2799
50MAX	182	150	331

Source: HPMV - HPMV Reporting Tool  
50MAX - Permit Registry

14.0 VEHICLE FLEET DISTRIBUTION TABLES

**PAT class** – This is the code relating to the axle configuration.

**Description** – This illustrates the PAT type by providing an indication of the spacing between axles.

**Total volume** – This indicates the number of heavy vehicles for each PAT class.

**Table 8.0 | Heavy vehicles frequency and percentage distributions by vehicle type, by PAT class, and by WiM site**

Group	PEM Class	PAT Class	Description	Drury		Tokoroa		Te Puke		Waipara		Eskdale		Hamanatua Bridge		Total Volume	% <sup>(1)</sup>
				Total Volume	% <sup>(1)</sup>	Total Volume	% <sup>(1)</sup>	Total Volume	% <sup>(1)</sup>	Total Volume	% <sup>(1)</sup>	Total Volume	% <sup>(1)</sup>	Total Volume	% <sup>(1)</sup>		
Rigid	Bus & MCV	20	0-0	70,587	4.6	9,024	1.8	16,133	2.7	9,119	4.8	4,227	2.1	10,542	6.2	119,632	3.8
		21	0-0-0	350,879	21.6	70,621	14.1	125,015	21.3	36,669	19.3	30,124	14.7	23,149	13.5	616,457	19.3
	Bus & HCV1	31	0-0-0	149,861	9.8	28,800	5.8	48,775	8.3	9,187	4.8	9,910	4.9	7,222	4.2	253,755	8.0
		34	00-0	213	0.0	96	0.0	405	0.1	161	0.1	300	0.1	36	0.0	1,211	0.0
	HCV1	301	0-00	2,423	0.2	352	0.1	557	0.1	280	0.1	111	0.1	67	0.0	3,790	0.1
		45	00-00	79,867	5.2	38,676	7.7	79,099	13.5	9,789	5.1	34,800	17.0	56,076	32.7	298,307	9.4
		47	0-000	85	0.0	10	0.0	32	0.0	125	0.1	14	0.0	1	0.0	267	0.0
511		00-000	889	0.1	70	0.0	306	0.1	52	0.0	9	0.0	2	0.0	1,328	0.0	
T&T	Bus & MCV	300	0-0-0	18,183	1.2	3,498	0.7	4,717	0.8	2,912	1.5	1,523	0.7	925	0.5	31,758	1.0
		401	0-0-00	13,931	0.9	5,570	1.1	4,899	0.8	3,263	1.7	2,173	1.1	1,686	1.0	31,522	1.0
	Bus & HCV1	44	00-0-0	25	0.0	7	0.0	37	0.0	10	0.0	12	0.0	2	0.0	93	0.0
		402	0-00-0	4,031	0.3	1,364	0.3	1,025	0.2	632	0.3	367	0.2	102	0.1	7,521	0.2
	HCV2	52	0-00-0-0	5,078	0.3	840	0.2	704	0.1	351	0.2	433	0.2	613	0.4	8,019	0.3
		61	0-0-0-0-0	4	0.0	1	0.0	-	-	1	0.0	-	-	-	-	6	0.0
		62	0-00-0-0-0	1,295	0.1	775	0.2	669	0.1	461	0.2	642	0.3	322	0.2	4,164	0.1
		63	0-00-0-0-0	10,634	0.7	2,410	0.5	2,573	0.4	832	0.4	263	0.1	275	0.2	16,987	0.5
		66	00-00-0-0	932	0.1	223	0.0	392	0.1	252	0.1	116	0.1	58	0.0	1,973	0.1
		77	00-00-0-00	18,542	1.2	5,790	1.2	8,106	1.4	1,972	1.0	4,816	2.4	4,015	2.3	43,241	1.4
		503	0-00-00	194	0.0	133	0.0	120	0.0	193	0.1	50	0.0	6	0.0	716	0.0
		751 <sup>(2)</sup>	0-00-00-00	122,032	8.0	27,556	5.5	38,276	6.5	6,566	3.5	10,295	5.0	6,016	3.5	210,741	6.6
		771	00-0-00-00	-	-	1	0.0	61	0.0	1	0.0	6	0.0	-	-	69	0.0
		891	00-00-00-00	253,927	16.6	147,114	29.4	134,196	22.9	52,987	27.9	58,453	28.6	56,267	32.9	702,944	22.1
		914	00-00-00-00	1,074	0.1	690	0.1	683	0.1	374	0.2	383	0.2	2	0.0	3,206	0.1
915	00-00-00-000	30,224	2.0	18,054	3.6	14,210	2.4	6,494	3.4	5,282	2.6	224	0.1	74,488	2.3		
1020	00-00-000-000	3,003	0.2	96	0.0	3,270	0.6	168	0.1	9	0.0	-	-	6,546	0.2		
Artic	HCV1	30	0-0-0-0	2,899	0.2	742	0.1	567	0.1	436	0.2	297	0.1	85	0.0	5,026	0.2
		41	0-0-0-0	16,226	1.1	3,657	0.7	1,866	0.3	1,249	0.7	1,324	0.6	237	0.1	24,559	0.8
		42	0-0-0-0	118	0.0	33	0.0	31	0.0	42	0.0	16	0.0	2	0.0	242	0.0
	HCV2	53	0-00-00	26,039	1.7	3,356	0.7	4,966	0.8	1,669	0.9	2,248	1.1	1,181	0.7	39,459	1.2
		57	0-0-0-000	2,057	0.1	892	0.2	303	0.1	225	0.1	648	0.3	17	0.0	4,142	0.1
		68	00-00-00	15,982	1.0	8,136	1.6	1,327	0.2	1,805	0.9	1,120	0.5	238	0.1	28,608	0.9
		69	0-00-000	112,911	7.4	20,305	4.1	37,096	6.3	6,688	3.5	4,287	2.1	1,079	0.6	182,366	5.7
		713	00-00-000	14,192	0.9	5,066	1.0	3,140	0.5	836	0.4	1,385	0.7	8	0.0	24,627	0.8
		747	0-000-000	55	0.0	33	0.0	12	0.0	13	0.0	11	0.0	-	-	124	0.0
		791	0-00-0000	42,224	2.8	12,473	2.5	4,601	0.8	5,791	3.0	1,772	0.9	47	0.0	66,908	2.1
826	00-00-0000	67,724	4.4	26,334	5.3	24,122	4.1	6,623	3.5	10,209	5.0	29	0.0	135,041	4.2		
847	0-000-0000	1,292	0.1	116	0.0	31	0.0	39	0.0	7	0.0	0	-	1,485	0.0		
A&B Train	HCV2	74	0-00-00-0-0	26	0.0	12	0.0	6	0.0	1	0.0	-	-	-	-	45	0.0
		622	0-0-00-0-0	29	0.0	15	0.0	2	0.0	3	0.0	1	0.0	2	0.0	52	0.0
		811	0-00-00-000	1,721	0.1	393	0.1	27	0.0	37	0.0	318	0.2	2	0.0	2,498	0.1
		851	0-00-000-00	79,959	5.2	36,740	7.3	20,012	3.4	15,918	8.4	12,621	6.2	694	0.4	165,944	5.2
		951	0-00-000-000	31,980	2.1	20,588	4.1	4,733	0.8	5,913	3.1	3,685	1.8	2	0.0	66,901	2.1
		1032	0-0-000-0000	-	-	-	-	-	-	2	0.0	-	-	-	-	2	0.0
<b>Total</b>				<b>1,533,347</b>	<b>100.0</b>	<b>500,682</b>	<b>100.0</b>	<b>587,102</b>	<b>100.0</b>	<b>190,141</b>	<b>100.0</b>	<b>204,267</b>	<b>100.0</b>	<b>171,231</b>	<b>100.0</b>	<b>3,186,770</b>	<b>100.0</b>
<i>Percentage from the total<sup>(3)</sup></i>				<i>48.1</i>		<i>15.7</i>		<i>18.4</i>		<i>6.0</i>		<i>6.4</i>		<i>5.4</i>		<i>100.0</i>	

**Symbol:** - no data  
 Top 5 with highest frequency in each WiM site  
 Top 5 with highest frequency across all WiM sites

**Note:** <sup>1</sup>Percentage of each PAT class from the total number of heavy vehicles per WiM site.  
<sup>2</sup>Percentage of each WiM site total from the overall total of heavy vehicles at all WiM sites.  
<sup>3</sup>In the new NZTA heavy vehicle classification, PAT class 751 has been split in two vehicle type categories, T&T and B Train. However, this PAT class was reported under T&T vehicle type category.

**Interpretation:** At the Tokoroa WiM site, 7.7 percent (38,676) of all heavy vehicles were PAT type 45. There were 48.1 percent (1,533,347) of the overall total vehicles at all WiM sites recorded at Drury WiM site.

## 14.0 VEHICLE FLEET DISTRIBUTION TABLES (continued)

**Table 9.0 | Annual average daily heavy vehicles<sup>(1)</sup> frequency by vehicle type and by WiM site (2004-2013)**

Year	Vehicle type	WiM site						Average <sup>(2)</sup>
		Drury	Eskdale	Hamanatua Bridge	Te Puke	Tokoroa	Waipara	
2004	Rigid	1,697	-	-	697	392	280	683
	T&T	1,028	-	-	570	501	232	533
	Artic	802	-	-	222	188	127	302
	A&B Train	371	-	-	111	184	93	179
2004 Total		3,899	-	-	1,600	1,264	732	1,696
2005	Rigid	1,639	-	-	630	419	299	746
	T&T	1,162	-	-	569	468	280	619
	Artic	763	-	-	211	180	134	323
	A&B Train	343	-	-	106	175	100	182
2005 Total		3,907	-	-	1,516	1,243	814	1,871
2006	Rigid	1,713	-	-	452	429	304	742
	T&T	1,154	-	-	577	503	321	645
	Artic	745	-	-	188	180	122	317
	A&B Train	353	-	-	109	164	113	188
2006 Total		3,966	-	-	1,325	1,276	860	1,892
2007	Rigid	1,715	-	-	696	397	298	835
	T&T	1,164	-	-	589	562	321	687
	Artic	727	-	-	215	178	133	337
	A&B Train	340	-	-	113	181	123	196
2007 Total		3,946	-	-	1,612	1,317	875	2,055
2008	Rigid	1,826	-	-	694	370	322	833
	T&T	1,138	-	-	570	486	316	637
	Artic	831	-	-	240	182	147	364
	A&B Train	356	-	-	102	156	127	189
2008 Total		4,151	-	-	1,606	1,194	913	2,022
2009	Rigid	1,627	-	-	689	368	335	757
	T&T	1,063	-	-	515	488	311	596
	Artic	823	-	-	246	207	151	359
	A&B Train	327	-	-	90	157	121	176
2009 Total		3,840	-	-	1,540	1,219	918	1,888
2010	Rigid	1,634	208	-	762	386	350	656
	T&T	1,088	213	-	588	518	337	553
	Artic	853	75	-	277	215	162	308
	A&B Train	307	44	-	102	162	130	152
2010 Total		3,882	540	-	1,729	1,282	980	1,669
2011	Rigid	1,724	227	-	758	390	361	690
	T&T	1,173	231	-	636	552	376	594
	Artic	818	68	-	253	208	135	298
	A&B Train	331	47	-	96	176	136	160
2011 Total		4,046	573	-	1,744	1,327	1,007	1,741
2012	Rigid	1,691	229	249	737	420	334	614
	T&T	1,237	249	173	579	573	387	533
	Artic	826	73	8	244	223	132	255
	A&B Train	319	51	2	86	168	123	126
2012 Total		4,072	603	432	1,645	1,384	976	1,528
2013	Rigid	1,744	232	267	858	426	369	678
	T&T	1,327	247	194	679	617	438	599
	Artic	829	68	8	248	234	144	268
	A&B Train	312	48	2	79	166	124	123
2013 Total		4,212	596	470	1,864	1,443	1,074	1,668

**Symbol:** - no data

**Note:** <sup>1</sup>Annual average daily heavy vehicles referring to the number of heavy vehicles that passed per day in a given year for each or all WiM site(s). This was computed by dividing the total heavy vehicles recorded over the total accepted days for each WiM site.

<sup>2</sup>Average was computed by dividing the overall total heavy vehicles over the total accepted days.

### Interpretation:

- An average of 1668 heavy vehicles were recorded during 2013 across all WiM sites, which is an increase of 9.2 percent compared to 1528 in 2012.
- During 2013 Drury WiM site had the highest annual average daily heavy vehicles, with an average of 4,212 vehicles per day.
- The annual average daily heavy vehicles traffic for the T&T vehicle type shows increases in all WiM sites, except Eskdale WiM site.
- Hamanatua Bridge and Waipara were the only WiM sites that did not have a decrease in the number of A&B Train heavy vehicles per day.

## 14.0 VEHICLE FLEET DISTRIBUTION TABLES (continued)

**Table 10.0 | Annual average daily heavy vehicles frequency<sup>(1)</sup> by selected<sup>(2)</sup>PAT class and by WiM site (2008-2013)**

Year	Vehicle type	WiM site						Average <sup>(3)</sup>
		Drury	Eskdale	Hamanatua Bridge	Te Puke	Tokoroa	Waipara	
2008	21	840	-	-	340	137	134	378
	31	397	-	-	136	76	60	174
	45	205	-	-	128	75	56	118
	751	332	-	-	163	74	39	157
	891	690	-	-	363	364	240	418
Others <sup>(4)</sup>		1,687	-	-	475	467	384	778
2008 Total		4,151	-	-	1,606	1,194	913	2,022
2009	21	866	-	-	364	176	189	400
	31	370	-	-	130	79	57	160
	45	201	-	-	143	81	58	120
	751	304	-	-	132	70	40	137
	891	651	-	-	342	375	231	401
Others <sup>(4)</sup>		1,448	-	-	429	438	344	670
2009 Total		3,840	-	-	1,540	1,219	918	1,888
2010	21	857	83	-	389	185	193	337
	31	374	32	-	146	84	60	136
	45	198	90	-	152	85	55	113
	751	295	32	-	148	76	41	116
	891	686	159	-	389	403	254	384
Others <sup>(4)</sup>		1,473	144	-	505	448	377	583
2010 Total		3,882	540	-	1,729	1,282	980	1,669
2011	21	913	87	-	367	188	194	349
	31	387	32	-	145	84	57	141
	45	205	93	-	191	87	54	124
	751	289	31	-	148	73	42	115
	891	716	171	-	417	422	274	401
Others <sup>(4)</sup>		1,537	159	-	475	473	386	611
2011 Total		4,046	573	-	1,744	1,327	1,007	1,741
2012	21	883	87	66	361	201	177	298
	31	385	32	21	140	81	55	120
	45	213	96	130	181	106	60	130
	751	314	36	22	123	66	38	101
	891	723	185	130	384	435	276	354
Others <sup>(4)</sup>		1,554	167	63	456	495	370	525
2012 Total		4,072	603	432	1,645	1,384	976	1,528
2013	21	909	88	64	397	204	207	323
	31	412	29	20	155	83	52	133
	45	219	101	154	251	111	55	156
	751	335	30	17	122	79	37	110
	891	698	170	155	426	424	299	368
Others <sup>(4)</sup>		1,640	177	62	513	542	423	578
2013 Total		4,212	596	470	1,864	1,443	1,074	1,668

**Symbol:** - no data

**Note:** <sup>1</sup>Annual average daily heavy vehicles refers to the average number of heavy vehicles that passed during 24-hour period in a given year in each or all WiM site(s). This was computed by dividing the total heavy vehicles recorded by the total accepted days for each WiM site.

<sup>2</sup>The selection of PAT class was based on the highest frequency recorded in the current year.

<sup>3</sup>Average was computed by dividing total heavy vehicles by total number of accepted days.

<sup>4</sup>All unstated PAT class were included in 'others' category.

### Interpretation:

- In the PAT class 891, only Te Puke and Waipara WiM sites had increased, which were up by 10.8 percent and 8.3 percent (to 426 and 299) respectively.
- At the Drury WiM site, PAT class 21(909) were the most frequent heavy vehicles on a daily basis, At all other sites, PAT class 891 was the most frequent.

## 15.0 VEHICLE FLEET OVERWEIGHT TABLES

**PAT type** – This is the code relating to the axle configuration.

**Description** – This illustrates the PAT type by providing an indication of the spacing between axles.

**Total overweight** – This indicates the number of heavy vehicles overweight for each PAT type.

**Table 11.0 | Overweight vehicles frequency and percentage distributions by vehicle type, PAT class, and by WiM site**

Group	PEM class	PAT class	Description	Drury		Tokoroa		Te Puke		Waipara		Eskdale		Hamanatua Bridge		Total volume	% <sup>2)</sup>	
				Total volume	% <sup>1)</sup>	Total volume	% <sup>1)</sup>	Total volume	% <sup>1)</sup>	Total volume	% <sup>1)</sup>	Total volume	% <sup>1)</sup>	Total volume	% <sup>1)</sup>			
Rigid	Bus & MCV	20	0--0	-	-	-	-	22	0.0	3	0.0	-	-	2	0.0	27	0.0	
		21	0--0	562	0.5	65	0.1	168	0.3	111	0.6	57	0.2	14	0.1	977	0.3	
	Bus & HCV1	31	0--00	19,573	17.1	2,535	5.3	5,135	7.7	697	3.8	826	3.3	614	3.1	29,380	10.0	
		34	00--0	3	0.0	1	0.0	4	0.0	17	0.1	-	-	-	-	25	0.0	
	HCV1	301	0--00	99	0.1	5	0.0	4	0.0	3	0.0	4	0.0	1	0.0	116	0.0	
		45	00--00	1,306	1.1	289	0.6	355	0.5	86	0.5	78	0.3	24	0.1	2,138	0.7	
		47	0--000	1	0.0	1	0.0	2	0.0	3	0.0	3	0.0	-	-	10	0.0	
511		00--000	194	0.2	6	0.0	7	0.0	23	0.1	1	0.0	-	-	231	0.1		
T&T	Bus & MCV	300	0--0-0	1	0.0	1	0.0	-	-	-	-	-	-	1	0.0	3	0.0	
		401	0--0-00	14	0.0	3	0.0	-	-	6	0.0	3	0.0	-	-	26	0.0	
	HCV2	Bus & HCV1	402	0--00--0	11	0.0	1	0.0	1	0.0	-	-	-	-	-	-	13	0.0
			52	0--00-0-0	32	0.0	12	0.0	7	0.0	12	0.1	11	0.0	-	-	74	0.0
		62	0--00-0-0-0	175	0.2	378	0.8	222	0.3	173	0.9	174	0.7	98	0.5	1,220	0.4	
		63	0--00-0-00	265	0.2	12	0.0	7	0.0	11	0.1	-	-	5	0.0	300	0.1	
		66	00--00-0-0	1	0.0	-	-	4	0.0	-	-	2	0.0	-	-	7	0.0	
		77	00--00-0-00	1,714	1.5	884	1.8	881	1.3	405	2.2	1,846	7.3	765	3.8	6,495	2.2	
		503	0--00-00	3	0.0	-	-	-	-	2	0.0	-	-	-	-	5	0.0	
		751 <sup>3)</sup>	0--00-00-00	24,057	21.0	4,098	8.5	6,165	9.2	1,349	7.3	2,620	10.4	792	4.0	39,081	13.3	
		771	00--0-00-00	-	-	-	-	-	-	1	0.0	-	-	-	-	1	0.0	
		891	00--00-00-00	34,383	30.0	23,756	49.4	32,745	49.0	10,416	56.3	15,267	60.5	17,423	87.0	133,990	45.7	
		914	00--00-000-00	188	0.2	155	0.3	166	0.2	32	0.2	69	0.3	-	-	610	0.2	
		915	00--00-000-000	5,540	4.8	4,169	8.7	6,207	9.3	1,817	9.8	1,514	6.0	57	0.3	19,304	6.6	
		1020	00--00-000-000	1,368	1.2	28	0.1	2,239	3.4	42	0.2	-	-	-	-	3,677	1.3	
Artic	HCV1	41	0--0-00	10	0.0	-	-	1	0.0	-	-	-	-	-	-	11	0.0	
		42	0--0-0	-	-	-	-	1	0.0	8	0.0	-	-	-	-	9	0.0	
	HCV2	53	0--00-00	693	0.6	9	0.0	39	0.1	10	0.1	10	0.0	3	0.0	764	0.3	
		57	0--0-0000	-	-	1	0.0	-	-	-	-	7	0.0	-	-	8	0.0	
		68	00--00-00	-	-	5	0.0	42	0.1	8	0.0	-	-	-	-	55	0.0	
		69	0-00-000	4,918	4.3	1,234	2.6	2,985	4.5	190	1.0	162	0.6	135	0.7	9,624	3.3	
		713	00--00-000	59	0.1	64	0.1	35	0.1	25	0.1	2	0.0	-	-	185	0.1	
		747	0--000-000	6	0.0	3	0.0	1	0.0	-	-	1	0.0	-	-	11	0.0	
		791	0-00-0000	2,313	2.0	1,127	2.3	249	0.4	357	1.9	109	0.4	4	0.0	4,159	1.4	
		826	00--00-0000	4,835	4.2	2,754	5.7	4,590	6.9	395	2.1	727	2.9	2	0.0	13,303	4.5	
		847	0--000-0000	98	0.1	7	0.0	1	0.0	5	0.0	1	0.0	-	-	112	0.0	
A&B Train	HCV2	74	0-00-00-0-0	3	0.0	2	0.0	-	-	1	0.0	-	-	-	-	6	0.0	
		811	0--00-00-000	861	0.8	62	0.1	15	0.0	14	0.1	38	0.2	2	0.0	992	0.3	
		851	0-00-000-00	7,536	6.6	3,460	7.2	3,196	4.8	1,462	7.9	1,144	4.5	81	0.4	16,879	5.8	
		951	0-00-000-000	3,832	3.3	2,918	6.1	1,277	1.9	815	4.4	565	2.2	-	-	9,407	3.2	
		1032	0-00-000-0000	-	-	-	-	-	-	1	0.0	-	-	-	-	1	0.0	
<b>Total</b>				114,654	100.0	48,045	100.0	66,773	100.0	18,500	100.0	25,241	100.0	20,023	100.0	293,236	100.0	
<i>Percentage from the total<sup>2)</sup></i>				39.1		16.4		22.8		6.3		8.6		6.8		100.0		

**Symbol:** - no data

- Top 5 with highest frequency in each WiM site
- Top 5 with highest frequency across all WiM sites

**Note:** <sup>1)</sup>Percentage of each PAT class from the total number of overweight vehicles per WiM site.

<sup>2)</sup>Percentage of overweight vehicle at each WiM site from the overall total of overweight at all WiM sites.

<sup>3)</sup>In the new Transport Agency heavy vehicle classification, PAT class 751 has been split in two vehicle type categories, T&T and B Train. However, this PAT class was reported under T&T vehicle type category.

**Interpretation:** Of the total overweight vehicles crossed across WiM sites 39.1 percent of this passed at Drury WiM site. Thirty percent (34,383) of all overweight vehicles which crossed at the Drury WiM site were PAT class 891.

## 15.0 VEHICLE FLEET OVERWEIGHT TABLES (continued)

**Table 12.0 | Annual average daily overweight vehicles frequency<sup>(1)</sup> by vehicle type and by WiM site**

Year	Vehicle type	WiM Site					Average <sup>(2)</sup>	
		Drury	Eskdale	Hamanatua Bridge	Te Puke	Tokoroa		Waipara
2004	Rigid	69	-	-	18	6	7	22
	T&T	155	-	-	121	57	45	85
	Artic	62	-	-	14	8	2	18
	A&B Train	64	-	-	19	17	4	23
2004 Total		351	-	-	173	89	58	149
2005	Rigid	49	-	-	16	4	7	19
	T&T	121	-	-	71	92	49	84
	Artic	34	-	-	5	11	3	13
	A&B Train	35	-	-	12	23	7	19
2005 Total		239	-	-	104	130	65	135
2006	Rigid	53	-	-	19	7	6	22
	T&T	132	-	-	50	127	42	88
	Artic	40	-	-	6	16	3	17
	A&B Train	33	-	-	8	26	8	19
2006 Total		257	-	-	83	175	59	145
2007	Rigid	57	-	-	16	5	4	23
	T&T	179	-	-	57	96	35	96
	Artic	50	-	-	8	17	2	21
	A&B Train	37	-	-	11	21	5	19
2007 Total		323	-	-	92	140	46	158
2008	Rigid	78	-	-	13	3	7	27
	T&T	295	-	-	73	40	58	123
	Artic	102	-	-	12	7	4	33
	A&B Train	68	-	-	14	8	11	27
2008 Total		543	-	-	111	58	80	210
2009	Rigid	37	-	-	15	6	5	16
	T&T	77	-	-	101	39	53	67
	Artic	28	-	-	26	7	4	16
	A&B Train	19	-	-	14	7	10	13
2009 Total		163	-	-	157	59	71	111
2010	Rigid	45	3	-	22	8	5	16
	T&T	152	90	-	171	59	62	105
	Artic	37	6	-	41	9	5	20
	A&B Train	30	7	-	23	12	13	17
2010 Total		264	106	-	257	88	86	159
2011	Rigid	52	4	-	16	8	5	17
	T&T	169	66	-	73	76	85	94
	Artic	56	4	-	14	11	6	18
	A&B Train	37	7	-	10	18	16	18
2011 Total		314	80	-	113	114	111	148
2012	Rigid	49	3	2	18	10	4	14
	T&T	170	70	19	138	125	46	93
	Artic	42	4	...	31	19	3	16
	A&B Train	31	6	...	17	24	8	14
2012 Total		293	83	21	203	178	60	137
2013	Rigid	60	3	2	18	8	5	17
	T&T	186	63	53	154	97	81	107
	Artic	36	3	...	25	15	6	15
	A&B Train	34	5	...	14	19	13	14
2013 Total		315	74	55	212	138	105	154

**Symbol:** - no data

... Below the number of accepted days

**Note:** <sup>1</sup>Annual average daily overweight heavy vehicles refers to the average number of overweight heavy vehicles that passed during a 24-hour period in a given year in each or all WiM site(s). This was computed by dividing the total overweight heavy vehicles recorded by the total accepted days for each WiM site.

<sup>2</sup>The average overweight vehicle per day was computed by dividing the total number overweight heavy vehicles by the total number of accepted days.

Accepted days refer to days with recorded data, which excludes shutdowns and site maintenance.

### Interpretation:

- T&T vehicle type were the most frequent overweight vehicle per day in all WiM sites. Rigid vehicle type was the second most frequent...
- The number of overweight Artic vehicles decreased from 16 overweight vehicles per day in 2012 to 15 during 2013, while the number of A&B Train vehicles overweight remained the same
- The highest frequency of overweight T&T vehicles was at the Drury site, with 186 overweight vehicles per day.

## 15.0 VEHICLE FLEET OVERWEIGHT TABLES (Continued)

Table 13.0 | Average annual daily overweight vehicles frequency<sup>(1)</sup> on selected<sup>(2)</sup> PAT class and by WiM site

Year	Vehicle type	WiM site						Average
		Drury	Eskdale	Hamanatua Bridge	Te Puke	Tokoroa	Waipara	
2008	31	68	-	-	12	2	6	24
	751	120	-	-	15	10	8	41
	826	25	-	-	3	2	1	8
	851	54	-	-	13	5	8	21
	891	166	-	-	56	29	43	77
	Others	110	-	-	12	10	13	38
<b>2008 Total</b>		<b>543</b>	<b>-</b>	<b>-</b>	<b>111</b>	<b>58</b>	<b>80</b>	<b>210</b>
2009	31	35	-	-	14	5	5	15
	751	29	-	-	29	7	8	18
	826	11	-	-	9	3	1	6
	851	15	-	-	13	4	7	10
	891	46	-	-	69	30	36	45
	Others	27	-	-	23	9	14	18
<b>2009 Total</b>		<b>163</b>	<b>-</b>	<b>-</b>	<b>157</b>	<b>59</b>	<b>71</b>	<b>111</b>
2010	31	41	3	-	19	7	5	15
	751	58	15	-	44	9	9	26
	826	12	4	-	16	5	2	8
	851	22	5	-	22	8	10	14
	891	90	68	-	120	47	47	74
	Others	41	12	-	37	12	13	23
<b>2010 Total</b>		<b>264</b>	<b>106</b>	<b>-</b>	<b>257</b>	<b>88</b>	<b>86</b>	<b>159</b>
2011	31	43	3	-	14	7	4	14
	751	51	9	-	11	11	11	19
	826	20	3	-	5	7	2	7
	851	25	4	-	10	10	11	12
	891	109	52	-	59	61	66	70
	Others	65	9	-	13	18	17	25
<b>2011 Total</b>		<b>314</b>	<b>80</b>	<b>-</b>	<b>113</b>	<b>114</b>	<b>111</b>	<b>148</b>
2012	31	42	3	2	16	8	4	13
	751	57	9	2	24	18	5	19
	826	17	2	-	17	10	1	7
	851	21	4	...	14	15	5	10
	891	101	57	16	103	99	33	66
	Others	56	8	2	30	28	13	22
<b>2012 Total</b>		<b>293</b>	<b>83</b>	<b>21</b>	<b>203</b>	<b>178</b>	<b>60</b>	<b>137</b>
2013	31	54	2	2	16	7	4	15
	751	66	8	2	20	12	8	20
	826	13	2	...	15	8	2	7
	851	21	3	...	10	10	8	9
	891	94	45	48	104	68	59	70
	Others	67	14	3	47	33	24	32
<b>2013 Total</b>		<b>315</b>	<b>74</b>	<b>55</b>	<b>212</b>	<b>138</b>	<b>105</b>	<b>154</b>

**Symbol:** - no data

... Numbers below the accepted days.

**Note:** <sup>1</sup>Annual average daily heavy vehicles refers to the average number of heavy vehicles that passed during 24-hour period in a given year in each or all WiM site(s). This was computed by dividing the total heavy vehicles recorded by the total accepted days for each WiM site.

<sup>2</sup>The selection of PAT class was based on the highest frequency recorded in the current year.

The average overweight vehicle per day was computed by dividing the total number overweight heavy vehicles by the total number of accepted days.

<sup>4</sup>All not stated PAT class were included in 'others' category.

### Interpretation:

- PAT class 751 had an average of 20 overweight vehicles travelled per day during 2013 across WiM sites. Of the same PAT class, the most overweight vehicles passed Drury WiM site with 66 overweight vehicles per day.
- The Te Puke site had the highest number of overweight PAT Class 891 vehicles with 104, followed by Drury WiM site with 94.



## 16.0 VEHICLE FLEET >44T/50T DISTRIBUTION TABLES

**PAT type** – This is the code relating to the axle configuration.

**Description** – This illustrates the number of axles and an indication of the spacing between axles.

**Table 14.0 | Frequency and percentage distributions of heavy vehicles >44T by vehicle type, PAT class and by WiM site**

Group	PEM class	PAT class	Description	Drury		Tokoroa		Te Puke		Waipara		Eskdale		Hamanatua Bridge		Total volume	% <sup>(2)</sup>
				Total volume	% <sup>(1)</sup>	Total volume	% <sup>(1)</sup>	Total volume	% <sup>(1)</sup>	Total volume	% <sup>(1)</sup>	Total volume	% <sup>(1)</sup>	Total volume	% <sup>(1)</sup>		
T&T	HCV2	52	0--00-0-0	-	-	1	0.0	-	-	-	-	1	0.0	-	-	2	0.0
		62	0--00-0-0-0	118	0.1	355	0.8	202	0.3	146	0.9	149	0.6	90	0.5	970	0.4
		63	0--00-0-0-00	265	0.3	12	0.0	7	0.0	11	0.1	-	-	5	0.0	295	0.1
		66	00--00-0-0-0	-	-	-	-	2	0.0	-	-	1	0.0	-	-	3	0.0
		77	00--00-0-0-00	1,714	2.0	884	2.0	881	1.5	405	2.4	1,846	7.7	765	4.0	5,730	2.3
		751	0-00--00-00	24,057	28.2	4,098	9.5	6,165	10.6	1,349	7.9	2,620	10.9	792	4.1	38,289	15.5
		891	00--00-00-00	34,383	40.3	23,756	55.1	32,745	56.5	10,416	61.1	15,267	63.7	17,423	90.3	116,567	47.3
		914	00--00-000-00	188	0.2	155	0.4	166	0.3	32	0.2	69	0.3	-	-	610	0.2
		915	00--00-00-000	5,540	6.5	4,169	9.7	6,207	10.7	1,817	10.7	1,514	6.3	57	0.3	19,247	7.8
		1020	00--00-000-000	1,368	1.6	28	0.1	2,239	3.9	42	0.2	-	-	-	-	3,677	1.5
Artic	HCV2	53	0-00--00	1	0.0	5	0.0	4	0.0	-	-	-	-	-	-	10	0.0
		68	00--00-00	-	-	4	0.0	30	0.1	4	0.0	-	-	-	-	38	0.0
		69	0-00--000	197	0.2	153	0.4	112	0.2	21	0.1	9	0.0	68	0.4	492	0.2
		713	00--00-000	59	0.1	64	0.1	35	0.1	25	0.1	2	0.0	-	-	185	0.1
		747	0-000--000	1	0.0	2	0.0	-	-	-	-	1	0.0	-	-	4	0.0
		791	0-00-0000	308	0.4	245	0.6	37	0.1	83	0.5	13	0.1	-	-	686	0.3
		826	00--00-0000	4,835	5.7	2,754	6.4	4,590	7.9	395	2.3	727	3.0	2	0.0	13,301	5.4
847	0-000--0000	98	0.1	7	0.0	1	0.0	5	0.0	1	0.0	-	-	112	0.0		
A&B Train	HCV2	74	0-00--00-0-0-0	-	-	-	-	-	-	1	0.0	-	-	-	-	1	0.0
		811	0-00--00-000	861	1.0	62	0.1	15	0.0	14	0.1	38	0.2	2	0.0	990	0.4
		851	0-00-000-00	7,536	8.8	3,460	8.0	3,196	5.5	1,462	8.6	1,144	4.8	81	0.4	16,798	6.8
		951	0-00-000-000	3,832	4.5	2,918	6.8	1,277	2.2	815	4.8	565	2.4	-	-	9,407	3.8
		1032	0-00-000-0000	-	-	-	-	-	-	1	0.0	-	-	-	-	1	0.0
<b>Total</b>				85,361	100.0	43,132	100.0	57,911	100.0	17,044	100.0	23,967	100.0	19,285	100.0	246,700	100.0
<i>Percentage from the total<sup>(2)</sup></i>				34.6		17.5		23.5		6.9		9.7		7.8		100.0	

**Symbol:** - no data

■ Top 5 with highest frequency in each WiM site

■ Top 5 with highest frequency across all WiM sites

**Note:** <sup>1</sup>Percentage of each PAT class from the total number of heavy vehicles recorded as >44T per WiM site.

<sup>2</sup>Percentage of each WiM site from the overall total number of heavy vehicles recorded as >44T at all WiM sites.

<sup>3</sup>In the new Transport Agency heavy vehicle classification, PAT class 751 has been split in two vehicle type categories, T&T and B Train. This PAT class was reported under T&T vehicle type category.

### Interpretation:

- At the Tokoroa WiM site, there were 3460 (8.0 percent) PAT class 851 vehicles reported with gross mass more than 44 tonnes.
- PAT Class 891 was the most frequent, with 47.3 (116,567) percent of these overweight heavy vehicles weighing more than 44 tones gross mass. These were most frequently recorded at the Drury site.
- Over 20 percent of those overweight vehicles with gross mass greater than 44 tonnes passed the Te Puke and Drury sites, while the least were recorded at the Waipara WiM site.

## 16.0 VEHICLE FLEET >44T/48T DISTRIBUTION TABLES (continued)

Table 14.1 | Frequency and percentage distributions of heavy vehicles >50T by vehicle type, PAT class and by WiM site

Group	PEM class	PAT class	Description	Drury		Tokoroa		Te Puke		Waipara		Eskdale		Hamanatua Bridge		Total volume	% <sup>(2)</sup>
				Total volume	% <sup>(1)</sup>	Total volume	% <sup>(1)</sup>	Total volume	% <sup>(1)</sup>	Total volume	% <sup>(1)</sup>	Total volume	% <sup>(1)</sup>	Total volume	% <sup>(1)</sup>		
T&T	HCV2	52	0-00-0-0	-	-	1	0.1	-	-	-	-	-	-	-	-	1	0.0
		62	0-00-0-0-0	10	0.3	240	19.4	107	1.4	82	8.0	89	12.6	61	49.6	528	3.8
		63	0-00-0-0-00	6	0.2	2	0.2	-	-	-	-	-	-	4	3.3	8	0.1
		77	00-00-0-0-00	11	0.3	10	0.8	2	0.0	18	1.8	1	0.1	-	-	42	0.3
		751	0-00-00-00-00	531	15.7	27	2.2	10	0.1	29	2.8	5	0.7	2	1.6	602	4.3
		891	00-00-00-00-00	928	27.4	283	22.9	1,537	20.5	271	26.5	277	39.2	18	14.6	3,296	23.6
		914	00-00-000-00-00	2	0.1	1	0.1	6	0.1	1	0.1	1	0.1	-	-	11	0.1
		915	00-00-00-000-000	573	16.9	495	40.0	3,522	46.9	474	46.4	284	40.2	3	2.4	5,348	38.2
		1020	00-00-000-000-000	1,057	31.2	22	1.8	1,669	22.2	1	0.1	-	-	-	-	2,749	19.7
		Artic	HCV2	53	0-00-00	-	-	1	0.1	-	-	-	-	-	-	-	1
68	00-00-00			-	-	4	0.3	18	0.2	-	-	-	-	-	22	0.2	
69	0-00-000			7	0.2	30	2.4	7	0.1	6	0.6	-	-	33	26.8	50	0.4
713	00-00-000			1	0.0	1	0.1	-	-	6	0.6	-	-	-	-	8	0.1
791	0-00-0000			3	0.1	10	0.8	-	-	8	0.8	1	0.1	-	-	22	0.2
A&B Train	HCV2	826	00-00-0000	18	0.5	13	1.1	49	0.7	15	1.5	4	0.6	-	-	99	0.7
		811	0-00-00-000	22	0.6	3	0.2	-	-	4	0.4	-	-	2	1.6	29	0.2
		851	0-00-000-00-00	116	3.4	33	2.7	64	0.9	66	6.5	22	3.1	-	-	301	2.2
		951	0-00-000-000	107	3.2	62	5.0	515	6.9	40	3.9	22	3.1	-	-	746	5.3
<b>Total</b>				3,392	100.0	1,238	100.0	7,506	100.0	1,021	100.0	706	100.0	123	100.0	13,986	100.0
<i>Percentage from the total<sup>(2)</sup></i>				24.3		8.9		53.7		7.3		5.0		0.9		100.0	

Symbol: - no data

- Top 5 with highest frequency in each WiM site
- Top 5 with highest frequency across all WiM sites

Note: <sup>1</sup>Percentage of each PAT class from the total number of overweight vehicles recorded as >50T per WiM site.  
<sup>2</sup>Percentage of each WiM site from the overall total number of overweight vehicles recorded as >50T at all WiM sites.

### Interpretation:

- Among all overweight vehicles with gross mass more than 50 tonnes, PAT Class 915 was the frequent, at 38.2 percent (5,348) of total overweight vehicles of that class, followed by PAT Class 891 with 23.6 percent of this class being recorded at overweight with gross mass more than 50 tonnes.
- The Te Puke WiM site had the highest percentage of PAT classes 915, 1020 and 891 with gross mass more than 50 tonnes.
- In terms of vehicle group type, T&T had the highest proportion of gross mass over 50 tonnes with 90 percent.
- Over 50 percent of the overweight vehicles with gross mass more than 50 tonnes passed the Te Puke WiM site, compared to the Drury WiM site with 24.3 percent. (despite Drury site having the highest proportion of overweight vehicles with gross mass more than 44 tonnes).

## 17.0 VEHICLE FLEET ESTIMATED GROSS MASS

The total estimated GHVM is the total estimated mass recorded that includes the heavy vehicle mass and its load for each PAT type, vehicle group and by WiM site.

**Table 15.0 | Vehicle estimated gross mass and percentage distribution by group, PAT class, and by WiM Site**

Group	PEM class	PAT class	Description	Drury		Tokoroa		Te Puke		Waipara		Eskdale		Hamanatua Bridge		Gross tonne	% <sup>(2)</sup>
				Tonne	% <sup>(1)</sup>	Tonne	% <sup>(1)</sup>	Tonne	% <sup>(1)</sup>	Tonne	% <sup>(1)</sup>	Tonne	% <sup>(1)</sup>	Tonne	% <sup>(1)</sup>		
Rigid	Bus & MCV	20	o-o	305,049	0.9	41,480	0.3	70,270	0.5	42,206	0.9	18,316	0.3	45,108	1.1	522,427	0.7
		21	o---o	2,122,614	6.4	457,721	3.4	794,191	5.9	226,539	4.9	194,323	3.7	143,738	3.5	3,939,124	5.3
	Bus & HCV1	31	o--oo	2,102,452	6.3	395,331	2.9	653,089	4.9	128,192	2.8	134,792	2.5	102,500	2.5	3,516,355	4.7
		34	oo-o	2,390	0.0	1,142	0.0	3,144	0.0	2,151	0.0	2,044	0.0	376	0.0	11,246	0.0
		301	o--oo	32,680	0.1	3,468	0.0	7,675	0.1	2,224	0.0	1,461	0.0	823	0.0	48,329	0.1
	HCV1	45	oo--oo	1,328,775	4.0	632,806	4.7	1,307,333	9.8	165,631	3.6	556,560	10.5	928,657	22.6	4,919,761	6.6
		47	o--ooo	1,340	0.0	138	0.0	493	0.0	2,074	0.0	228	0.0	12	0.0	4,284	0.0
511		oo-ooo	21,468	0.1	1,530	0.0	5,722	0.0	1,420	0.0	181	0.0	37	0.0	30,357	0.0	
Bus & MCV	300	o--o-o	109,668	0.3	19,307	0.1	27,300	0.2	17,498	0.4	8,767	0.2	5,456	0.1	187,994	0.3	
	401	o-o--oo	100,824	0.3	40,662	0.3	31,819	0.2	23,842	0.5	16,251	0.3	10,553	0.3	223,949	0.3	
Bus & HCV1	44	oo-o--o	151	0.0	124	0.0	336	0.0	206	0.0	81	0.0	9	0.0	906	0.0	
	402	o--oo--o	48,289	0.1	18,125	0.1	11,706	0.1	6,220	0.1	3,704	0.1	1,068	0.0	89,111	0.1	
T&T	HCV2	52	o--oo-o	105,685	0.3	18,448	0.1	13,525	0.1	8,087	0.2	9,497	0.2	14,061	0.3	169,302	0.2
		61	o-o-o-o-oo	39	0.0	6	0.0	-	-	12	0.0	-	-	-	-	56	0.0
		62	o--oo-o-o	39,768	0.1	31,719	0.2	23,660	0.2	17,465	0.4	20,779	0.4	11,644	0.3	145,033	0.2
		63	o--oo-o-oo	300,304	0.9	64,353	0.5	69,849	0.5	22,132	0.5	7,456	0.1	7,222	0.2	471,315	0.6
		66	oo--oo--o	23,146	0.1	5,561	0.0	8,542	0.1	6,605	0.1	2,670	0.1	1,541	0.0	48,065	0.1
		77	oo--oo-o-oo	586,431	1.8	207,515	1.5	313,436	2.3	71,061	1.5	205,843	3.9	154,516	3.8	1,538,802	2.1
		503	o--oo-oo	3,017	0.0	2,204	0.0	1,775	0.0	2,662	0.1	718	0.0	72	0.0	10,447	0.0
		751	o--oo-oo-oo	4,092,852	12.3	923,445	6.9	1,340,002	10.0	218,940	4.7	388,172	7.3	207,191	5.1	7,170,602	9.7
		771	oo--oo-oo-oo	-	-	32	0.0	919	0.0	41	0.0	69	0.0	-	-	1,060	0.0
		891	oo--oo-oo-oo	8,520,676	25.6	5,290,385	39.4	4,940,832	37.0	1,847,361	39.9	2,283,789	42.9	2,368,903	57.7	25,251,944	34.1
		914	oo--oo-oo-oo	38,448	0.1	26,682	0.2	23,314	0.2	14,008	0.3	14,068	0.3	53	0.0	116,572	0.2
		915	oo--oo-oo-oo	1,081,087	3.2	697,275	5.2	551,285	4.1	243,174	5.2	203,252	3.8	8,012	0.2	2,784,085	3.8
		1020	oo--oo-oo-oo	121,460	0.4	3,679	0.0	150,880	1.1	6,369	0.1	312	0.0	-	-	282,699	0.4
Artic	HCV1	30	o-o----o	32,208	0.1	7,650	0.1	5,598	0.0	4,432	0.1	3,349	0.1	829	0.0	54,064	0.1
		41	o--o-oo	242,646	0.7	59,699	0.4	25,519	0.2	20,954	0.5	20,087	0.4	3,798	0.1	372,702	0.5
		42	o--o-o	1,214	0.0	289	0.0	353	0.0	472	0.0	210	0.0	31	0.0	2,568	0.0
	HCV2	53	o--oo-oo	567,532	1.7	74,712	0.6	108,610	0.8	37,533	0.8	44,617	0.8	25,529	0.6	858,532	1.2
		57	o-o----ooo	35,069	0.1	15,478	0.1	3,613	0.0	2,767	0.1	11,457	0.2	197	0.0	68,579	0.1
		68	oo--oo-oo	439,847	1.3	235,759	1.8	31,578	0.2	53,484	1.2	28,097	0.5	5,100	0.1	793,864	1.1
		69	o--oo-oo	2,993,153	9.0	557,133	4.1	988,513	7.4	186,441	4.0	115,356	2.2	29,430	0.7	4,870,024	6.6
		713	oo--oo-oo	411,892	1.2	153,572	1.1	89,521	0.7	26,559	0.6	39,770	0.7	221	0.0	721,535	1.0
		747	o--oo--oo	2,050	0.0	1,175	0.0	446	0.0	446	0.0	402	0.0	-	-	4,517	0.0
		791	o--oo-oo	1,270,707	3.8	404,937	3.0	134,957	1.0	186,668	4.0	53,789	1.0	1,423	0.0	2,052,479	2.8
826	oo--oo-oo	2,207,439	6.6	912,589	6.8	785,586	5.9	240,150	5.2	341,892	6.4	810	0.0	4,488,465	6.1		
847	o--oo--oo	45,954	0.1	3,988	0.0	1,157	0.0	1,448	0.0	246	0.0	-	-	52,792	0.1		
A&B Train	HCV2	74	o--oo-oo-o	680	0.0	381	0.0	201	0.0	46	0.0	-	-	-	-	1,308	0.0
		622	o--oo-oo-o	251	0.0	167	0.0	13	0.0	29	0.0	11	0.0	24	0.0	493	0.0
		811	o--oo-oo-oo	72,283	0.2	13,998	0.1	993	0.0	1,499	0.0	11,055	0.2	121	0.0	99,947	0.1
		851	o--oo-oo-oo	2,694,828	8.1	1,322,974	9.9	658,612	4.9	573,141	12.4	438,417	8.2	23,655	0.6	5,711,626	7.7
		951	o--oo-oo-oo	1,158,764	3.5	778,719	5.8	172,615	1.3	221,135	4.8	135,259	2.5	48	0.0	2,466,539	3.3
		1032	o--oo-oo-oo	-	-	-	-	-	-	90	0.0	-	-	-	-	90	0.0
Gross Mass (Tonne)				33,265,119	100.0	13,426,351	100.0	13,358,971	100.0	4,633,402	100.0	5,317,337	100.0	4,102,761	100.0	74,103,939	100.0
Percentage from the total <sup>(2)</sup>				44.9		18.1		18.0		6.3		7.2		5.5		100.0	

Symbol: - no data  
 Top 5 with highest frequency in each WiM site  
 Top 5 with highest frequency across all WiM sites

Note: <sup>1</sup>Percentage of each PAT class from the overall gross mass per WiM site.  
<sup>2</sup>Percentage of each WiM site from the overall gross mass at all WiM sites.

### Interpretation:

- The Drury WiM site had the highest proportion of estimated gross mass recorded with 44.9 percent of the overall gross mass.
- PAT class 891 had the highest estimated gross mass recorded across all PAT classes, with more than 25 million tonnes (34.1 percent). PAT Classes 751 (7.2 million tonnes) and 851 (5.7 million tonnes) ranked the second and third with highest gross mass recorded during 2013.

## 17.0 VEHICLE FLEET ESTIMATED GROSS MASS (continued)

The table below shows the total estimated gross mass that exceeded the maximum limit of each PAT type by group for each WiM site.

**Table 16.0 | Overweight vehicle estimated gross mass frequency and percentage distribution by group, PAT class, and by WiM site**

Group	PEM class	PAT class	Description	Drury		Tokoroa		Te Puke		Waipara		Eskdale		Hamanatua Bridge		Tonne	% <sup>2</sup>
				Tonne	% <sup>1</sup>	Tonne	% <sup>1</sup>	Tonne	% <sup>1</sup>	Tonne	% <sup>1</sup>	Tonne	% <sup>1</sup>	Tonne	% <sup>1</sup>		
Rigid	Bus & MCV	20	o-o	-	-	-	-	360	0.0	48	0.0	-	-	34	0.0	442	0.0
		21	o---o	8,945	0.2	1,051	0.0	2,628	0.1	1,786	0.2	923	0.1	221	0.0	15,553	0.1
	Bus & HCV1	31	o-oo	411,704	8.6	52,845	2.4	104,523	3.4	14,461	1.7	17,359	1.5	12,570	1.4	613,460	4.8
		34	oo-o	62	0.0	22	0.0	85	0.0	373	0.0	-	-	-	-	541	0.0
		301	o-oo	2,277	0.0	145	0.0	94	0.0	76	0.0	90	0.0	25	0.0	2,705	0.0
	HCV1	45	oo-oo	36,721	0.8	8,763	0.4	11,132	0.4	2,494	0.3	2,253	0.2	763	0.1	62,125	0.5
		47	o-ooo	26	0.0	27	0.0	52	0.0	83	0.0	78	0.0	-	-	264	0.0
511		oo-ooo	6,128	0.1	181	0.0	217	0.0	739	0.1	30	0.0	-	-	7,294	0.1	
Bus & MCV	300	o-o-o	23	0.0	23	0.0	-	-	-	-	-	-	22	0.0	67	0.0	
	401	o-o-oo	300	0.0	74	0.0	-	-	126	0.0	60	0.0	-	-	559	0.0	
Bus & HCV1	402	o-oo-o	341	0.0	31	0.0	31	0.0	-	-	-	-	-	-	402	0.0	
	52	o-oo-o-o	1,295	0.0	501	0.0	277	0.0	474	0.1	441	0.0	-	-	2,987	0.0	
T&T	HCV2	62	o-oo-o-o-o	8,207	0.2	20,054	0.9	11,376	0.4	8,816	1.0	8,947	0.8	5,167	0.6	62,566	0.5
		63	o-oo-o-oo	12,413	0.3	575	0.0	335	0.0	509	0.1	-	-	277	0.0	14,107	0.1
		66	oo-oo-o-o	45	0.0	-	-	183	0.0	-	-	89	0.0	-	-	317	0.0
		77	oo-oo-o-oo	79,549	1.7	41,151	1.9	40,721	1.3	19,107	2.3	85,976	7.4	35,211	3.9	301,714	2.3
		503	o-oo-oo	84	0.0	-	-	-	-	56	0.0	-	-	-	-	140	0.0
		751	o-oo-oo-oo	1,132,531	23.6	190,075	8.8	285,096	9.4	63,190	7.5	121,580	10.5	36,614	4.0	1,829,085	14.2
		771	oo-o-oo-oo	-	-	-	-	-	-	41	0.0	-	-	-	-	41	0.0
		891	oo-oo-oo-oo	1,618,966	33.7	1,103,063	51.0	1,544,846	51.0	487,780	57.7	713,089	61.7	804,110	88.5	6,271,852	48.6
		914	oo-oo-ooo-oo	8,800	0.2	7,306	0.3	7,863	0.3	1,502	0.2	3,234	0.3	-	-	28,704	0.2
		915	oo-oo-oo-ooo	265,157	5.5	199,147	9.2	324,745	10.7	88,368	10.5	73,186	6.3	2,688	0.3	953,289	7.4
		1020	oo-oo-oo-ooo	71,774	1.5	1,501	0.1	124,793	4.1	1,952	0.2	-	-	-	-	200,020	1.6
		HCV1	41	o-o-oo	310	0.0	-	-	31	0.0	-	-	-	-	-	-	341
42	o-oo-o		-	-	-	-	26	0.0	212	0.0	-	-	-	-	238	0.0	
Artic	HCV2	53	o-oo-oo	26,667	0.6	397	0.0	1,598	0.1	388	0.0	377	0.0	115	0.0	29,540	0.2
		57	o-o-oo-oo	-	-	37	0.0	-	-	-	-	246	0.0	-	-	282	0.0
		68	oo-oo-oo	-	-	286	0.0	2,090	0.1	357	0.0	-	-	-	-	2,733	0.0
		69	o-oo-ooo	204,514	4.3	52,412	2.4	124,667	4.1	8,026	1.0	6,746	0.6	6,302	0.7	402,666	3.1
		713	oo-oo-ooo	2,749	0.1	2,962	0.1	1,655	0.1	1,219	0.1	92	0.0	-	-	8,676	0.1
		747	o-ooo-ooo	267	0.0	137	0.0	44	0.0	-	-	46	0.0	-	-	493	0.0
		791	o-oo-oooo	100,795	2.1	49,638	2.3	10,858	0.4	15,801	1.9	4,753	0.4	175	0.0	182,018	1.4
		826	oo-oo-oooo	223,141	4.6	128,172	5.9	214,260	7.1	18,447	2.2	33,738	2.9	91	0.0	617,848	4.8
		847	o-ooo-oooo	4,492	0.1	325	0.0	46	0.0	236	0.0	47	0.0	-	-	5,144	0.0
A&B Train	HCV2	74	o-oo-oo-o	127	0.0	84	0.0	-	-	46	0.0	-	-	-	-	256	0.0
		811	o-oo-oo-ooo	40,527	0.8	2,917	0.1	696	0.0	707	0.1	1,771	0.2	121	0.0	46,738	0.4
		851	o-oo-ooo-oo	352,644	7.3	160,984	7.4	150,571	5.0	68,600	8.1	53,440	4.6	3,718	0.4	789,957	6.1
		951	o-oo-ooo-ooo	180,438	3.8	136,890	6.3	64,236	2.1	38,648	4.6	26,632	2.3	-	-	446,843	3.5
		1032	o-oo-ooo-oooo	-	-	-	-	-	-	46	0.0	-	-	-	-	46	0.0
Tonne				4,802,010	100.0	2,161,768	100.0	3,030,125	100.0	844,704	100.0	1,155,217	100.0	908,220	100.0	12,902,042	100.0
Percentage from the total <sup>2</sup>				37.2		16.8		23.5		6.5		9.0		7.0		100.0	

Symbol: - no data  
  Top 5 with highest frequency in each WiM site  
  Top 5 with highest frequency across all WiM sites

Note: <sup>1</sup>Percentage of each PAT class from the overall overweight gross mass per WiM site.  
<sup>2</sup>Percentage of each WiM site from the overall overweight gross mass at all WiM sites.

### Interpretation:

- Almost 13 million tonnes was the estimated gross mass exceeded maximum limit across all PAT type.
- PAT Classes 891 and 751 had GHVM exceeded their maximum limits with more than one million tonnes.
- The Waipara site had the lowest proportion of overweight gross mass with less than seven percent.

## 18.0 AVERAGE ESTIMATED GHVM PER VEHICLE

The average estimated GHVM per vehicle is derived from dividing the total estimated gross mass over the heavy vehicle frequency for each PAT type, each WiM site and combined. This is also similar in deriving the overweight vehicles.

**Table 17.0 | Average estimated gross mass per vehicle and rank distribution by group, PAT class, and by WiM site**

Group	PEM class	PAT class	Description	Drury		Tokoroa		Te Puke		Waipara		Eskdale		Hamanatua Bridge		Tonne	Rank	
				Tonne	Rank	Tonne	Rank	Tonne	Rank	Tonne	Rank	Tonne	Rank	Tonne	Rank			
Rigid	Bus & MCV	20	o-o	4.3	41	4.6	42	4.4	41	4.6	43	4.3	40	4.3	36	4.37	43	
		21	o---o	6.4	38	6.5	39	6.4	39	6.2	41	6.5	38	6.2	33	6.39	41	
	Bus & HCV1	31	o-oo	14.0	29	13.7	31	13.4	30	14.0	30	13.6	28	14.2	23	13.86	31	
		34	oo-o	11.2	32	11.9	33	7.8	36	13.4	32	6.8	36	10.4	30	9.29	39	
	HCV1	301	o-oo	13.5	30	9.9	36	13.8	28	7.9	39	13.2	29	12.3	24	12.75	32	
		45	oo--oo	16.6	25	16.4	27	16.5	24	16.9	27	16.0	25	16.6	20	16.49	26	
47		o-ooo	15.8	26	13.8	30	15.4	25	16.6	29	16.3	24	11.5	28	16.04	27		
HCV1	511	o-oo--o	24.1	21	21.9	24	18.7	23	27.3	21	20.1	21	18.5	19	22.86	22		
	300	o-o-o	6.0	39	5.5	40	5.8	40	6.0	42	5.8	39	5.9	34	5.92	42		
Bus & MCV	401	o-o--o	7.2	37	7.3	38	6.5	38	7.3	40	7.5	35	6.3	32	7.10	40		
	44	oo-o--o	6.0	40	17.6	25	9.1	35	20.6	26	6.8	37	4.5	35	9.74	36		
Bus & HCV1	402	o-oo--o	12.0	31	13.3	32	11.4	32	9.8	37	10.1	34	10.5	29	11.85	33		
	52	o-oo-o-o	20.8	23	22.0	23	19.2	22	23.0	24	21.9	20	22.9	16	21.11	24		
T&T	HCV2	61	o-o-o-o-oo	9.8	35	5.5	41	0.0	42	11.5	34	0.0	41	0.0	37	9.33	38	
		62	o-oo-o-o-o	30.7	13	40.9	1	35.4	9	37.9	6	32.4	13	36.2	4	34.83	11	
		63	o-oo-o-oo	28.2	16	26.7	20	27.1	17	26.6	22	28.3	16	26.3	14	27.75	19	
		66	oo-oo-o-o	24.8	20	24.9	21	21.8	21	26.2	23	23.0	19	26.6	12	24.36	21	
		77	oo-oo-o-oo	31.6	12	35.8	8	38.7	3	36.0	12	42.7	1	38.5	3	35.59	9	
		503	o-oo-oo	15.6	27	14.4	29	14.8	27	13.8	31	14.4	27	12.0	25	14.59	30	
		751	o-oo--oo-oo	33.5	10	33.5	13	35.0	10	33.3	16	37.7	4	34.4	6	34.03	13	
		771	oo-o-oo-oo	0.0	42	31.5	16	15.1	26	40.5	3	11.5	31	0.0	37	15.36	28	
		891	oo-oo-oo-oo	33.6	9	36.0	7	36.8	6	34.9	14	39.1	2	42.1	2	35.92	8	
		914	oo-oo-ooo-oo	35.8	5	38.7	2	34.1	11	37.5	7	36.7	5	26.5	13	36.36	7	
		915	oo-oo--oo-oo	35.8	6	38.6	3	38.8	2	37.4	8	38.5	3	35.8	5	37.38	4	
		1020	oo-oo-ooo-ooo	40.4	2	38.3	4	46.1	1	37.9	5	34.6	11	0.0	37	43.19	2	
		HCV1	30	o-o----o	11.1	33	10.3	35	9.9	34	10.2	36	11.3	32	9.7	31	10.76	34
			41	o-o-oo	15.0	28	16.3	28	13.7	29	16.8	28	15.2	26	16.0	21	15.18	29
Artic	HCV2	42	o-oo-o	10.3	34	8.7	37	11.4	33	11.2	35	13.1	30	15.5	22	10.61	35	
		53	o-oo-oo	21.8	22	22.3	22	21.9	20	22.5	25	19.8	22	21.6	17	21.76	23	
		57	o-o----ooo	17.0	24	17.4	26	11.9	31	12.3	33	17.7	23	11.6	27	16.56	25	
		68	oo-oo-oo	27.5	17	29.0	18	23.8	19	29.6	19	25.1	18	21.4	18	27.75	18	
		69	o-oo-ooo	26.5	18	27.4	19	26.6	18	27.9	20	26.9	17	27.3	11	26.70	20	
		713	oo-oo-ooo	29.0	15	30.3	17	28.5	16	31.8	18	28.7	15	27.6	10	29.30	16	
		747	o-ooo---ooo	37.3	3	35.6	10	37.2	5	34.3	15	36.5	7	0.0	37	36.43	6	
		791	o-oo-oooo	30.1	14	32.5	14	29.3	15	32.2	17	30.4	14	30.3	8	30.68	15	
		826	oo-oo--oooo	32.6	11	34.7	11	32.6	14	36.3	11	33.5	12	27.9	9	33.24	14	
		847	o-ooo--oooo	35.6	7	34.4	12	37.3	4	37.1	10	35.1	8	0.0	37	35.55	10	
A&B Train	HCV2	74	o-oo--oo-o-o	26.2	19	31.8	15	33.5	12	45.5	1	0.0	41	0.0	37	29.06	17	
		622	o-o-oo-o-o	8.6	36	11.1	34	6.5	37	9.5	38	10.5	33	12.0	25	9.48	37	
		811	o-oo-oo-ooo	42.0	1	35.6	9	36.8	7	40.5	3	34.8	9	60.5	1	40.01	3	
		851	o-oo-ooo-oo	33.7	8	36.0	6	32.9	13	36.0	13	34.7	10	34.1	7	34.42	12	
		951	o-oo-ooo-ooo	36.2	4	37.8	5	36.5	8	37.4	9	36.7	6	24.0	15	36.87	5	
1032	o-oo-ooo-oooo	0.0	42	0.0	43	0.0	42	45.0	2	0.0	41	0.0	37	45.00	1			
Tonne				21.7		26.8		22.8		24.4		26.0		24.0		23.3		

Symbol: - no data  
    Top 5 with highest frequency in each WiM site  
    Top 5 with highest frequency across all WiM sites

### Interpretation:

- During 2013, the average estimated gross mass per vehicle was 23.3 tonnes regardless of PAT class. This was a slight increase from 23.1 tonnes in 2012.
- The Tokoroa site had the highest average estimated gross mass per vehicle at 26.8 tonnes, followed by Eskdale WiM site at 26 tonnes per vehicle.
- PAT class 1032 had the highest average estimated gross mass per vehicle at 45 tonnes. T class 1020 follows at over 43 tonnes per vehicle.

## 18.0 AVERAGE ESTIMATED GROSS MASS PER VEHICLE (continued)

Table 18.0 | Overweight average estimated gross mass per vehicle and rank distribution by group, PAT class, and by WiM site

Group	PEM class	PAT class	Description	Drury		Tokoroa		Te Puke		Waipara		Eskdale		Hamanatua Bridge		Tonne	Rank
				Tonne	Rank	Tonne	Rank	Tonne	Rank	Tonne	Rank	Tonne	Rank	Tonne	Rank		
Rigid	Bus & MCV	20	o-o	0.0	34	0.0	33	16.4	31	15.8	33	0.0	27	17.0	17	16.4	38
		21	o---o	15.9	33	16.2	32	15.6	32	16.1	32	16.2	26	15.8	18	15.9	39
	Bus & HCV1	31	o--oo	21.0	31	20.8	31	20.4	30	20.7	31	21.0	24	20.5	16	20.9	37
		34	oo--o	20.5	32	21.5	30	21.3	29	21.9	29	0.0	27	0.0	19	21.6	35
	HCV1	301	o--oo	23.0	28	28.9	26	23.5	28	25.2	28	22.5	23	24.5	14	23.3	33
		45	oo--oo	28.1	25	30.3	24	31.4	22	29.0	24	28.9	21	31.8	13	29.1	29
47		o---ooo	25.5	27	26.5	27	26.0	26	27.5	26	25.8	22	0.0	19	26.4	31	
511		oo--ooo	31.6	22	30.2	25	30.9	23	32.1	23	29.5	20	0.0	19	31.6	26	
Bus & MCV	300	o--o-o	22.5	29	22.5	29	0.0	33	0.0	34	0.0	27	21.5	15	22.2	34	
	401	o--o--oo	21.4	30	24.5	28	0.0	33	21.0	30	19.8	25	0.0	19	21.5	36	
Bus & HCV1	402	o--oo--o	31.0	24	30.5	23	30.5	24	0.0	34	0.0	27	0.0	19	30.9	28	
	52	o--oo-o-o	40.5	20	41.8	21	39.5	21	39.5	21	40.0	17	0.0	19	40.4	23	
T&T	HCV2	62	o--oo--o-o-o	46.9	7	53.1	3	51.2	3	51.0	1	51.4	1	52.7	3	51.3	2
		63	o--oo-o--oo	46.8	8	47.9	4	47.8	6	46.2	14	0.0	27	55.3	2	47.0	8
		66	oo--oo--o--o	44.5	15	0.0	33	45.8	15	0.0	34	44.5	14	0.0	19	45.2	17
		77	oo--oo--o--oo	46.4	12	46.6	9	46.2	14	47.2	6	46.6	8	46.0	8	46.5	13
		503	o--oo--oo	27.8	26	0.0	33	0.0	33	28.0	25	0.0	27	0.0	19	27.9	30
		751	o--oo--oo--oo	47.1	5	46.4	13	46.2	13	46.8	10	46.4	11	46.2	6	46.8	11
		771	oo--o--oo--oo	0.0	34	0.0	33	0.0	33	40.5	20	0.0	27	0.0	19	40.5	22
		891	oo--oo--oo--oo	47.1	4	46.4	12	47.2	9	46.8	11	46.7	6	46.2	7	46.8	10
		914	oo--oo--ooo--oo	46.8	9	47.1	6	47.4	7	46.9	8	46.9	4	0.0	19	47.1	7
		915	oo--oo--ooo--ooo	47.9	2	47.8	5	52.3	2	48.6	4	48.3	2	47.1	4	49.4	4
		1020	oo--oo--ooo--ooo	52.5	1	53.6	2	55.7	1	46.5	13	0.0	27	0.0	19	54.4	1
Artic	HCV1	41	o--o--oo	31.0	23	0.0	33	30.5	24	0.0	34	0.0	27	0.0	19	31.0	27
		42	o--oo--o	0.0	34	0.0	33	25.5	27	26.5	27	0.0	27	0.0	19	26.4	32
	HCV2	53	o--oo--oo	38.5	21	44.1	17	41.0	20	38.8	22	37.7	18	38.2	12	38.7	24
		57	o--o---ooo	0.0	34	36.5	22	0.0	33	0.0	34	35.1	19	0.0	19	35.3	25
		68	oo--oo--oo	0.0	34	57.1	1	49.8	5	44.6	17	0.0	27	0.0	19	49.7	3
		69	o--oo--oo	41.6	19	42.5	19	41.8	19	42.2	19	41.6	16	46.7	5	41.8	21
		713	oo--oo--ooo	46.6	11	46.3	15	47.3	8	48.7	3	46.0	12	0.0	19	46.9	9
		747	o--ooo--ooo	44.5	15	45.5	16	43.5	18	0.0	34	45.5	13	0.0	19	44.8	18
		791	o--oo--ooo	43.6	17	44.0	18	43.6	17	44.3	18	43.6	15	43.8	11	43.8	19
		826	oo--oo--ooo	46.2	13	46.5	10	46.7	11	46.7	12	46.4	10	45.5	10	46.4	14
		847	o--ooo--ooo	45.8	14	46.4	14	45.5	16	47.1	7	46.5	9	0.0	19	45.9	15
A&B Train	HCV2	74	o--oo--oo-o-o	42.2	18	42.0	20	0.0	33	45.5	15	0.0	27	0.0	19	42.7	20
		811	o--oo--oo--ooo	47.1	6	47.0	7	46.4	12	50.5	2	46.6	7	60.5	1	47.1	6
		851	o--oo--ooo--oo	46.8	10	46.5	11	47.1	10	46.9	9	46.7	5	45.9	9	46.8	12
		951	o--oo--ooo--ooo	47.1	3	46.9	8	50.3	4	47.4	5	47.1	3	0.0	19	47.5	5
		1032	o--oo--ooo--ooo	0.0	34	0.0	33	0.0	33	45.5	15	0.0	27	0.0	19	45.5	16
Tonne				41.9		45.0		45.4		45.7		45.8		45.4		44.0	

Symbol:   
  - no data   
  Top 5 with highest frequency in each WiM site   
  Top 5 with highest frequency across all WiM sites

### Interpretation:

- The average estimated gross mass per overweight vehicle during 2013 was 44 tonnes that falls within the maximum gross mass.
- PAT class 1020 continued to have the highest average estimated gross mass with 54.4 tonnes per overweight vehicle. This increased by 1.6 tonnes to 54.4 tonnes, compared to 52.8 tonnes in 2012
- Only the Drury WiM site had an average of overweight per vehicle of less than 45 tonnes.

## 19.0 AXLE GROUP LOAD DISTRIBUTION TABLES

The limits to axle mass are imposed to protect the road infrastructure.

The maximum axle load on an axle group is defined in the Land Transport Rule: Vehicle Dimensions and Mass 2002.

**Load (kN)** - kilo newton is the load imposed by each axle type.

**Table 19.0 | Axle group approximate maximum mass limit**

Axle group	Approximate maximum mass limit (kN)
SAST - Single Axle Single Tyre	60
SADT - Single Axle Dual Tyre	80
TADT - Tandem Axle Dual Tyre	150
TSST - Twin Steer Single Tyre	110
TRDT - Triple Axle Dual Tyre	180
QADT - Quad Axle Dual Tyre	200

It is important to note that the WIM data from which the following table is derived does not distinguish between single and dual tyres. It is assumed that steer axles are single tyred and all others are dual tyred. From observation, there is an increase in the use of 'super single' type tyres in the SADT, TADT, TAST and TRDT groups. However, the impact or significance cannot be measured or derived from this technology. Despite the QADT description, 80-90 percent of quad axles are single tyred. The highlighted sections indicate the peaks in load per axle group.

**Table 20.0 | Site: 00200176 (Te Puke)**

Load (kN)	SAST	SADT	TADT	TSST	TRDT	QADT
10	2%	5%	0%	-	-	-
20	29%	38%	3%	-	0%	-
30	18%	25%	3%	0%	1%	0%
40	12%	11%	7%	0%	1%	1%
50	23%	8%	7%	0%	3%	2%
60	15%	6%	6%	3%	11%	3%
70	1%	4%	6%	15%	11%	7%
80	0%	2%	6%	31%	9%	11%
90	0%	1%	8%	26%	6%	9%
100	0%	0%	10%	19%	5%	9%
110	-	0%	11%	5%	4%	5%
120	-	0%	10%	0%	4%	4%
130	-	0%	8%	0%	4%	3%
140	-	0%	8%	0%	4%	2%
150	-	0%	5%	0%	4%	2%
160	-	0%	2%	0%	6%	3%
170	-	-	0%	0%	7%	3%
180	-	-	0%	0%	8%	4%
190	-	-	0%	0%	7%	6%
200	-	-	0%	-	3%	10%
210	-	-	0%	-	1%	12%
220	-	-	0%	-	0%	4%
230	-	-	0%	-	0%	1%
240	-	-	-	-	0%	0%
250	-	-	-	-	-	0%
260	-	-	-	-	0%	0%
270	-	-	-	-	-	-

**Symbol:** - no data  
 — approximate axle group mass legal limit

## 19.0 AXLE GROUP DISTRIBUTION TABLES (continued)

**Table 20.1 | Site: 01N00463 (Drury)**

Load (kN)	SAST	SADT	TADT	TSST	TRDT	QADT
10	1%	6%	0%	-	-	-
20	25%	37%	3%	0%	-	-
30	17%	24%	4%	0%	0%	0%
40	10%	12%	9%	0%	2%	0%
50	21%	8%	8%	1%	6%	1%
60	22%	6%	9%	3%	7%	6%
70	4%	4%	8%	15%	8%	8%
80	0%	2%	7%	23%	8%	9%
90	0%	1%	7%	24%	7%	6%
100	0%	0%	7%	21%	7%	5%
110	-	0%	8%	10%	6%	5%
120	-	0%	9%	2%	6%	5%
130	-	0%	8%	0%	6%	4%
140	-	0%	6%	0%	6%	5%
150	-	-	4%	0%	5%	5%
160	-	-	2%	-	6%	5%
170	-	-	1%	-	6%	4%
180	-	-	0%	-	6%	5%
190	-	-	0%	-	4%	6%
200	-	-	0%	-	2%	9%
210	-	-	0%	-	1%	7%
220	-	-	0%	-	0%	3%
230	-	-	0%	-	0%	1%
240	-	-	0%	-	0%	0%
250	-	-	-	-	0%	0%
260	-	-	-	-	0%	0%
270	-	-	-	-	0%	0%

**Table 20.2 | Site: 01N00628 (Tokoroa)**

Load (kN)	SAST	SADT	TADT	TSST	TRDT	QADT
10	3%	4%	0%	-	-	-
20	23%	36%	2%	0%	0%	-
30	14%	22%	6%	0%	0%	-
40	10%	13%	6%	0%	1%	0%
50	20%	10%	8%	0%	2%	0%
60	25%	7%	6%	2%	5%	1%
70	4%	4%	6%	11%	7%	6%
80	0%	2%	7%	27%	8%	8%
90	0%	1%	8%	26%	8%	7%
100	0%	0%	11%	26%	8%	5%
110	-	0%	12%	7%	9%	5%
120	-	0%	9%	1%	9%	6%
130	-	0%	7%	0%	8%	6%
140	-	0%	6%	0%	8%	6%
150	-	0%	4%	0%	7%	6%
160	-	0%	2%	0%	6%	6%
170	-	-	1%	0%	5%	7%
180	-	-	0%	-	3%	7%
190	-	-	0%	-	2%	6%
200	-	-	0%	-	1%	6%
210	-	-	0%	-	0%	5%
220	-	-	0%	-	0%	4%
230	-	-	0%	-	0%	2%
240	-	-	0%	-	0%	1%
250	-	-	0%	-	0%	0%
260	-	-	0%	-	0%	0%
270	-	-	0%	-	-	0%

Symbol: - no data  
 — approximate axle group mass legal limit



19.0 AXLE GROUP DISTRIBUTION TABLES (continued)

Table 20.3: Site: 01S00285 (Waipara)

Load (kN)	SAST	SADT	TADT	TSST	TRDT	QADT
10	2%	8%	0%	-	-	-
20	44%	53%	3%	-	-	-
30	14%	18%	5%	0%	0%	-
40	7%	8%	6%	1%	1%	-
50	17%	5%	8%	2%	4%	-
60	14%	3%	8%	2%	3%	0%
70	1%	2%	6%	10%	4%	1%
80	0%	2%	6%	28%	5%	2%
90	0%	1%	9%	29%	5%	4%
100	-	0%	10%	23%	6%	6%
110	-	0%	11%	5%	8%	7%
120	-	0%	10%	0%	9%	6%
130	-	0%	8%	0%	9%	6%
140	-	0%	6%	-	11%	7%
150	-	-	3%	-	10%	8%
160	-	-	1%	-	9%	7%
170	-	-	0%	-	7%	7%
180	-	-	0%	-	4%	9%
190	-	-	0%	-	2%	10%
200	-	-	0%	-	1%	9%
210	-	-	0%	-	0%	6%
220	-	-	-	-	0%	3%
230	-	-	-	-	0%	1%
240	-	-	-	-	0%	1%
250	-	-	-	-	-	0%
260	-	-	-	-	-	0%
270	-	-	-	-	-	0%

Table 20.4 | Site: 00500259 (Eskdale)

Load (kN)	SAST	SADT	TADT	TSST	TRDT	QADT
10	2%	5%	0%	-	-	-
20	30%	37%	2%	-	0%	-
30	15%	24%	2%	0%	0%	-
40	9%	9%	3%	1%	1%	1%
50	18%	7%	4%	1%	2%	2%
60	21%	6%	5%	4%	6%	4%
70	3%	5%	6%	13%	7%	5%
80	0%	4%	7%	23%	6%	5%
90	0%	2%	10%	24%	7%	5%
100	-	1%	10%	23%	7%	4%
110	-	0%	13%	9%	7%	4%
120	-	0%	12%	1%	8%	5%
130	-	0%	8%	0%	8%	5%
140	-	0%	7%	0%	7%	6%
150	-	-	6%	0%	7%	6%
160	-	-	4%	-	7%	6%
170	-	-	1%	-	8%	7%
180	-	-	0%	-	6%	8%
190	-	-	0%	-	4%	8%
200	-	-	0%	-	1%	9%
210	-	-	-	-	1%	8%
220	-	-	-	-	0%	3%
230	-	-	0%	-	-	1%
240	-	-	-	-	0%	1%
250	-	-	-	-	-	0%
260	-	-	-	-	0%	-
270	-	-	-	-	-	-

Symbol: - no data  
 — approximate axle group mass legal limit

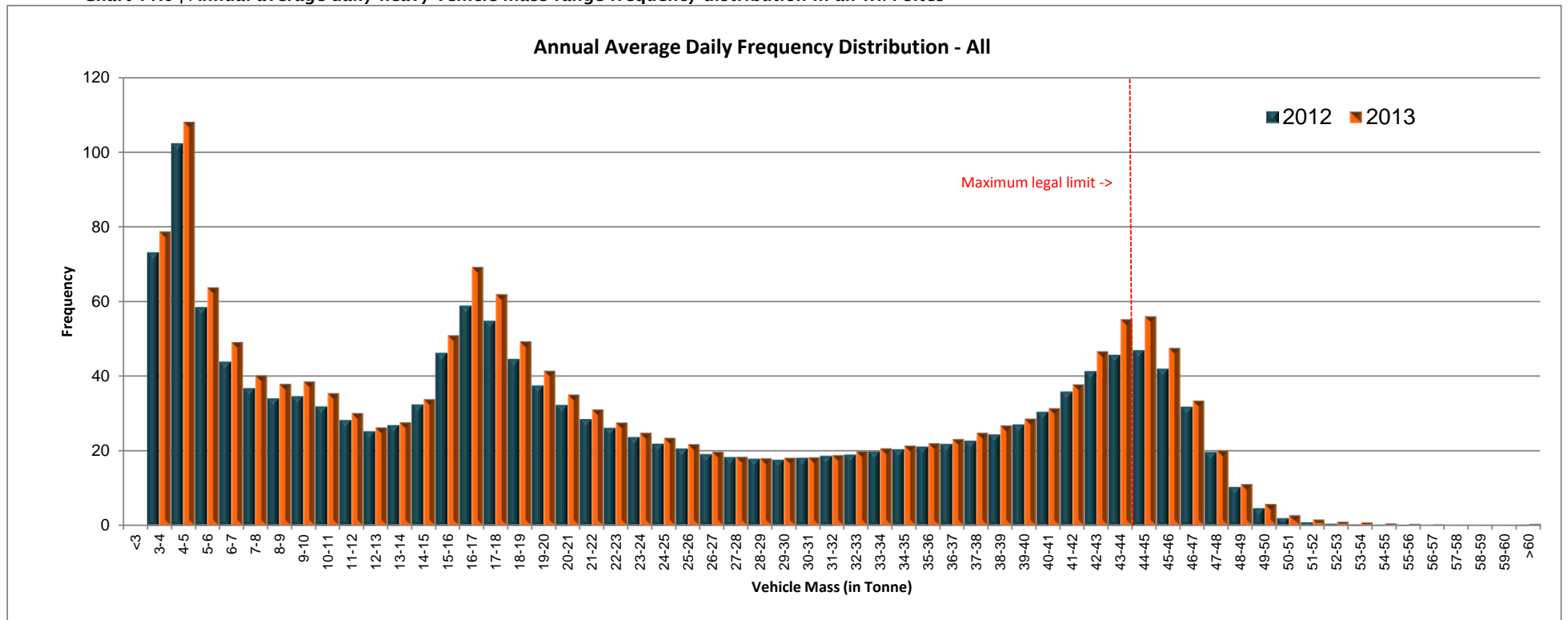
19.0 AXLE GROUP DISTRIBUTION TABLES (continued)

Table 20.5 | Site: 03500321 (Hamanatua Bridge)

Load (kN)	SAST	SADT	TADT	TSST	TRDT	QADT
10	2%	4%	1%	-	-	-
20	38%	39%	3%	-	-	-
30	28%	28%	1%	0%	-	-
40	7%	11%	2%	0%	0%	-
50	14%	6%	3%	1%	3%	-
60	11%	4%	3%	1%	3%	-
70	1%	4%	3%	10%	19%	-
80	0%	4%	4%	40%	17%	25%
90	-	1%	11%	38%	8%	25%
100	-	0%	16%	8%	1%	-
110	-	0%	17%	1%	1%	-
120	-	0%	11%	0%	1%	-
130	-	0%	5%	-	2%	-
140	-	0%	6%	-	7%	-
150	-	0%	9%	-	9%	-
160	-	-	4%	-	8%	-
170	-	-	1%	-	12%	8%
180	-	-	0%	-	2%	17%
190	-	-	0%	-	2%	-
200	-	-	-	-	0%	25%
210	-	-	-	-	2%	-
220	-	-	-	-	0%	-
230	-	-	-	-	0%	-
240	-	-	-	-	0%	-
250	-	-	-	-	0%	-
260	-	-	-	-	1%	-
270	-	-	-	-	-	-

Symbol: - no data  
 — approximate axle group mass legal limit

Chart 11.0 | Annual average daily heavy vehicle mass range frequency distribution in all WiM sites

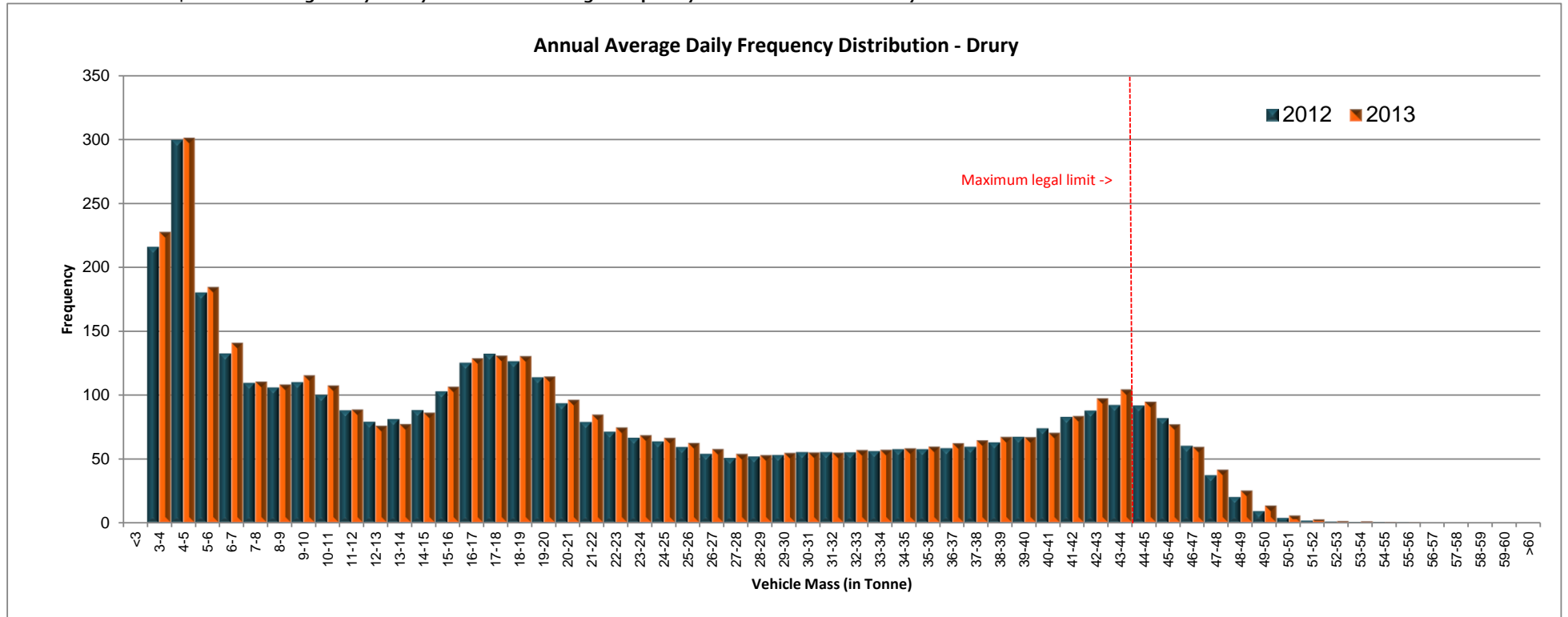


**Interpretation:** The chart above shows the comparison of annual weighted average daily total heavy vehicles in across WiM sites. There are increases in most weight ranges in 2013.

**Note:** Maximum legal limit (VDAM) without HPMV or on overweight permits.

20.0 APPENDIX A - HEAVY VEHICLES MASS RANGE FREQUENCY DISTRIBUTION BY WiM SITE CHARTS (continued)

Chart 11.1 | Annual average daily heavy vehicle mass range frequency distribution at the Drury WiM site

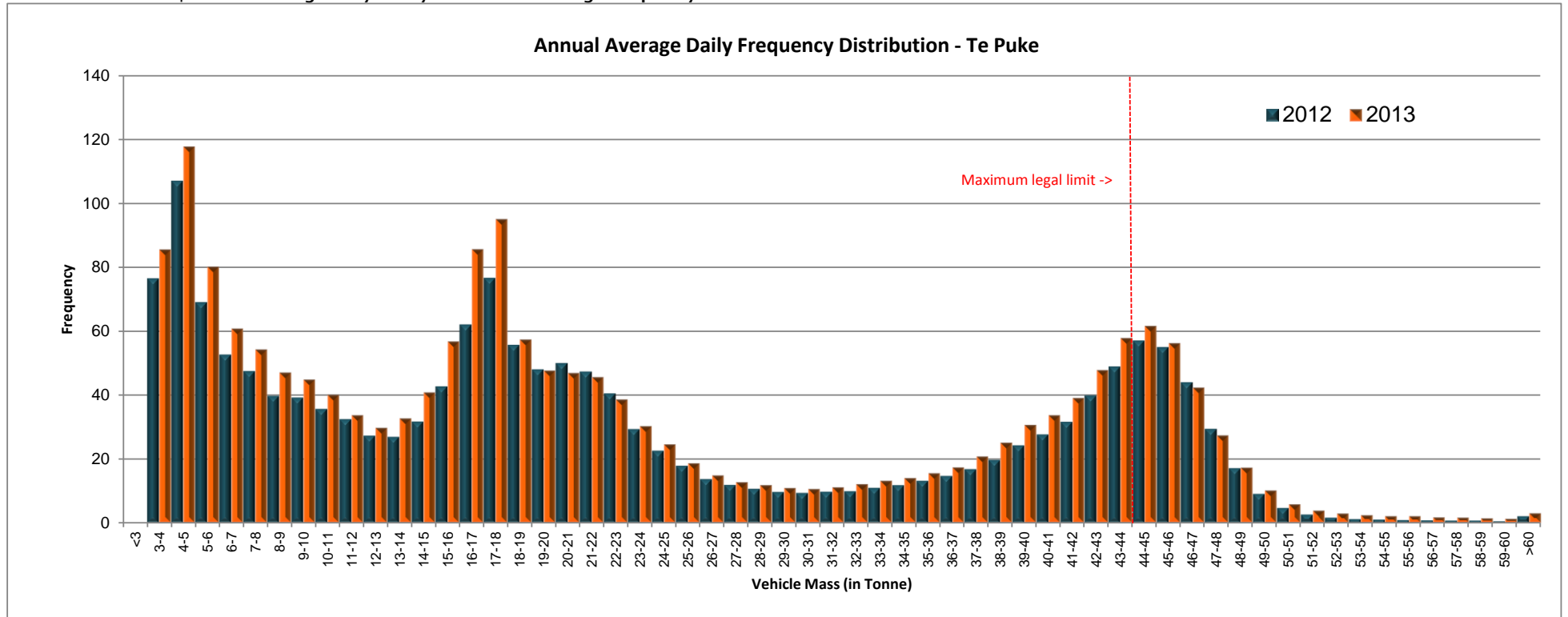


**Interpretation:** The above chart illustrates that the annual average daily heavy vehicles show an increase with gross mass above the maximum legal limit.

**Note:** Maximum legal limit (VDAM) without HPMV or on overweight permits.

20.0 APPENDIX A - HEAVY VEHICLES MASS RANGE FREQUENCY DISTRIBUTION BY WiM SITE CHARTS (continued)

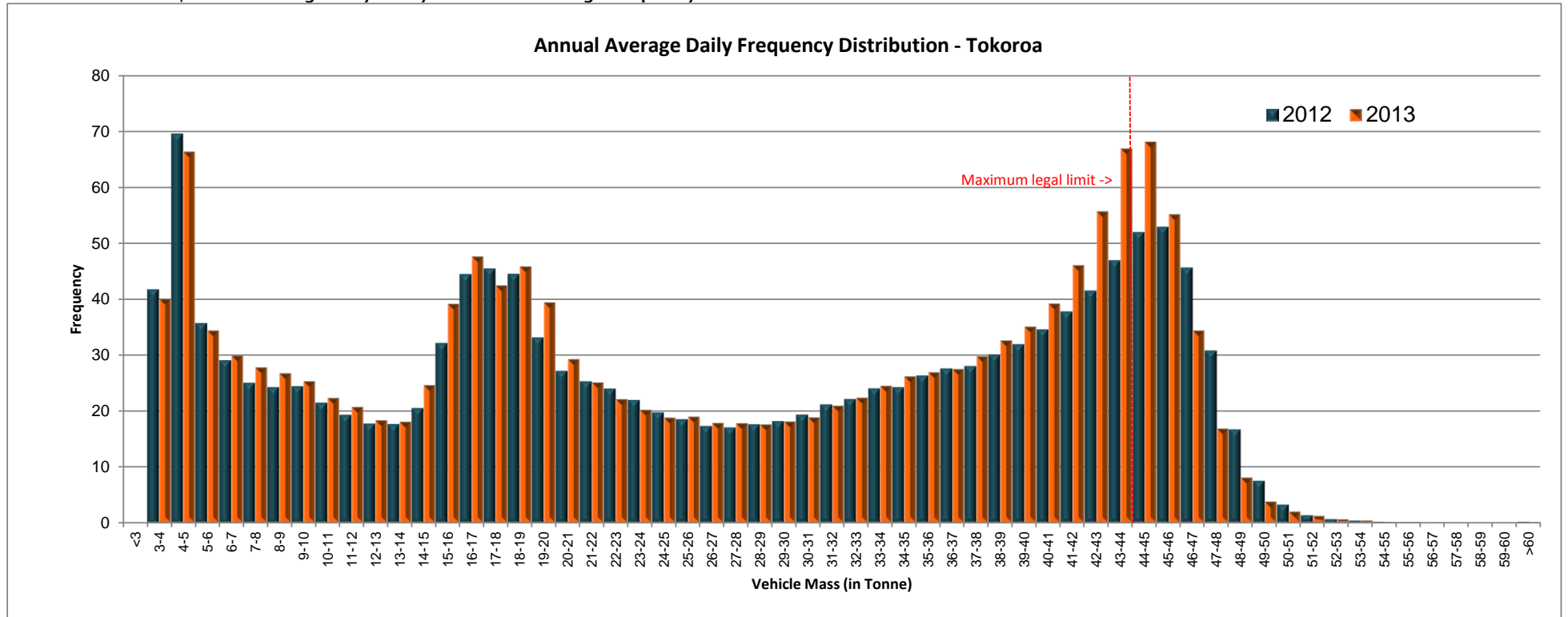
Chart 11.2 | Annual average daily heavy vehicle mass range frequency distribution at the Te Puke



Note: Maximum legal limit (VDAM) without HPMV or on overweight permits.

20.0 APPENDIX A - HEAVY VEHICLES MASS RANGE FREQUENCY DISTRIBUTION BY WiM SITE CHARTS (continued)

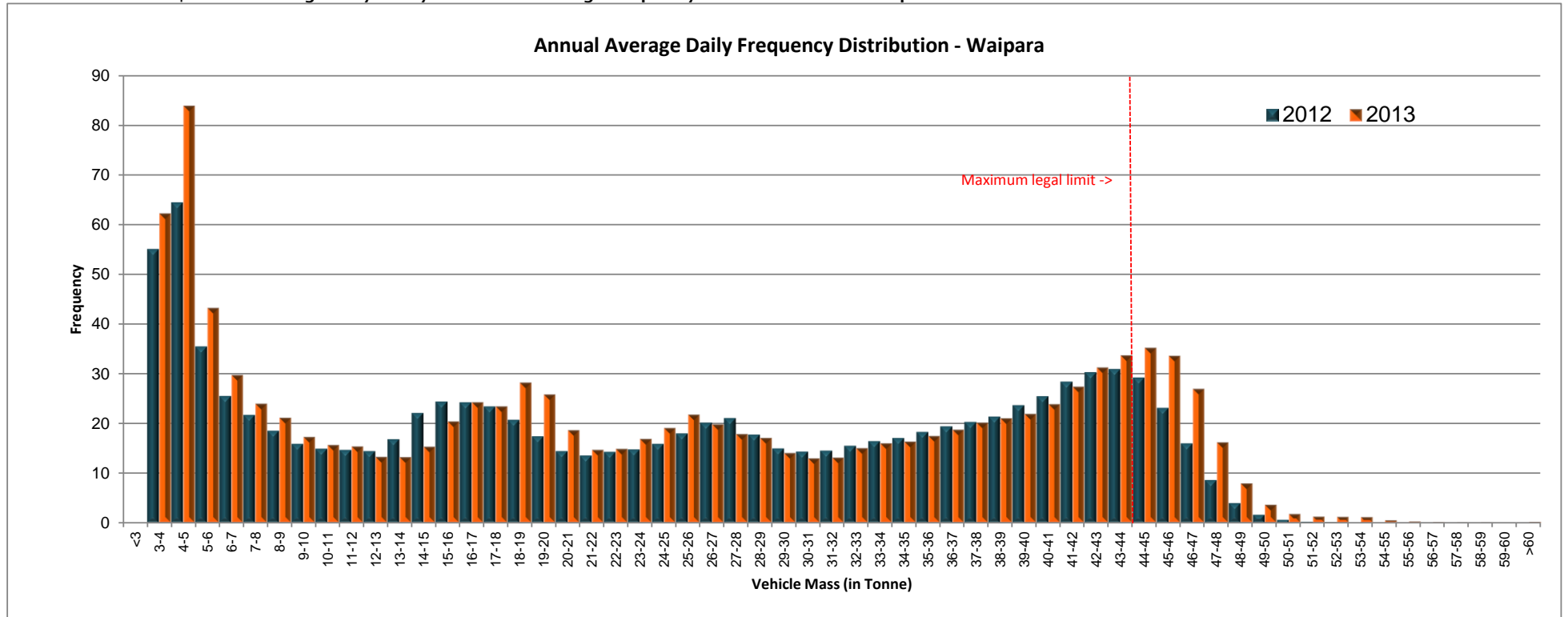
Chart 11.3 | Annual average daily heavy vehicle mass range frequency distribution at the Tokoroa



Note: Maximum legal limit (VDAM) without HPMV or on overweight permits.

20.0 APPENDIX A - HEAVY VEHICLES MASS RANGE FREQUENCY DISTRIBUTION BY WiM SITE CHARTS (continued)

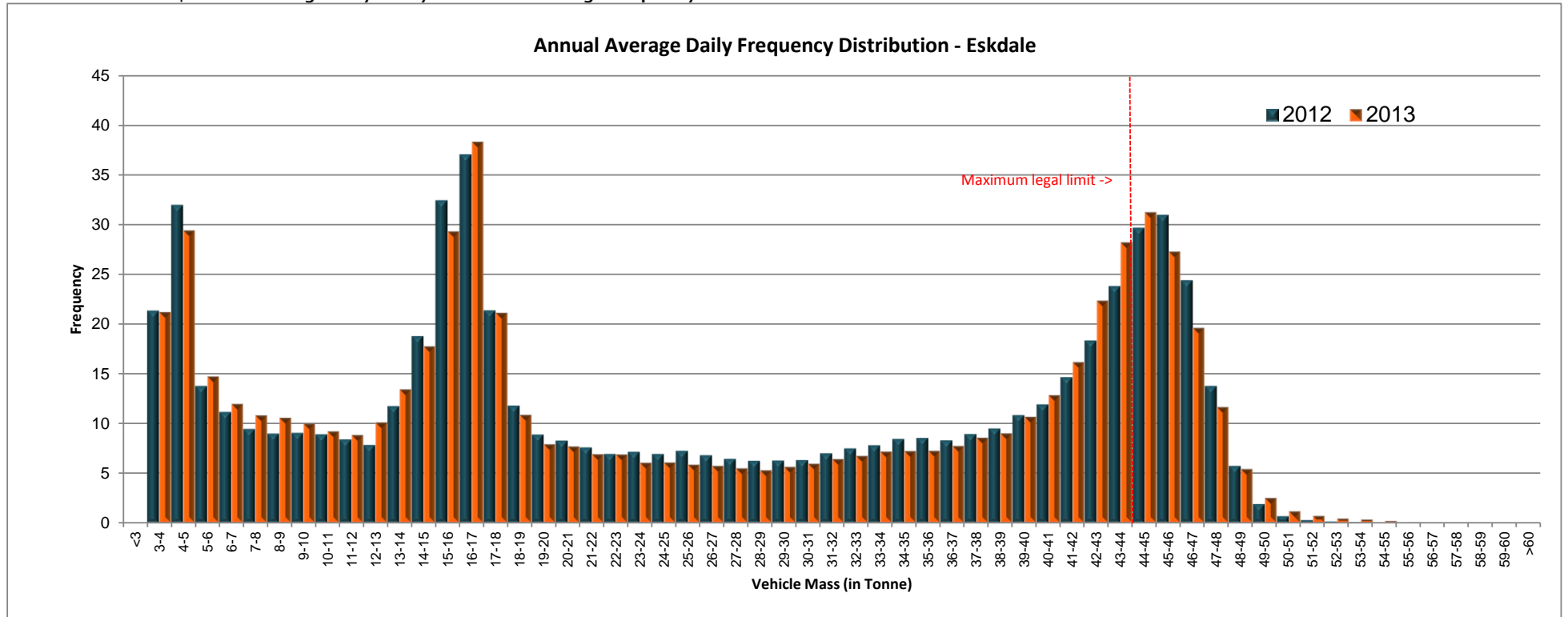
Chart 11.4 | Annual average daily heavy vehicle mass range frequency distribution at the Waipara



Note: Maximum legal limit (VDAM) without HPMV or on overweight permits.

20.0 APPENDIX A - HEAVY VEHICLES MASS RANGE FREQUENCY DISTRIBUTION BY WiM SITE CHARTS (continued)

Chart 11.5 | Annual average daily heavy vehicle mass range frequency distribution at the Eskdale

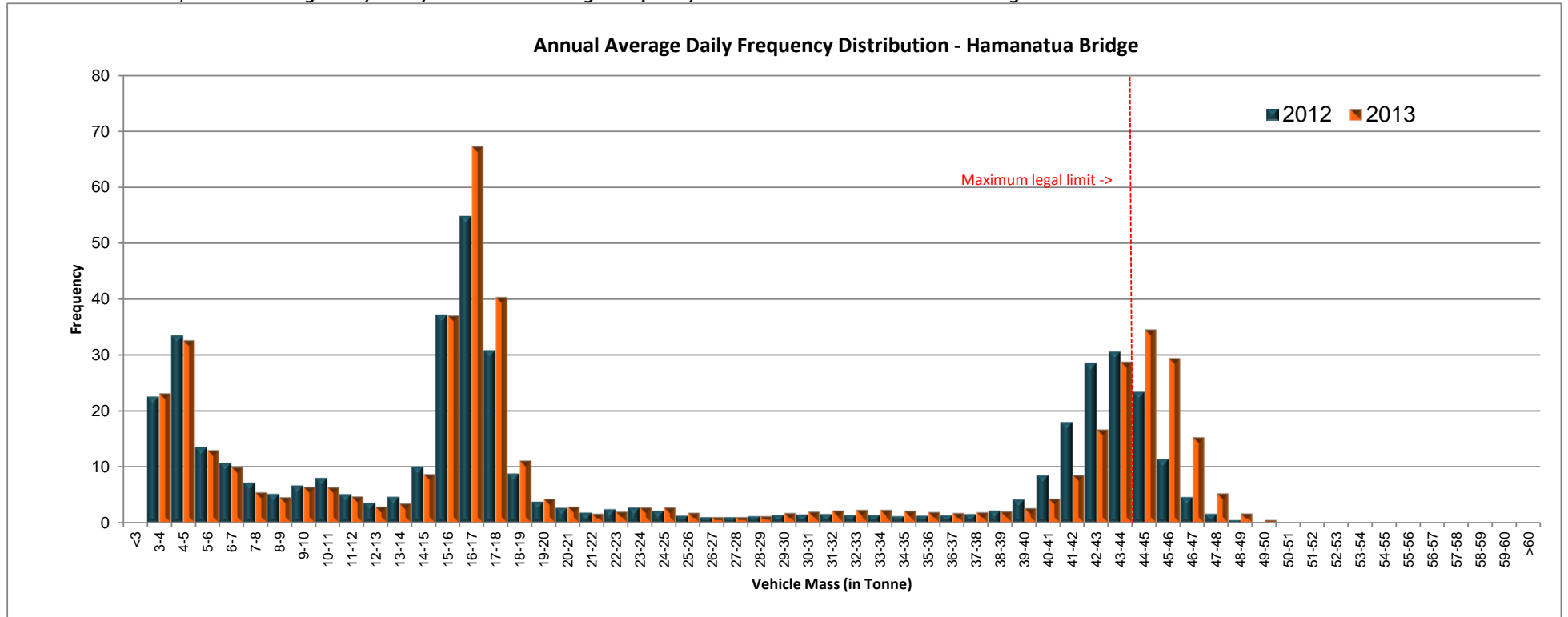


**Note:** Maximum legal limit (VDAM) without HPMV or on overweight permits.



20.0 APPENDIX A - HEAVY VEHICLES MASS RANGE FREQUENCY DISTRIBUTION BY WiM SITE CHARTS (continued)

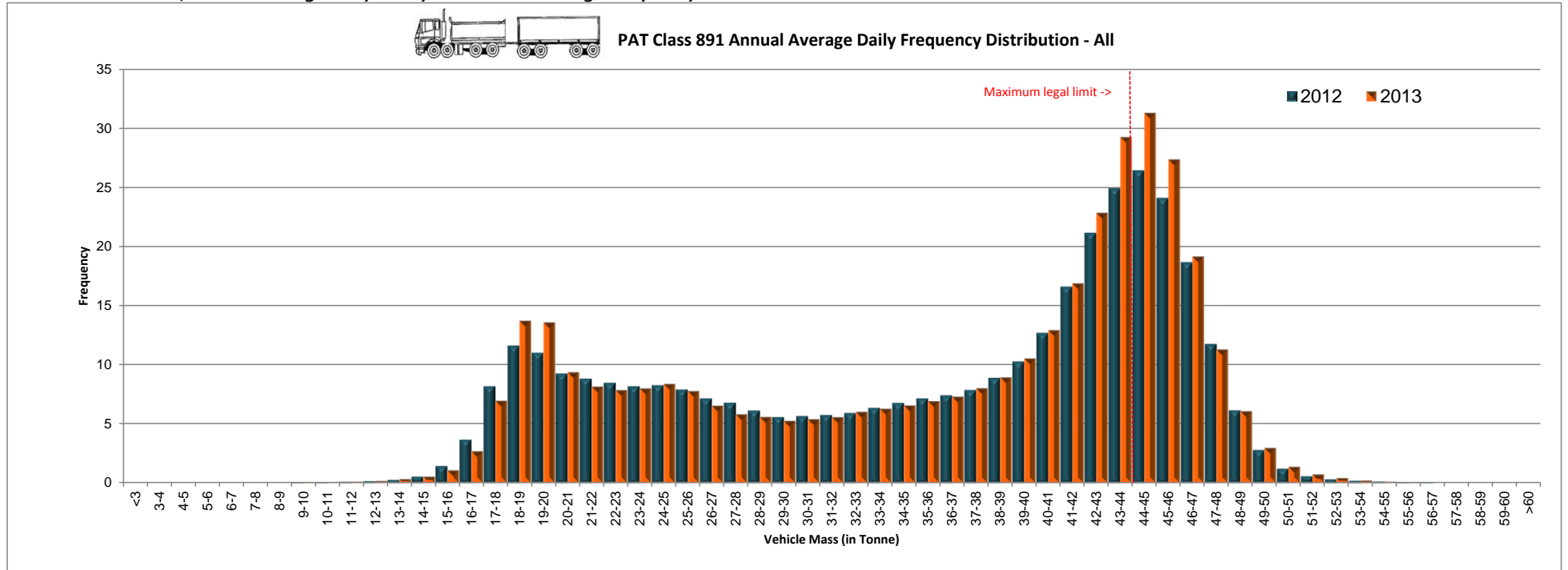
Chart 11.6 | Annual average daily heavy vehicle mass range frequency distribution at the Hamanatua Bridge



Note: Maximum legal limit (VDAM) without HPMV or on overweight permits.

21.0 APPENDIX B – PAT CLASS 891 MASS RANGE FREQUENCY DISTRIBUTION BY WiM SITE CHARTS

Chart 12.0 | Annual average daily heavy vehicle mass range frequency distribution of PAT Class 891 in all WiM sites

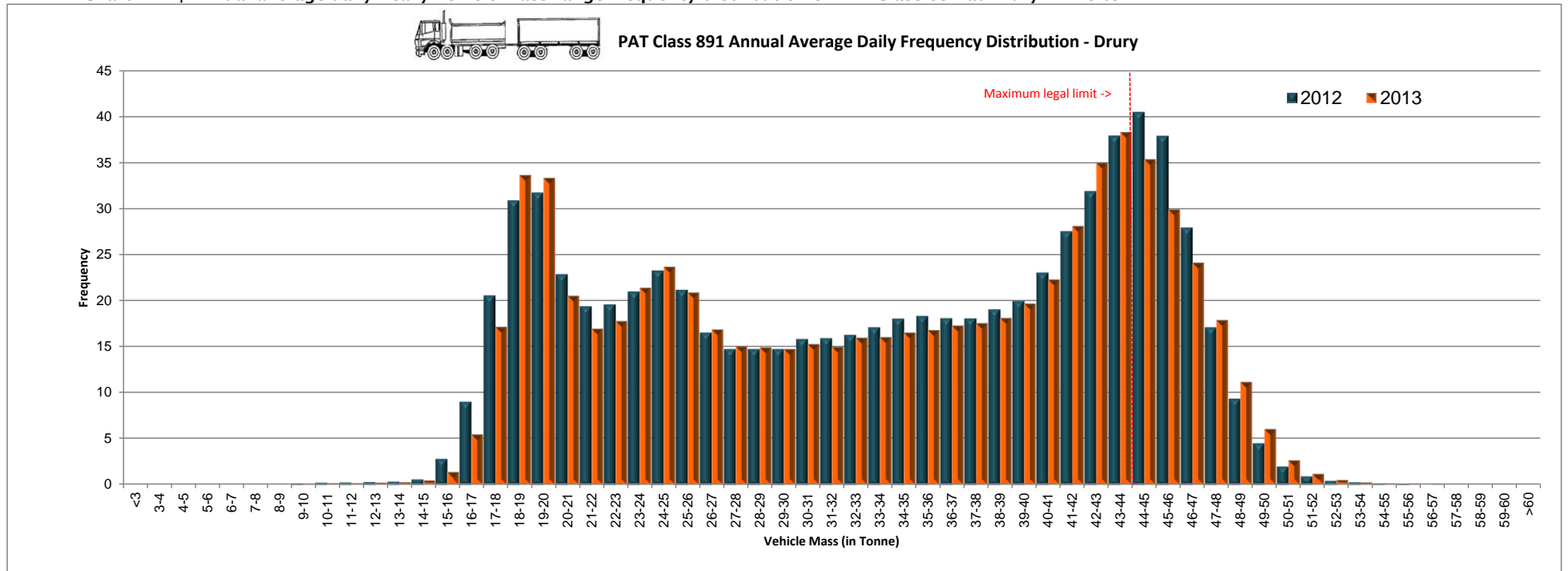


**Interpretation:** PAT class 891 shows increases between the following bands: 15 to 19, 22 to 26, 30 to 32, 45 to 48 and 52 to 59.

**Note:** Maximum legal limit (VDAM) without HPMV or on overweight permits.

21.0 APPENDIX B – PAT CLASS 891 MASS RANGE FREQUENCY DISTRIBUTION BY WiM SITE CHARTS (continued)

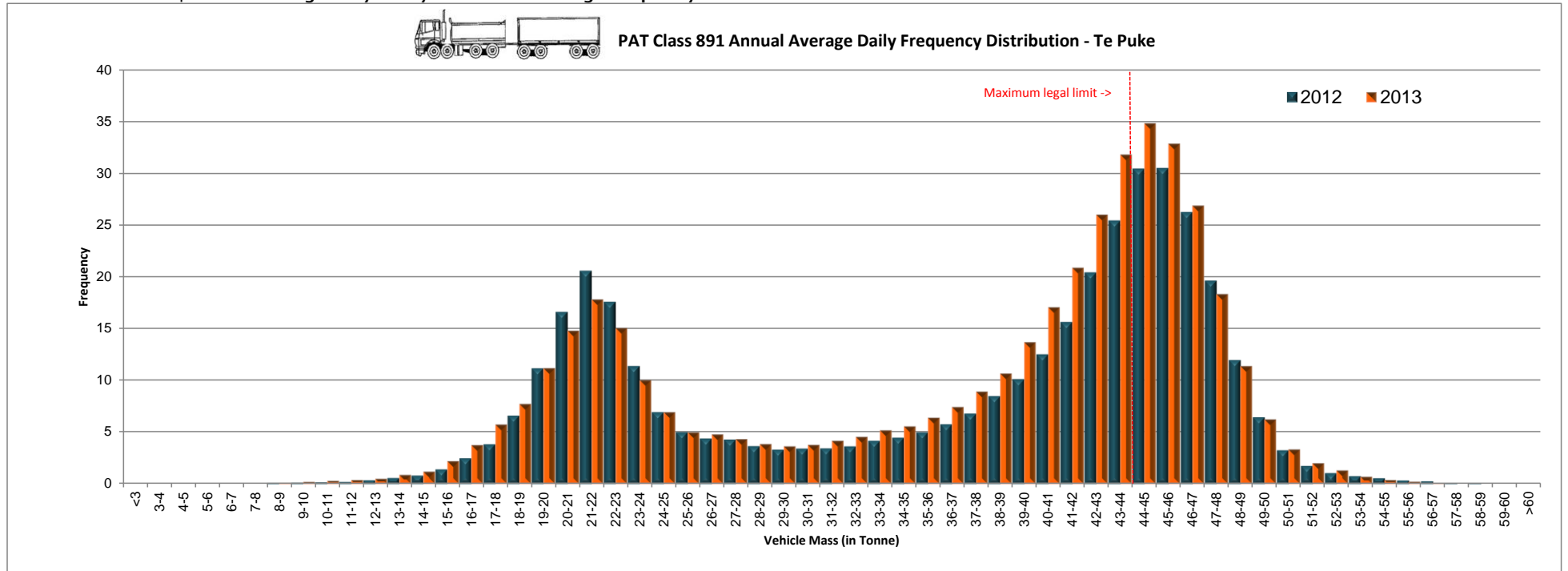
Chart 12.1 | Annual average daily heavy vehicle mass range frequency distribution of PAT Class 891 at Drury WiM site



**Note:** Maximum legal limit (VDAM) without HPMV or on overweight permits.

21.0 APPENDIX B – PAT CLASS 891 MASS RANGE FREQUENCY DISTRIBUTION BY WiM SITE CHARTS (continued)

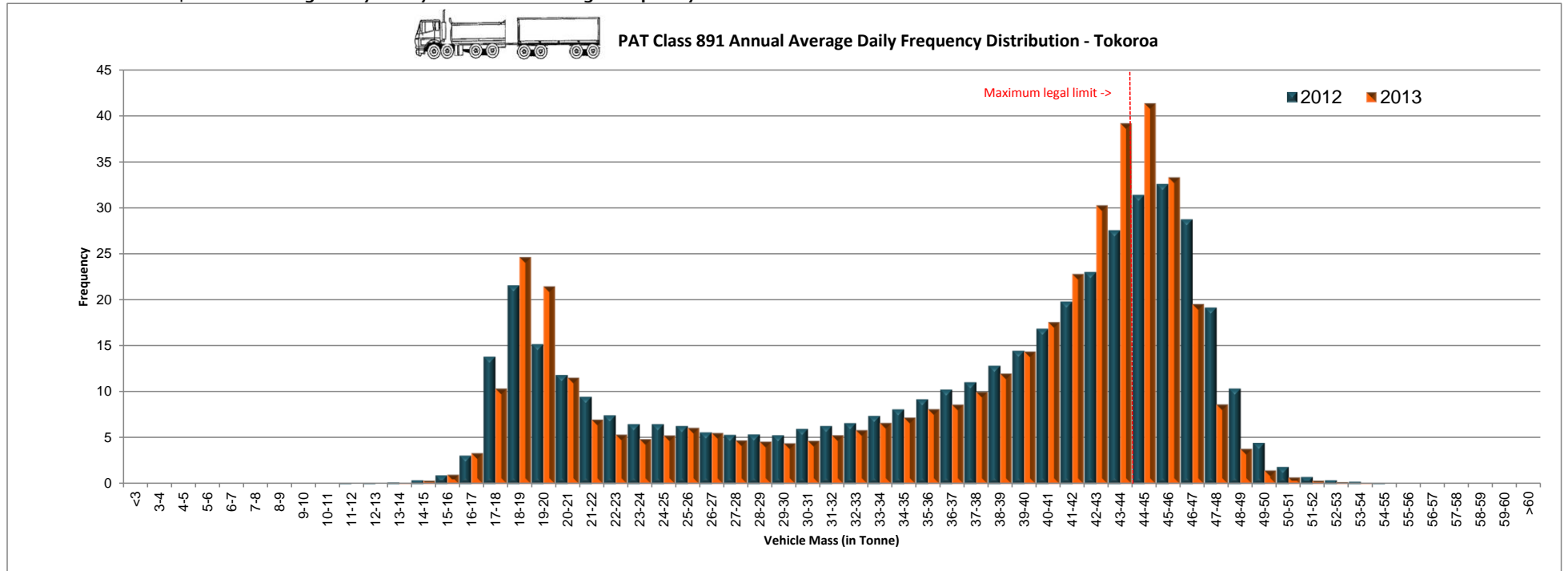
Chart 12.2 | Annual average daily heavy vehicle mass range frequency distribution of PAT Class 891 at Te Puke WiM site



Note: Maximum legal limit (VDAM) without HPMV or on overweight permits.

21.0 APPENDIX B – PAT CLASS 891 MASS FREQUENCY DISTRIBUTION BY WiM SITE CHARTS (continued)

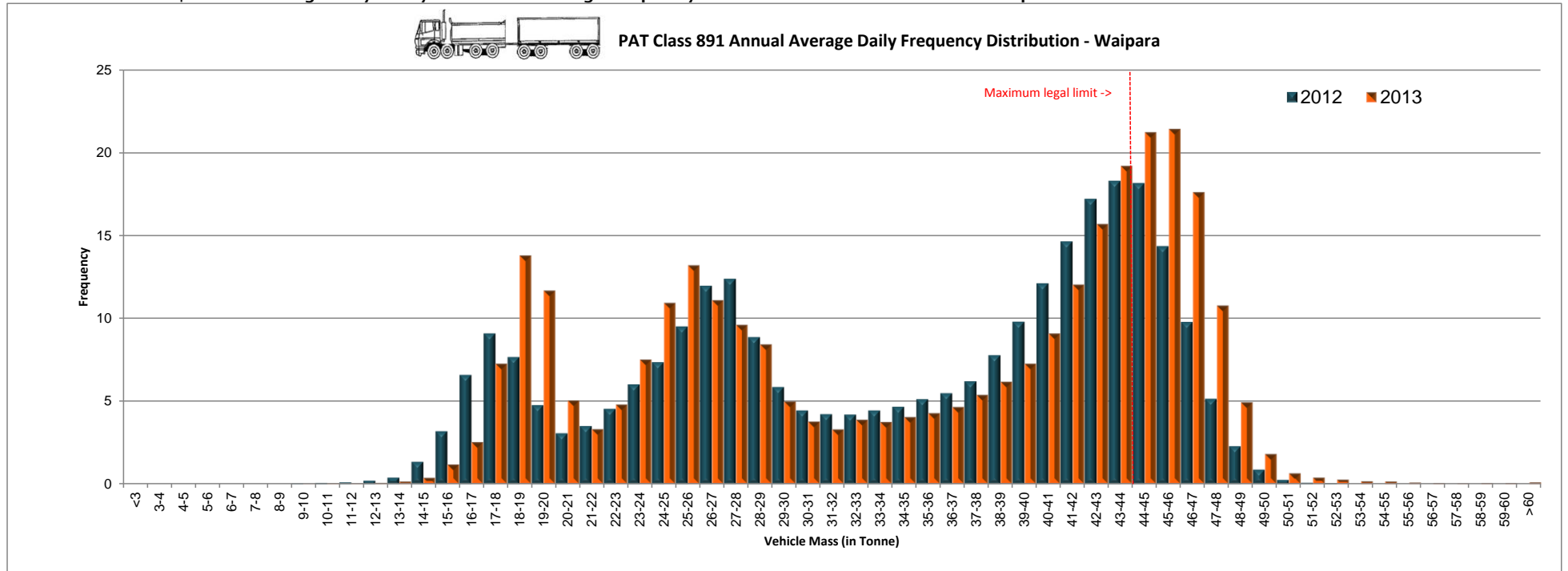
Chart 12.3 | Annual average daily heavy vehicle mass range frequency distribution of PAT Class 891 at Tokoroa WiM site



**Note:** Maximum legal limit (VDAM) without HPMV or on overweight permits.

21.0 APPENDIX B – PAT CLASS 891 MASS FREQUENCY DISTRIBUTION BY WiM SITE CHARTS (continued)

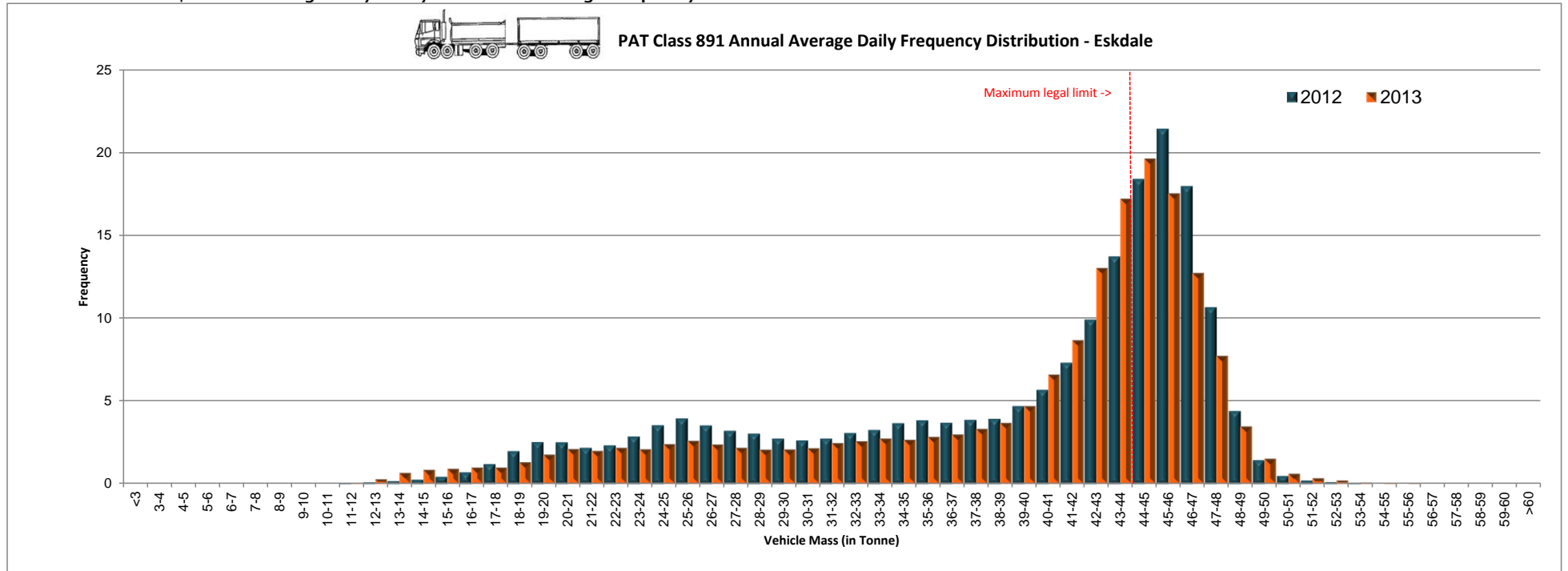
Chart 12.4 | Annual average daily heavy vehicle mass range frequency distribution of PAT Class 891 at Waipara WiM site



**Note:** Maximum legal limit (VDAM) without HPMV or on overweight permits.

21.0 APPENDIX B – PAT CLASS 891 MASS FREQUENCY DISTRIBUTION BY WiM SITE CHARTS (continued)

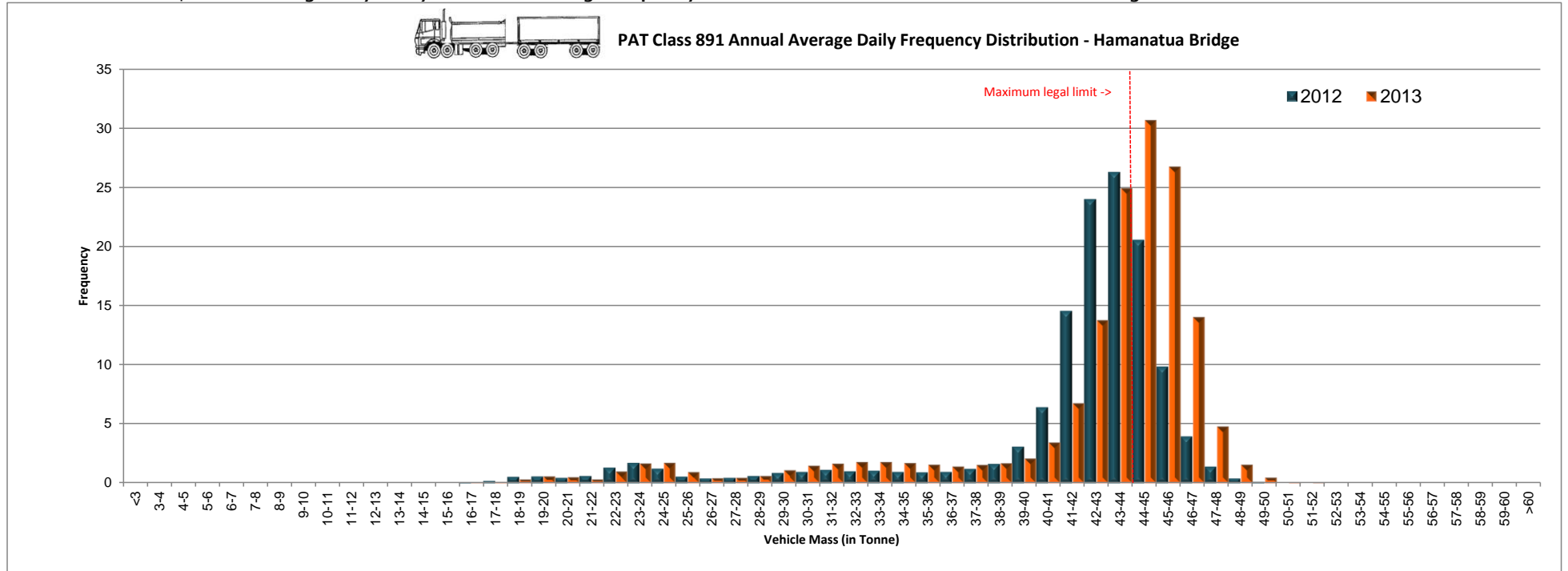
Chart 12.5 | Annual average daily heavy vehicle mass range frequency distribution of PAT Class 891 at Eskdale WiM site



Note: Maximum legal limit (VDAM) without HPMV or on overweight permits.

21.0 APPENDIX B - PAT CLASS 891 MASS FREQUENCY DISTRIBUTION BY WiM SITE CHARTS (continued)

Chart 12.6 | Annual average daily heavy vehicle mass range frequency distribution of PAT Class 891 at Hamanatua Bridge WiM site



Note: Maximum legal limit (VDAM) without HPMV or on overweight permits.



## 22.0 APPENDIX C - VEHICLE FLEET OVERWEIGHT CHARTS

The following charts depict the time of 24-hour distribution of the vehicle fleet deemed overweight at each site.

Chart 13.0 | All WiM sites

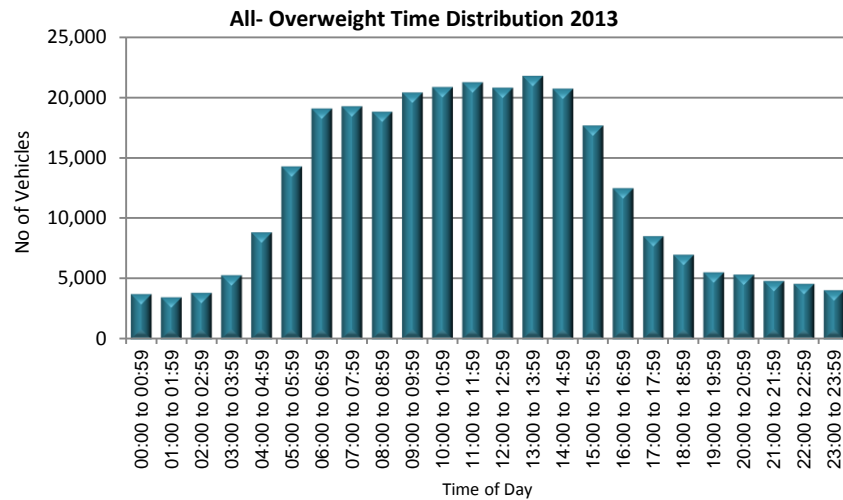


Chart 13.1 | Drury

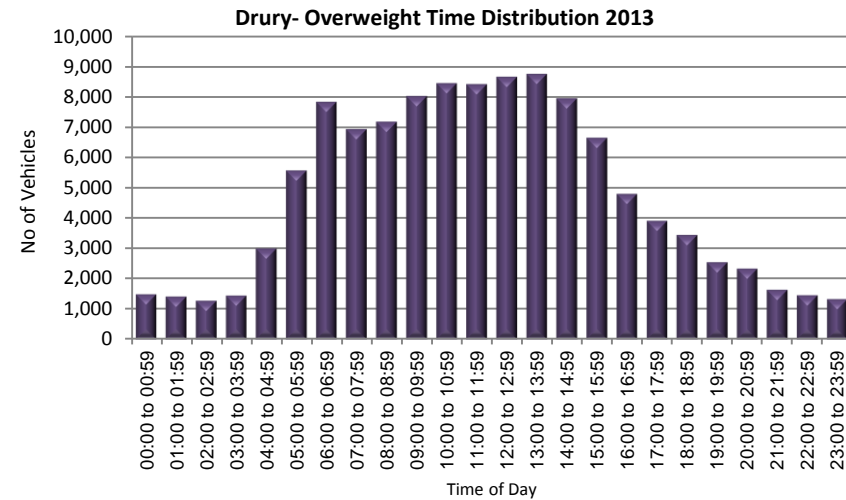


Chart 13.2 | Eskdale

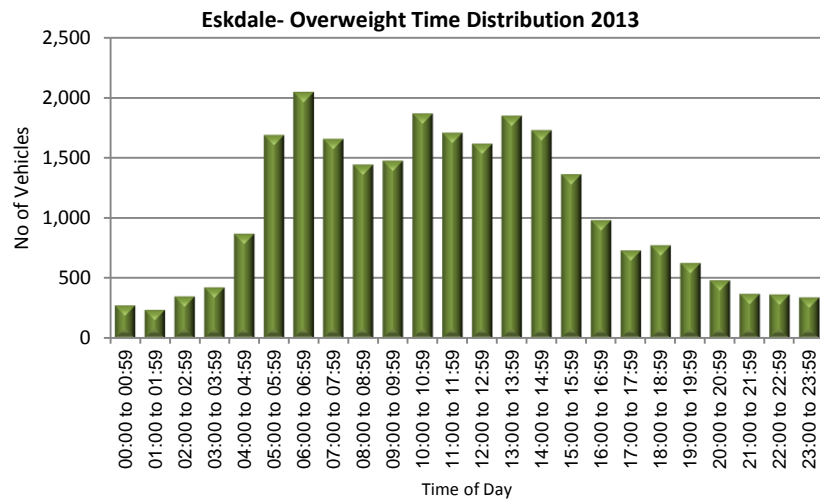
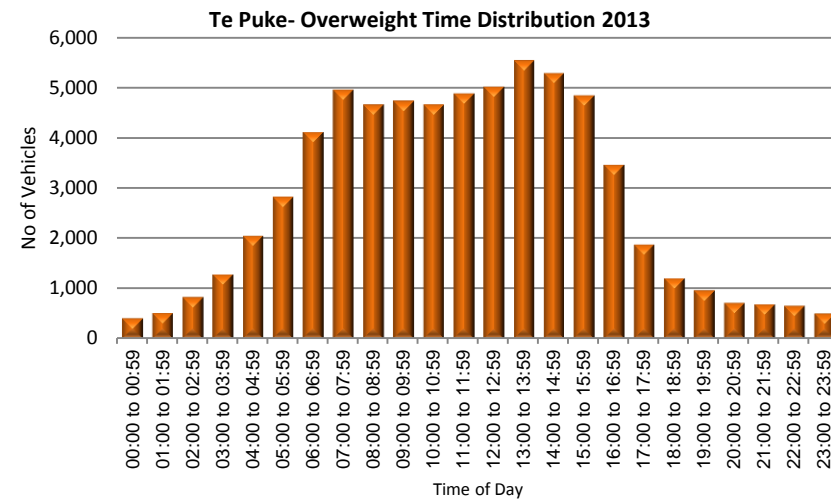


Chart 13.3 | Te Puke



22.0 APPENDIX C - VEHICLE FLEET OVERWEIGHT CHARTS (Continued)

Chart 13.4 | Tokoroa

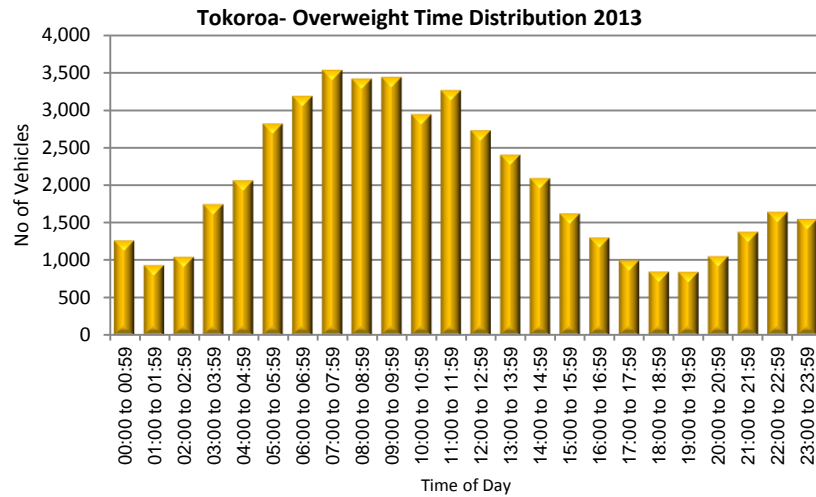


Chart 13.5 | Waipara

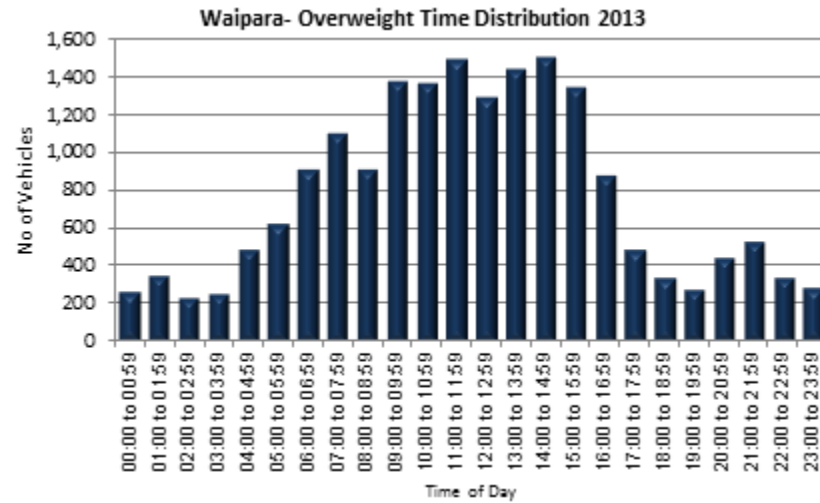
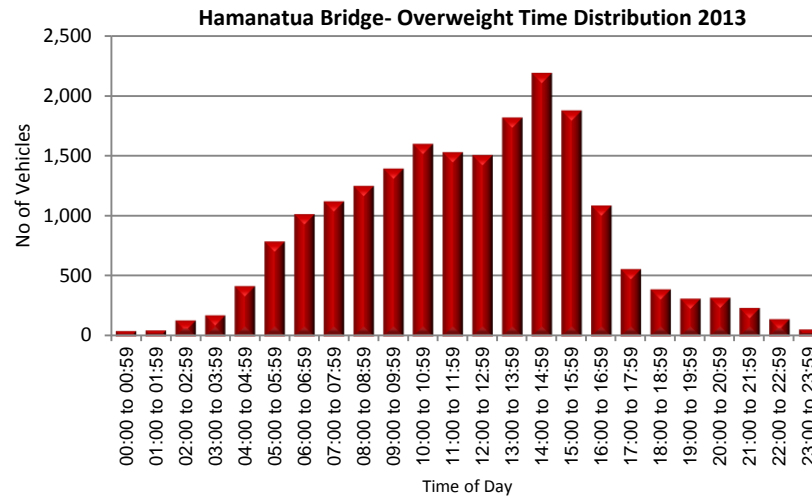
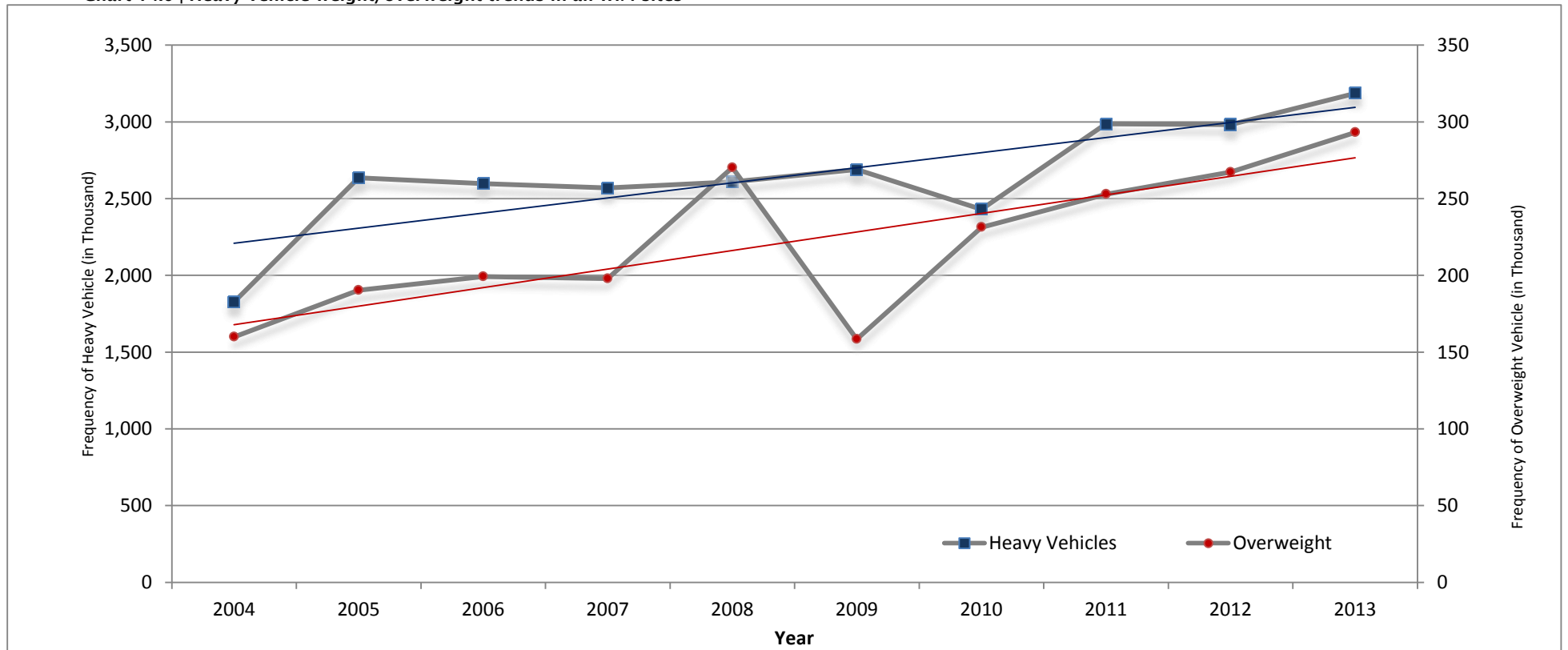


Chart 13.5 | Hamanatua Bridge



23.0 APPENDIX D - HEAVY VEHICLES LOAD/OVERWEIGHT TRENDS

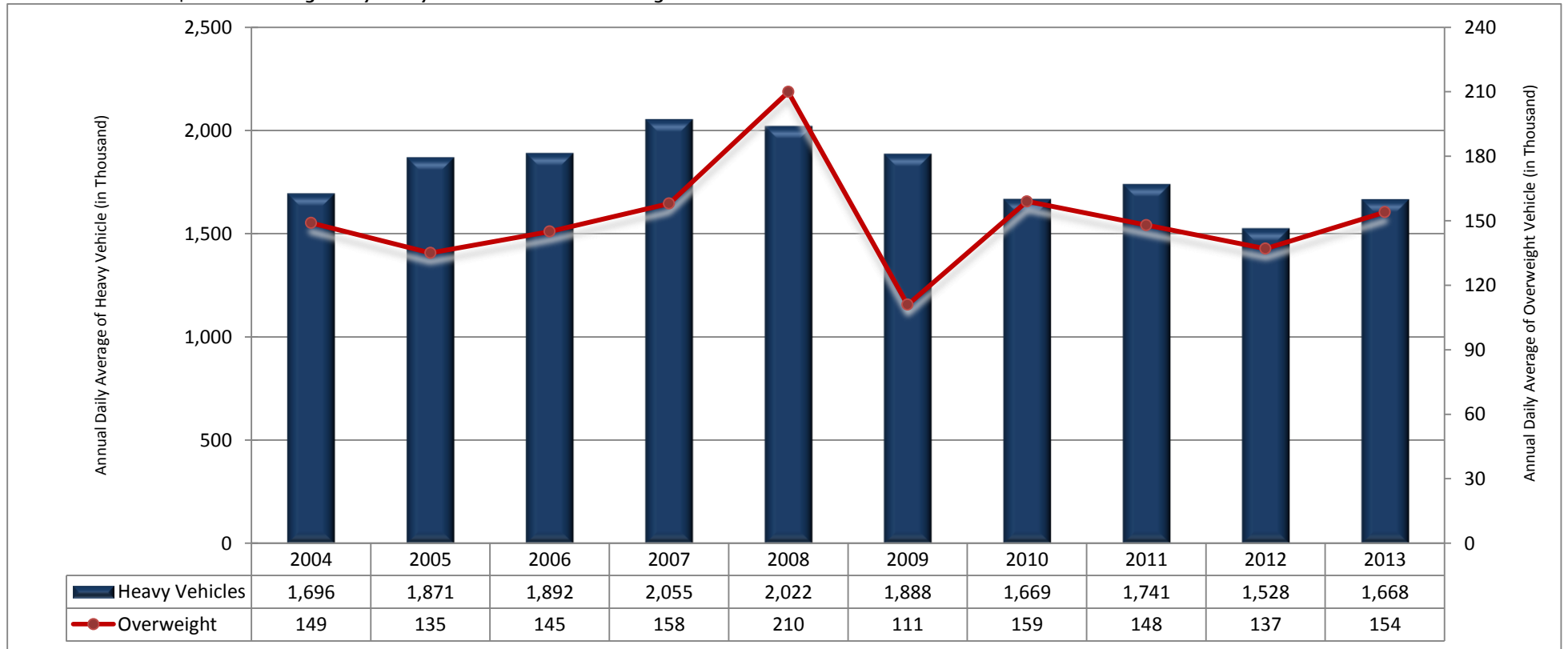
Chart 14.0 | Heavy vehicle weight/overweight trends in all WiM sites



**Interpretation:** In 2013, both heavy and overweight vehicles show increasing trends.

24.0 APPENDIX E – ANNUAL AVERAGE DAILY HEAVY VEHICLES LOAD/OVERWEIGHT TRENDS

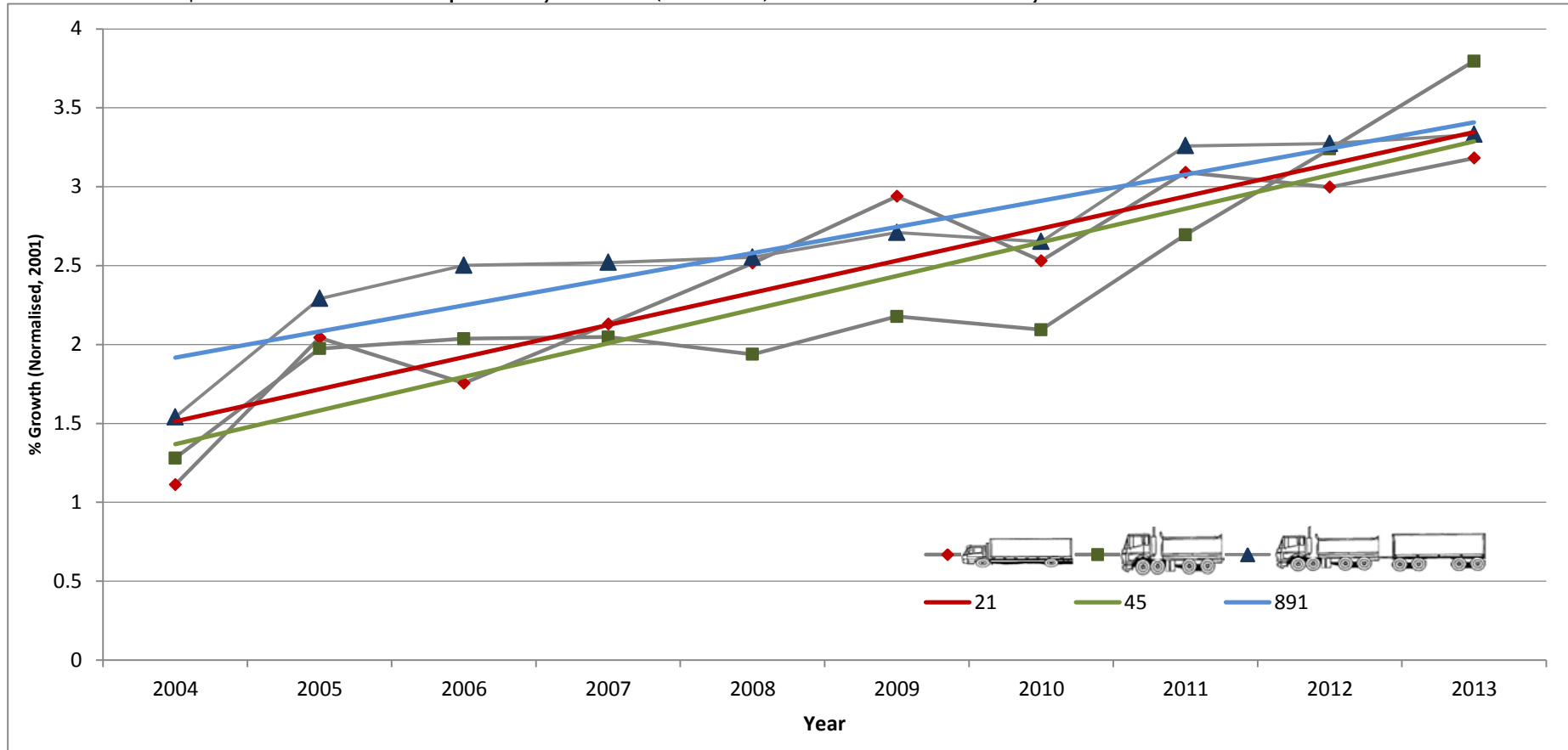
Chart 14.1 | Annual average daily heavy vehicle load and overweight in all WiM sites



**Note:** The average of heavy and overweight vehicles per day across all WiMs site in a given year.

25.0 APPENDIX F - VEHICLE FLEET TRENDS

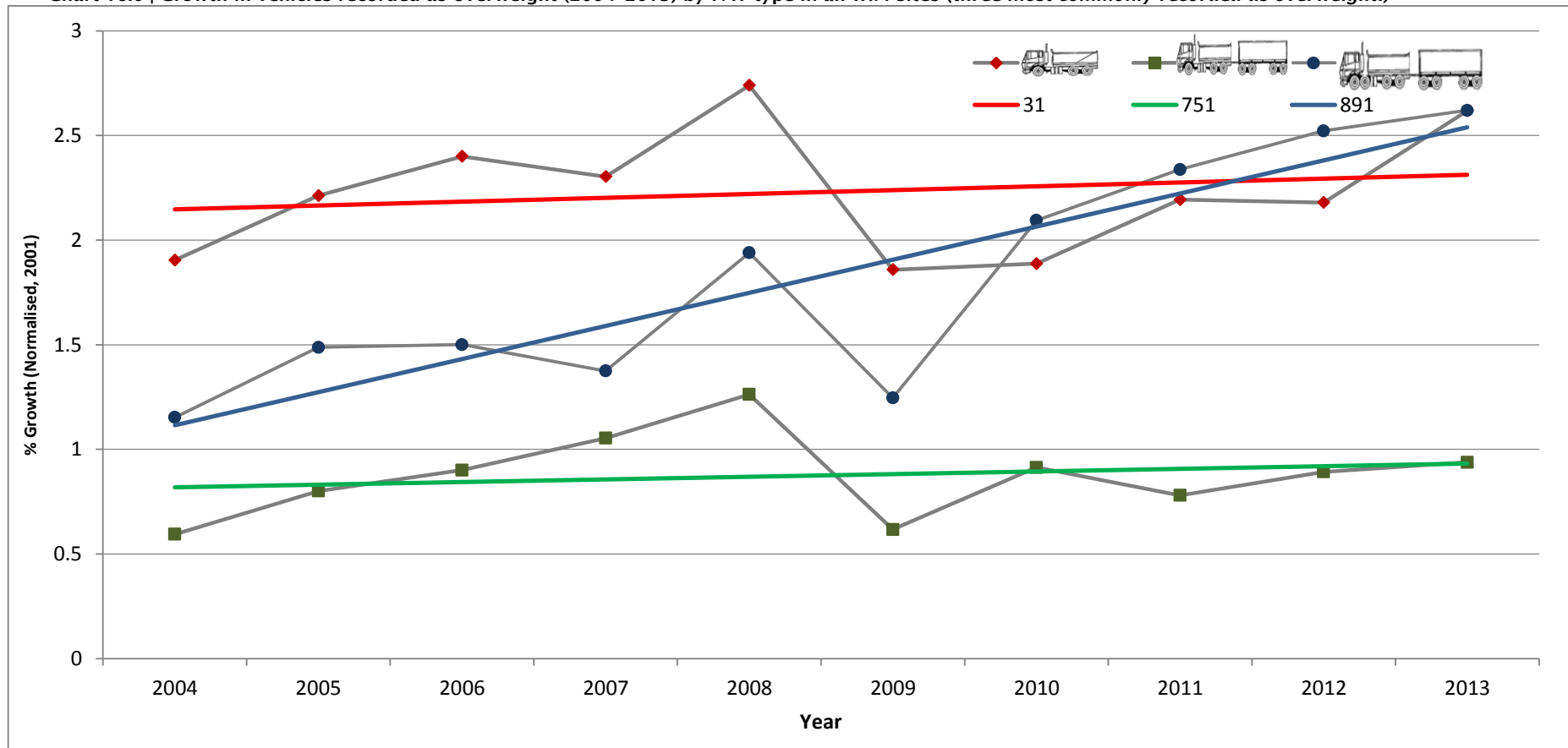
Chart 15.0 | Growth in vehicle fleet frequencies by PAT class (2004-2013) in all WiM sites - trend analysis



**Interpretation:** The three most frequent PAT classes (891, 21, and 45) show an increasing trend in the long term.

26.0 APPENDIX G - VEHICLE FLEET OVERWEIGHT TRENDS

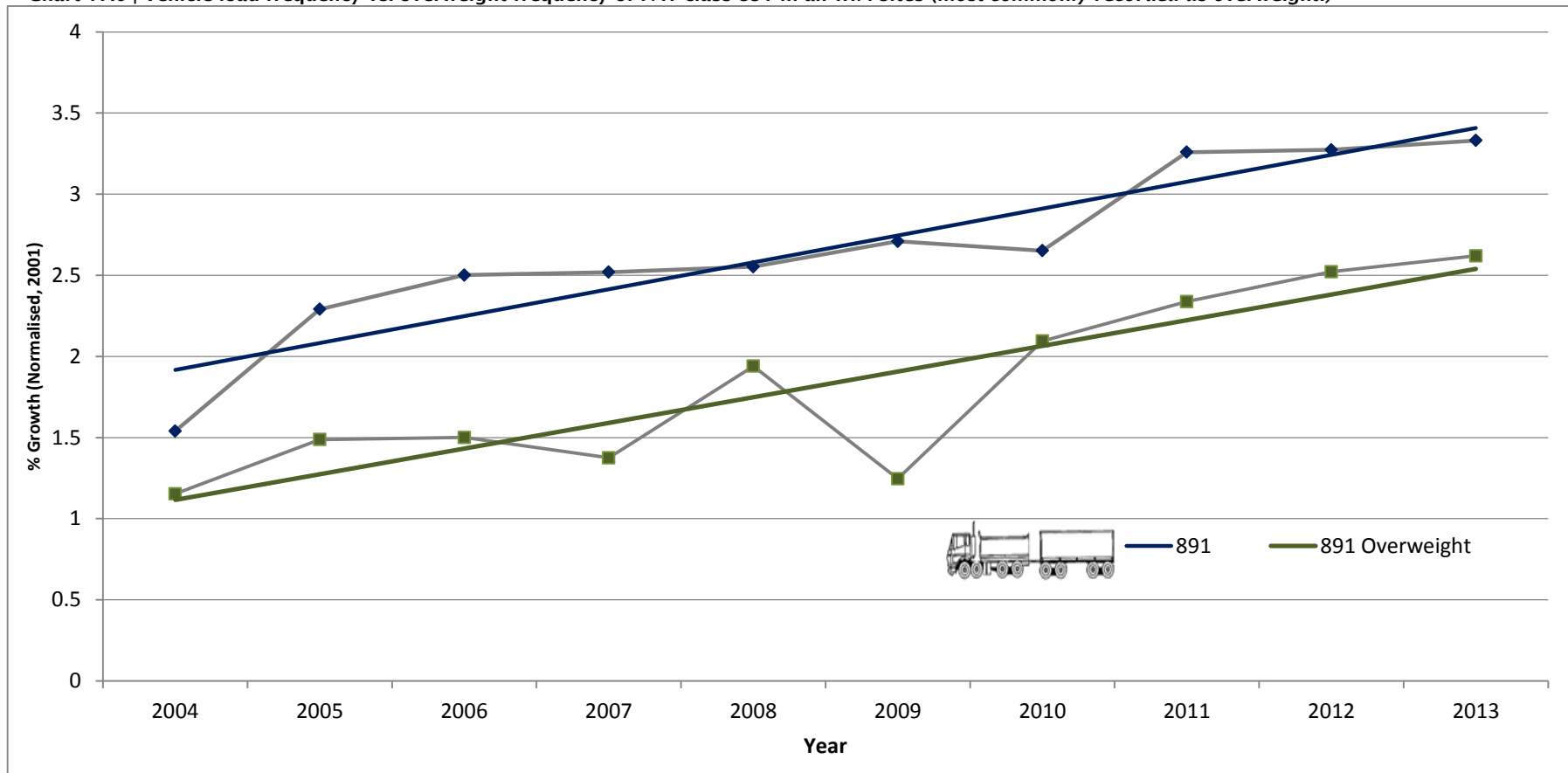
Chart 16.0 | Growth in vehicles recorded as overweight (2004-2013) by PAT type in all WiM sites (*three most commonly recorded as overweight.*)



**Interpretation:** PAT class 891 continues to report an increasing overweight trend while PAT classes 751 and 31 illustrate flat trends.

27.0 APPENDIX H - VEHICLE FLEET FREQUENCY vs OVERWEIGHT CHARTS

Chart 17.0 | Vehicle load frequency vs. overweight frequency of PAT class 891 in all WiM sites (most commonly recorded as overweight.)



**Interpretation:** PAT Class 891 illustrates increasing trends for both heavies and overweight (2004 – 2013).

For more graphs on each PAT class and number of axles, refer to the attached **Weight-in-Motion Dashboard 2013**