NZ TRANSPORT AGENCY
WAKA KOTAHI

Annual weigh-in-motion (WiM) report 2014

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Quality Assurance Statement
Prepared by: Glenn Peoples
Reviewed by: Gerald Wen
Approved for issue by:

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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.

The NZ Transport Agency and its employees or agents involved in preparation of this information cannot accept liability for its contents or for any consequences arising from its use. People using the contents of the report should apply, and rely upon, their own skill and judgement. The contents should not be used in isolation from other sources of advice and information.

Note that in previous annual WiM reports, Hamanatua Bridge was incorrectly spelled in some instances as "Hamamanaua Bridge."

2.0 GLOSSARY

44T	Maximum gross weight allowed for standard vehicles in New Zealand.
50MAX	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.
A Train	A rigid vehicle connected to a semi-trailer that tows a full trailer.
ASTM	American Standard Test Method
AADT	Annual average daily traffic – an estimation of the number of vehicles crossing a site on an average day.
Articulated vehicle	An articulated vehicle has a driver's position, a steering system, motive power and two rigid sections that articulate relative to each other.
B Train	A rigid vehicle attached to two semi-trailers.
Description	The description stated in tables refers to the PAT type illustration by providing indication of the spacing between axles.
ESA	Equivalent Standard Axle
GHVM	Gross heavy vehicle mass
HCV	Heavy commercial vehicle
HPMV	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.
kN	Kilo newton
MCV	Medium commercial vehicle
Overweight vehicle	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
PAT Class	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.
QADT	Quad axle dual tyre
RS	Reference station
Rigid vehicle	A rigid vehicle has two axle sets, a driver's position, a steering system, motive power and a single rigid chassis.
SADT	Single axle dual tyre
SAST	Single axle single tyre
SH	State highway
T&T	Truck and trailer
TADT	Tandem axle dual tyre
TSST	Twin steer single tyre
TRDT	Triple axle dual tyre
Total volume	This indicates the number of heavy vehicles for each PAT class.
VDAM	Vehicle dimension and mass
WiM	Weigh-in-motion system is a device that measures the dynamic axle mass of moving vehicles to estimate the corresponding static axle mass.

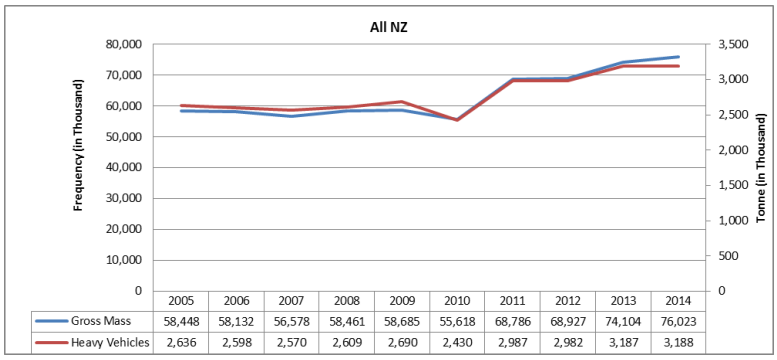
3.0 EXECUTIVE SUMMARY

Key Findings

- The amount of recorded gross mass increased by 3%, while the total number of recorded heavy vehicles remained at almost the same level, compared to last year's data.
- The heavy commercial vehicle II (with five or or more axles in total) taken 82% of all recorded gross mass, and 59% of total number of heavy vehicles recorded. These are slightly higher than last year's 80% and 56%, respectively.
- The heavy vehicles with 8 axles taken both the largest proportion of 43% in all recorded gross mass, and 29% of total number of heavy vehicles recorded, across all axles groups.
- The heavy vehicles with 2 axles taken the second largest proportion of 22% in total number of heavy vehicles recorded, but they only taken 6% of all recorded gross mass.
- The proportion of heavy vehicles with 8 axles is steadily decreasing (33.5%, 31.6% and 29% for the last three years), and the proportion of heavy vehicles with 9 axles (especially PAT class 915) have close to doubled in number since the previous year, This is a desirable outcome which suggests that an increasing number of drivers are moving to HPMV and 50Max vehicles.
- The number of overweight vehicles increased by 21%; while the amount of gross mass of overweight vehicles increased by 22%, compared to the data of 2013. This includes those vehicles that have be permitted to carry weights in excess of the standard weight limits for their class.
- PAT class 891 had the both highest proportion of estimated gross mass recorded (30%) and overweight vehicles (37%)across all PAT classes.

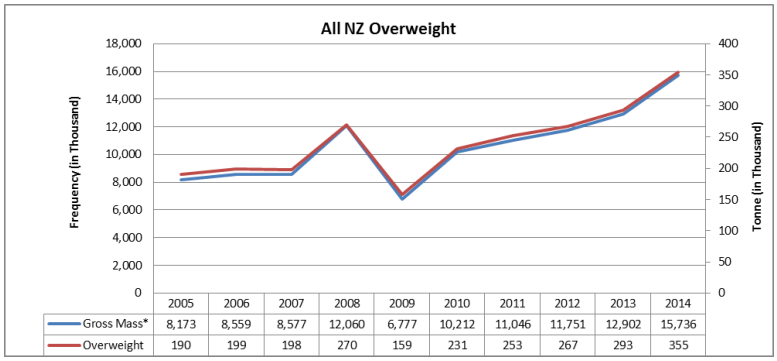
All heavy vehicles (recorded by WiM site with gross mass over 3.5 tonnes) are referred to as *vehicles* or *heavy vehicles* in this report. Those heavy vehicles that exceed specified mass limits by more than one tonne are described as *overweight heavy vehicles* or *overweight vehicles* (this includes permitted overweight vehicles such as 50MAX and HPMVs).

Heavy Vehicle Counts and Gross Mass



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Gross Mass	58,448	58,132	56,578	58,461	58,685	55,618	68,786	68,927	74,104	76,023
Heavy Vehicles	2,636	2,598	2,570	2,609	2,690	2,430	2,987	2,982	3,187	3,188

Overweight Heavy Vehicle Counts and Gross Mass



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Gross Mass*	8,173	8,559	8,577	12,060	6,777	10,212	11,046	11,751	12,902	15,736
Overweight	190	199	198	270	159	231	253	267	293	355

Chart 1 | Vehicle percentage distribution by vehicle type

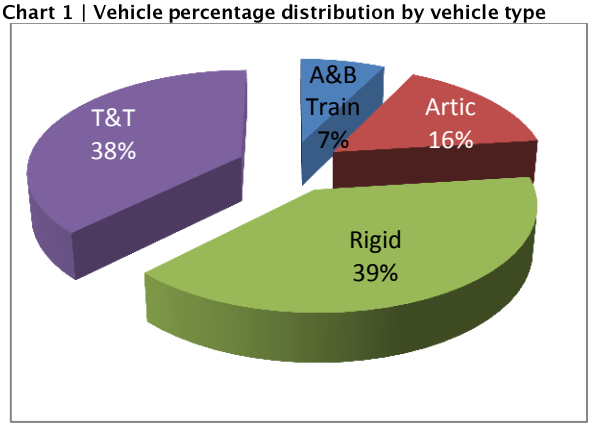


Chart 2 | GHVM percentage distribution by vehicle type

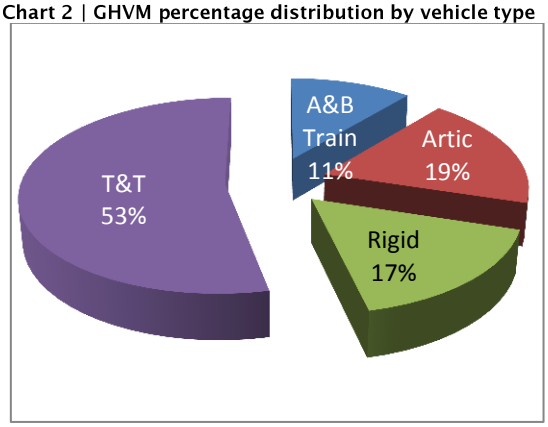


Chart 3 | Overweight percentage distribution by vehicle type

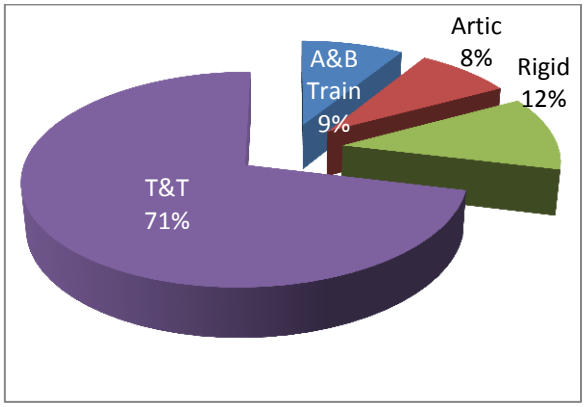


Chart 4 | GHVM percentage distribution of overweight vehicle by vehicle type

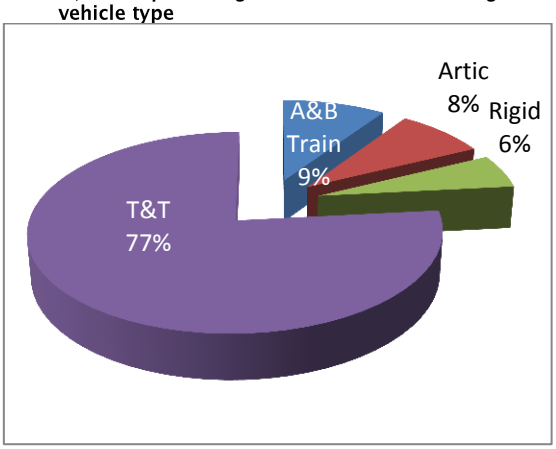


Table 1.0 | Vehicle frequency and estimated GHVM by vehicle type

Vehicle Type	Heavy Vehicles[1]				Overweight Heavy Vehicles[2]				Percentage of Recorded Vehicles Overweight		Estimated Gross Mass per Vehicle	
	Recorded		Gross Mass		Recorded		Gross Mass		Recorded	Gross Mass	Overall	Overweight
	f	*%*[3]	*Tonne*	*%*[3]	*f*	*%*[3]	*Tonne*	*%*[3]	*%*[4]	*%*[4]	*Tonne*	*Tonne*
A&B Train	235,591	*7.4*	8,415,549	*11.1*	31,487	*8.9*	1,490,480	*9.5*	*13.4*	*17.7*	*35.7*	*47.3*
Artic	499,464	*15.7*	*14,193,722*	*18.7*	29,381	*8.3*	1,301,599	*8.3*	*5.9*	*9.2*	*28.4*	*44.3*
Rigid	1,257,297	*39.4*	*12,661,358*	*16.7*	41,140	*11.6*	885,973	*5.6*	*3.3*	*7.0*	*10.1*	*21.5*
T&T	1,195,327	*37.5*	*40,636,256*	*53.5*	252,905	*71.3*	12,058,862	*76.6*	*21.2*	*29.7*	*34.0*	*47.7*
Total	3,187,679	*100.0*	75,906,884	*100.0*	354,913	*100.0*	15,736,913	*100.0*	*11.1*	*20.7*	*23.8*	*44.3*

Note: [1]Total number of vehicles recorded or the estimated gross mass (both vehicle and load mass) during the accepted days of operations.
[2]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.
[3]The proportion of each vehicle type from the given column total. For example, 15.7 percent of the overall total of heavy vehicles recorded were Artic vehicles.
[4]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, 21.2 percent of 1,195,327 T&T Train vehicles were overweight.

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

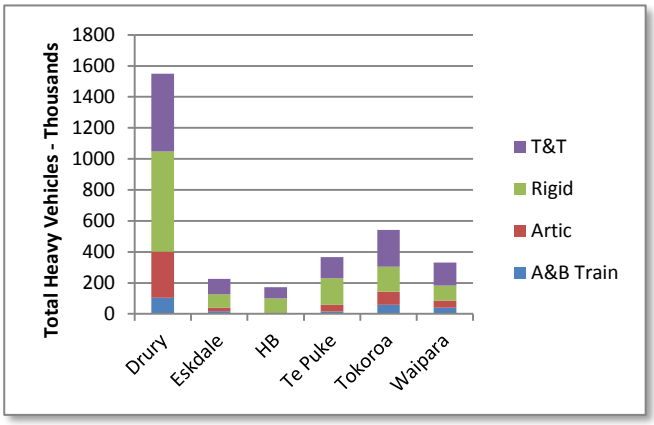


Chart 5.1 | Vehicle per day frequency distribution by vehicle type

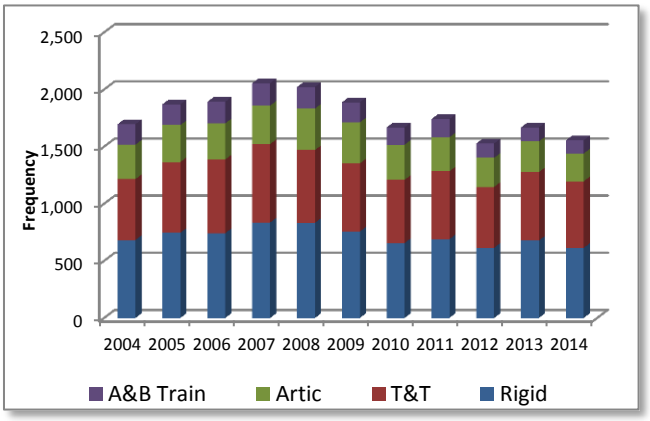
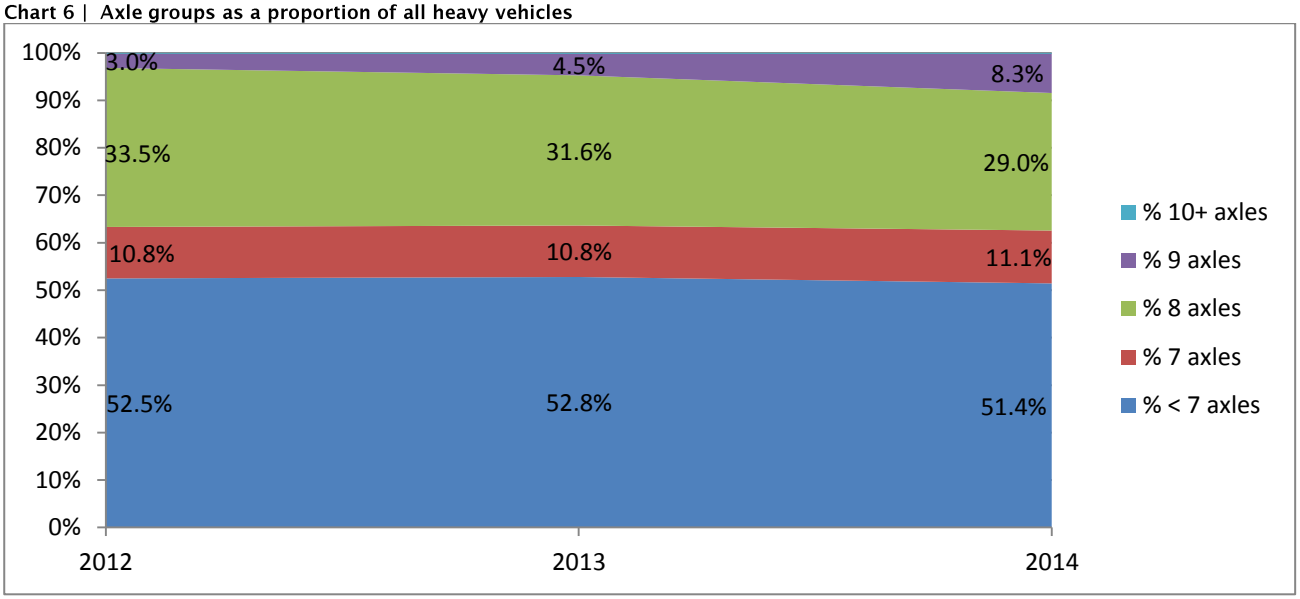


Chart 6 | Axle groups as a proportion of all heavy vehicles



Vehicle fleet

- The total heavy vehicles recorded over all six WiM site during 2014 was just under 3.2 million.
- Rigid and T&T vehicle types continue to have the highest proportion of heavy vehicles recorded across the six WiM sites with 39.4 percent and 37.5 percent, respectively.
- PAT classes 21, 891, 45 and 31*(see Fig. 1)* are reported as having the largest proportion of vehicles. Combined, these classes account for 55.7 percent of the total heavy vehicle fleet (*see Table 7.0).*
- The largest proportion of the estimated GHVM (53.5%) was carried by the T&T vehicle type, followed by Artic (18.7 percent).
- While the proportion of all heavy vehicles that have 8 or more axles is not changing significantly (36.7%, 36.4% and 37.4% for 2012, 2013 and 2014), the makeup of this group is clearly changing (see Chart 6 and Table). The proportion of heavy vehicles with 8 axles is steadily decreasing (33.5%, 31.6% and 29% for the last three years), and the proportion of heavy vehicles with 9 axles is increasing: 3%, 4.5% and 8.3% for the last three years. This suggests that an increasing number of drivers are moving to HPMV vehicles. This is a desirable outcome.
- The overall average estimated GHVM per vehicle is 23.81 tonnes, regardless of vehicle type (*see Table 16.0*). The PAT class with the highest average mass across all sites was class 1032 (a class within A&B Train), with an average mass of 52.5 tonnes.

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

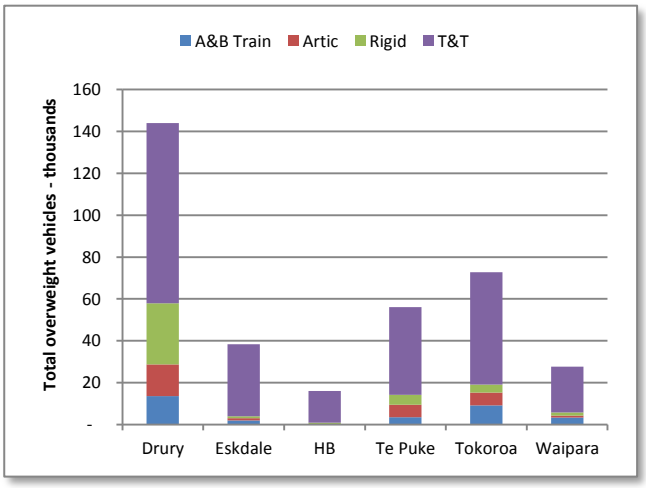
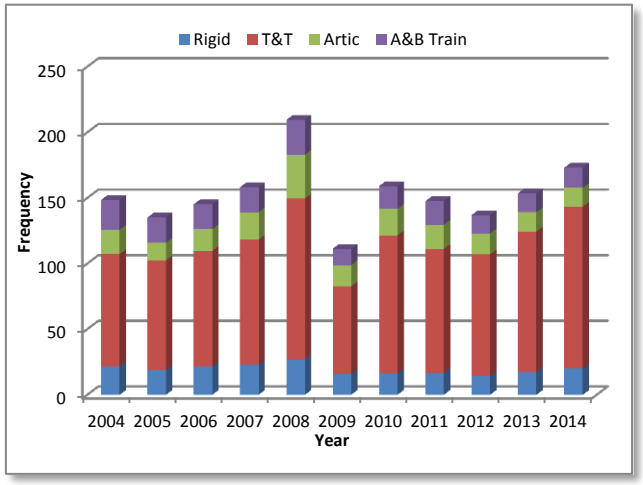


Chart 8 | Overweight vehicle per day frequency distribution by vehicle type



Vehicle fleet overweight

- There were 354,913 vehicles recorded as overweight across WiM sites in 2014. 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 12.3 percent to 173 overweight heavy vehicles per day compared to 154 in 2013. (*Table 11.0*)
- The T&T vehicle type continues to have the highest number of overweight vehicles recorded during 2014 with 71.3 percent of the total overweight vehicles (up from 61.6 in 2013). Of the total number of T&T vehicles recorded, 23.5 percent were overweight, up from 18 percent in 2013.
- The estimated average gross mass for overweight vehicles virtually remained unchanged at 44.3 tonnes (and increase of only 0.3 tonnes from 2013).
- 47.7 tonnes was the estimated average gross mass of overweight T&T vehicles.
- The vehicle classes with the largest proportion of all overweight vehicles were PAT class 891 (36.7 percent), 915 (18.1 percent), 751 (12.9 percent) and 31 (10.3 percent). Combined, these classes account for 78 percent of the total heavy vehicles recorded as overweight. *(Table 10.0)*
- Eskdale WiM site had the highest proportion of overweight vehicles with 16.9 percent and Te Puke WiM site follows with 15.3 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 (2014)

Vehicle Type	WiM Site						Total
	Drury	Eskdale	Hamanatua Bridge	Te Puke	Tokoroa	Waipara	
Number of Heavy vehicles							
A&B Train	105,119	16,697	472	14,679	58,572	40,052	235,591
Artic	297,094	24,486	2,729	43,390	85,712	46,053	499,464
Rigid	645,490	85,715	97,168	172,559	160,182	96,183	1,257,297
T&T	502,087	99,801	71,168	135,985	238,101	148,185	1,195,327
Total	1,549,790	226,699	171,537	366,613	542,567	330,473	3,187,679
Number of Overweight vehicles							
A&B Train	13,528	1,985	42	3,555	9,073	3,304	31,487
Artic	15,243	1,049	109	5,894	6,168	918	29,381
Rigid	29,149	976	704	4,812	3,886	1,613	41,140
T&T	86,011	34,403	15,125	41,879	53,617	21,870	252,905
Total	143,931	38,413	15,980	56,140	72,744	27,705	354,913
Percentage of overweight vehicles (%)							
A&B Train	*12.9*	*11.9*	*8.9*	*24.2*	*15.5*	*8.2*	*13.4*
Artic	*5.1*	*4.3*	*4.0*	*13.6*	*7.2*	*2.8*	*6.0*
Rigid	*4.5*	*1.1*	*0.7*	*2.8*	*2.4*	*1.7*	*3.3*
T&T	*17.1*	*34.5*	*21.3*	*30.8*	*22.5*	*71.6*	*23.5*
Total	*9.3*	*16.9*	*9.3*	*15.3*	*13.4*	*13.9*	*11.6*
Estimated gross mass							
A&B Train	3,674,412	588,824	15,672	515,828	2,187,738	1,433,076	8,415,549
Artic	8,246,814	691,678	62,465	1,247,668	2,582,551	1,362,547	14,193,722
Rigid	6,055,591	991,716	1,235,880	1,827,296	1,645,330	905,547	12,661,358
T&T	16,014,132	3,790,189	2,824,258	4,818,935	8,397,858	4,790,886	40,636,256
Total	33,990,948	6,062,406	4,138,275	8,409,726	14,813,477	8,492,055	75,906,884
Estimated overweight vehicles gross mass							
A&B Train	638,920	94,015	1,935	172,440	428,306	154,865	1,490,480
Artic	668,235	47,321	4,905	262,767	277,530	40,842	1,301,599
Rigid	629,508	20,608	14,395	103,972	83,195	34,296	885,973
T&T	4,105,346	1,637,945	698,135	2,040,741	2,543,170	1,033,527	12,058,862
Total	6,042,008	1,799,888	719,369	2,579,919	3,332,200	1,263,530	15,736,913
Estimated Gross Mass per vehicle (tonne)							
A&B Train	*35.0*	*35.3*	*33.2*	*35.1*	*37.4*	*35.8*	*35.7*
Artic	*27.8*	*28.2*	*22.9*	*28.8*	*30.1*	*29.6*	*28.4*
Rigid	*9.4*	*11.6*	*12.7*	*10.6*	*10.3*	*9.4*	*10.1*
T&T	*31.9*	*38.0*	*39.7*	*35.4*	*35.3*	*32.3*	*34.0*
Total	*21.9*	*26.7*	*24.1*	*22.9*	*27.3*	*25.7*	*23.8*
Estimated overweight vehicles gross mass per vehicle (tonne)							
A&B Train	*47.2*	*47.4*	*46.1*	*48.5*	*47.2*	*46.9*	*47.3*
Artic	*43.8*	*45.1*	*45.0*	*44.6*	*45.0*	*44.5*	*44.3*
Rigid	*21.6*	*21.1*	*20.4*	*21.6*	*21.4*	*21.3*	*21.5*
T&T	*47.7*	*47.6*	*46.2*	*48.7*	*47.4*	*47.3*	*47.7*
Total	*42.0*	*46.9*	*45.0*	*46.0*	*45.8*	*45.6*	*44.3*

Interpretation:

- Across all WiM sites there were 11.6 overweight vehicles for every 100 heavy vehicles. This is greater than last year (9 per 100).
- However, this upward movement is being driven by T&T vehicles. T&T vehicles are considerably over-represented among overweight (i.e. con-compliant) vehicles. While 11.6 percent of all heavy vehicles were overweight, 23.5 percent of all T&T vehicles (across all sites) were overweight. 37 percent (1,195,327 out of 3,187,679) of heavy vehicles across all sites were T&T vehicles. However, 71% percent of all overweight vehicles (252,905 out of 354,913) were T&T vehicles.
- The Drury and Hamanatua sites had the lowest proportion of overweight vehicles with just over 9 overweight vehicles per 100 heavy vehicles while Eskdale site had the highest with 16.9 overweight vehicles per 100. Drury also had the lowest estimated gross mass per overweight vehicle with 42 tonnes.
- A&B vehicle type at the Te Puke WiM site showed the highest estimated gross mass for an overweight vehicle with 48.7 tonnes.

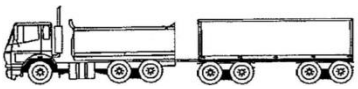
Fig. 1 | PAT type 21, 31, 891, 751, 851 and 915

PAT type 21:

PAT type 31:

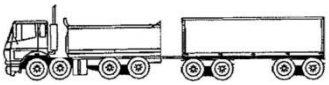
PAT type 45:

PAT type 751:



PAT type 851:

PAT type 891:



PAT type 915

Vehicle fleet > 44T/50T

- PAT class 891, 751 and 851 *(see tables 13.0 and 13.1)* represent the PAT class with highest frequencies of heavy vehicles recorded with >44T. (Combined, they account for over 75 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 87 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	15:59
Eskdale	4:00	15:59
Hamanatua Bridge	6:00	16:59
Te Puke	5:00	16:59
Tokoroa	5:00	14:59
Waipara	6:00	16:59

- Eskdale began to peak earliest, as early as four in the morning. (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 2014. 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 2014 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.

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

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

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.

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: ± 10%

Axle group load: ± 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 astrucks bouncing onto scales will affect accuracy.
- truck driver behavior
- strong winds

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.

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/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.

10.0 CLASSIFICATION SCHEME

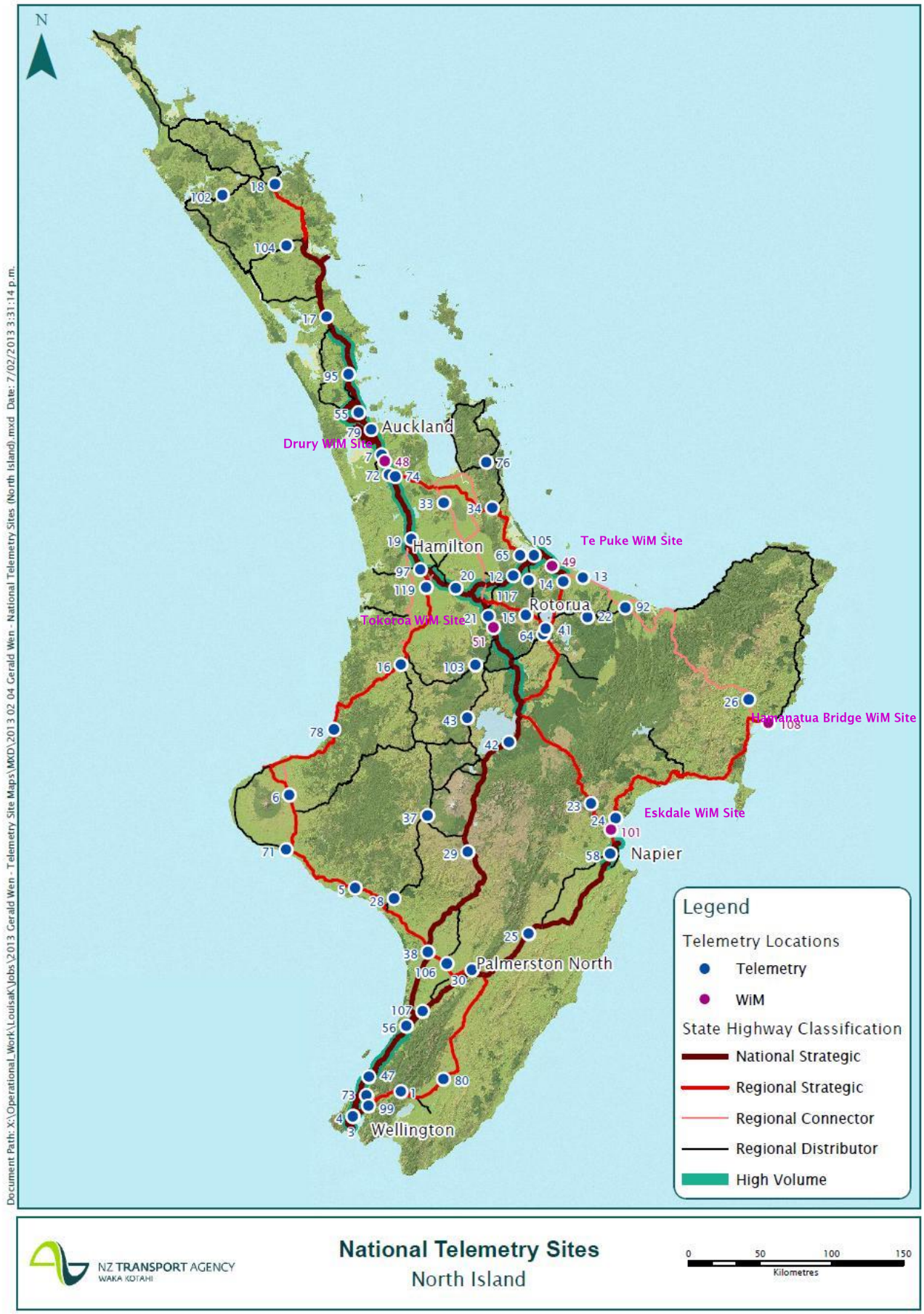
Table 5.0 | Heavy vehicle classification 2011 scheme

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 1criterion
	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
HCV1	Rigid	45	oo--oo (heavy truck)	4	2	26	
		47	o--ooo (heavy truck)	4	2	24	4,5 axles, 2 groups
		511	oo--ooo (heavy truck)	5	2	28	
	Artic	30	o--o-----o (artic e.g. bread truck)	3	3	26	3 ax, AS 1,2 criteria
		41	o--o--oo (artic A112)	4	3	29	4 ax, AS 1,2,3 criteria
		42	o--oo--o (artic A121)	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[1]	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[2]	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[2]	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

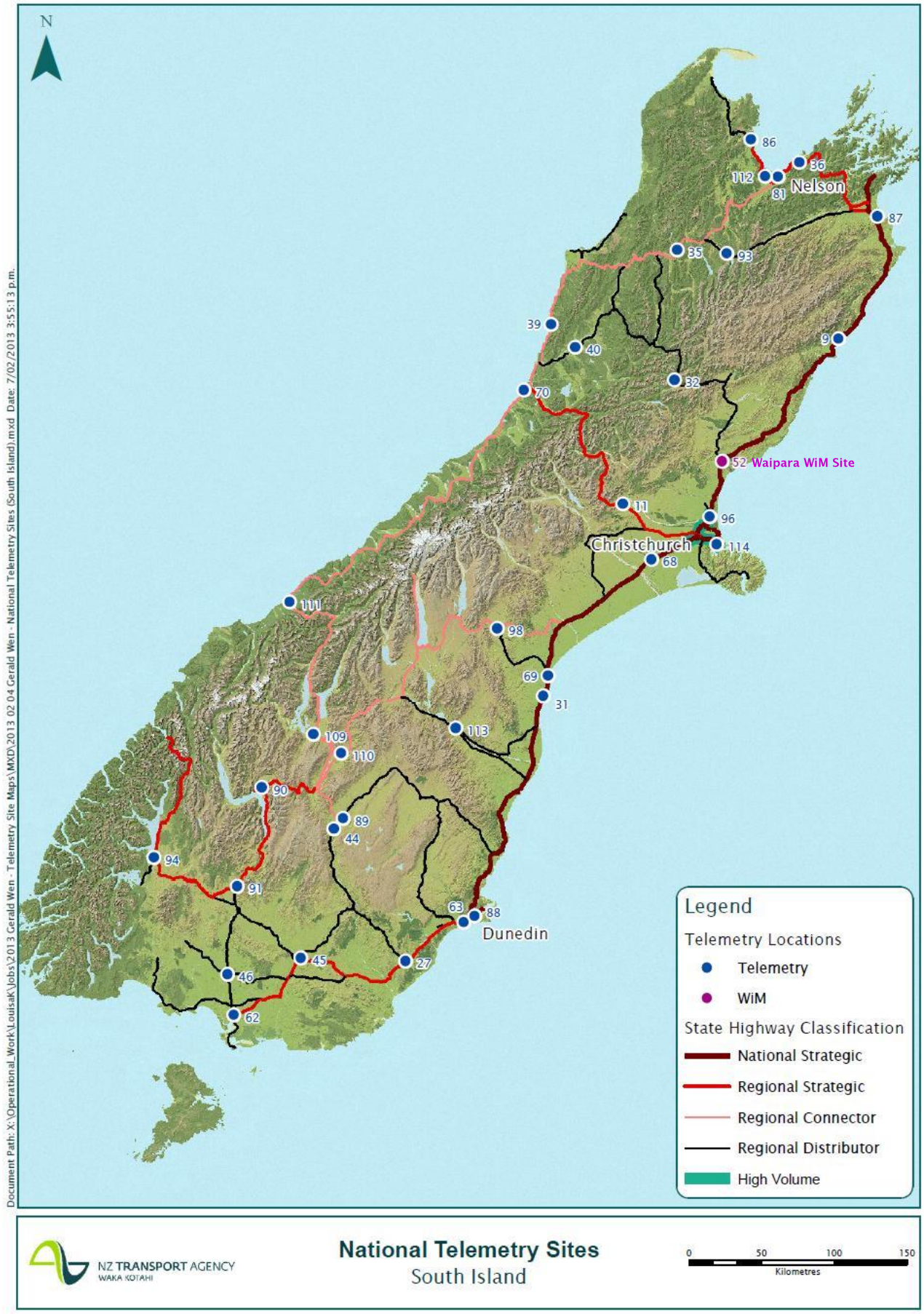
Symbol: - decreased in new maximum limit
- increased in new maximum limit

Note: [1]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.
[2]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 2014	Number of heavies per day	% Heavy[1]
1205	1N	DRURY –Telemetry Site 48	44,738	4,921	*11.0*
5721	5	ESKDALE – Telemetry Site 101	3,758	665	*17.7*
6281	35	HAMANATUA BRIDGE – Telemetry Site 108	4,543	536	*11.8*
421	1N	TOKOROA – Telemetry Site 51	8,864	1,578	*17.8*
24	2	TE PUKE – Telemetry Site 49	18,714	2,021	*10.8*
518	1S	WAIPARA – Telemetry Site 52	8,152	1,247	*15.3*

[1]% Heavy – is the estimate of the proportion of the heavy vehicles per day over AADT.

Source: State Highway Traffic Data Booklet 2009-2014, published in March 2015

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

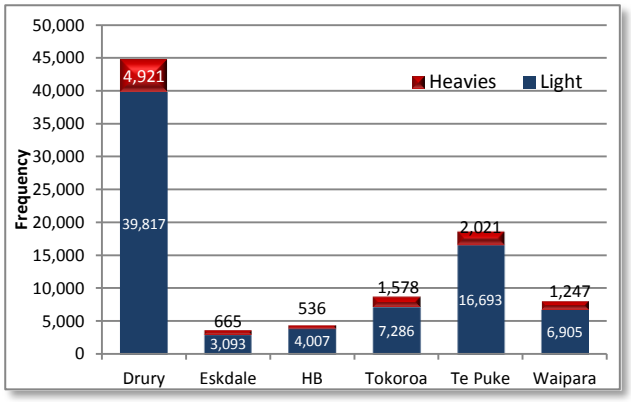
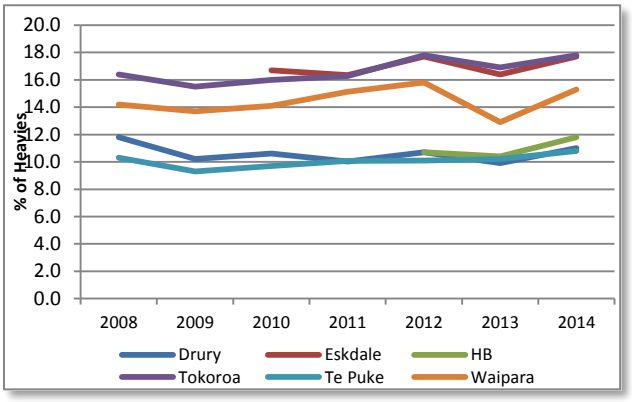


Chart 10 | Heavy vehicles proportion from AADT



13.0 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 7.0 | 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	%
				Total Volume	%	Total Volume	%	Total Volume	%	Total Volume	%	Total Volume	%	Total Volume	%		
Rigid	Bus & MCV	20	o--o (short truck or bus)	69,925	4.5	9,439	1.7	13,255	3.6	5,879	1.8	4,625	2.0	11,209	6.5	114,332	3.6
		21	o----o(truck or bus)	328,485	21.2	80,367	14.8	81,984	22.4	55,881	16.9	30,854	13.6	22,047	12.9	599,618	18.8
	Bus & HCV 1	31	o--oo (truck or bus/coach)	161,699	10.4	31,539	5.8	29,464	8.0	16,548	5.0	10,960	4.8	6,403	3.7	256,613	8.1
		34	oo--o (twin steer truck)	215	0.0	157	0.0	104	0.0	106	0.0	331	0.1	32	0.0	945	0.0
		301	o--oo (tractor without semi-trailer)	1,640	0.1	317	0.1	312	0.1	305	0.1	87	0.0	50	0.0	2,711	0.1
	HCV 1	45	oo--oo (heavy truck)	82,524	5.3	38,236	7.0	47,266	12.9	17,321	5.2	38,813	17.1	57,421	33.5	281,581	8.8
		47	o--ooo (heavy truck)	82	0.0	13	0.0	13	0.0	100	0.0	25	0.0	2	0.0	235	0.0
		511	oo--ooo (heavy truck)	920	0.1	114	0.0	161	0.0	43	0.0	20	0.0	4	0.0	1,262	0.0
T&T	Bus & MCV	300	o--o--o(truck towing light trailer)	22,591	1.5	3,337	0.6	3,400	0.9	4,386	1.3	1,683	0.7	883	0.5	36,280	1.1
		401	o--o--oo(truck tow light 2 ax trailer)	15,820	1.0	5,277	1.0	4,338	1.2	6,629	2.0	2,696	1.2	1,567	0.9	36,327	1.1
	Bus & HCV 1	44	oo--o---o (twin steer tow 1 ax trailer)	18	0.0	29	0.0	4	0.0	5	0.0	9	0.0	7	0.0	72	0.0
		402	o--oo---o(truck tow light 1 ax trailer)	3,951	0.3	1,379	0.3	708	0.2	1,079	0.3	360	0.2	97	0.1	7,574	0.2
	HCV 2	52	o--oo-o--o T&T	4,300	0.3	615	0.1	490	0.1	523	0.2	327	0.1	696	0.4	6,951	0.2
		61	o-o--o-o--oo T & T	7	0.0	4	0.0	-	-	1	0.0	-	-	-	-	12	0.0

		62	o--oo--o-o-o (T+T)	1,336	0.1	1,133	0.2	405	0.1	627	0.2	624	0.3	318	0.2	4,443	0.1
		63	o--oo-o--oo T & T	12,617	0.8	2,374	0.4	1,532	0.4	1,291	0.4	340	0.1	619	0.4	18,773	0.6
		66	oo--oo--o--o (T+T)	1,423	0.1	344	0.1	325	0.1	381	0.1	353	0.2	56	0.0	2,882	0.1
		77	oo--oo--o-oo (T+T)	15,322	1.0	5,698	1.1	3,505	1.0	3,340	1.0	4,500	2.0	4,314	2.5	36,679	1.2
		503	o--oo--oo (truck tow light trailer)	184	0.0	169	0.0	27	0.0	353	0.1	72	0.0	5	0.0	810	0.0
		751	o-oo--oo--oo B-train or T&T	140,066	9.0	29,507	5.4	25,809	7.0	11,940	3.6	11,766	5.2	5,412	3.2	224,500	7.0
		771	oo--o--oo--oo (T+T)	-	-	40	0.0	100	0.0	-	-	5	0.0	-	-	145	0.0
		891	oo--oo-oo--ooT&T	213,309	13.8	144,654	26.7	73,227	20.0	91,987	27.8	59,313	26.2	55,526	32.4	638,016	20.0
		914	oo-oo--ooo-ooT&T	829	0.1	667	0.1	247	0.1	921	0.3	412	0.2	8	0.0	3,084	0.1
		915	oo-oo--oo-ooo T&T	68,114	4.4	42,252	7.8	19,104	5.2	24,223	7.3	17,236	7.6	1,659	1.0	172,588	5.4
		1020	oo-oo-ooo-ooo B Train	2,200	0.1	622	0.1	2,764	0.8	499	0.2	105	0.0	1	0.0	6,191	0.2
Artic	HCV 1	30	o--o-----o(artic e.g. bread truck)	2,744	0.2	767	0.1	397	0.1	671	0.2	236	0.1	30	0.0	4,845	0.2
		41	o--o--oo (artic A112)	14,808	1.0	3,951	0.7	1,397	0.4	1,956	0.6	1,896	0.8	263	0.2	24,271	0.8
		42	o--oo--o (artic A121)	121	0.0	39	0.0	16	0.0	19	0.0	13	0.0	3	0.0	211	0.0
	HCV 2	53	o-oo--oo T&T	27,936	1.8	4,351	0.8	2,146	0.6	3,279	1.0	1,713	0.8	1,142	0.7	40,567	1.3
		57	o--o-----ooo (artic)	2,355	0.2	1,308	0.2	252	0.1	336	0.1	802	0.4	21	0.0	5,074	0.2
		68	oo--oo--oo T & T	16,507	1.1	8,821	1.6	814	0.2	3,734	1.1	1,093	0.5	205	0.1	31,174	1.0
		69	o-oo--ooo	105,729	6.8	20,874	3.8	19,707	5.4	10,439	3.2	4,280	1.9	769	0.4	161,798	5.1
		713	oo-oo--ooo Tri Artic	14,142	0.9	4,542	0.8	2,314	0.6	1,547	0.5	1,476	0.7	4	0.0	24,025	0.8
		747	o--ooo---ooo Tri Artic	71	0.0	31	0.0	-	-	18	0.0	15	0.0	-	-	135	0.0
		791	o-oo-oooo Quad Artic	38,452	2.5	14,537	2.7	3,229	0.9	10,879	3.3	2,090	0.9	270	0.2	69,457	2.2
		826	oo-oo--oooo Quad Artic	73,467	4.7	26,455	4.9	13,101	3.6	13,130	4.0	10,870	4.8	22	0.0	137,045	4.3
		847	o--ooo---oooo Quad Artic	762	0.0	36	0.0	17	0.0	45	0.0	2	0.0	-	-	862	0.0
A&B Train	HCV 2	74	o-oo--oo-o--o A Train	24	0.0	6	0.0	5	0.0	-	-	1	0.0	16	0.0	52	0.0
		622	o--o--oo--o-o (A train)	22	0.0	14	0.0	2	0.0	15	0.0	4	0.0	2	0.0	59	0.0
		811	o--oo--oo--ooo (B train)	926	0.1	308	0.1	90	0.0	39	0.0	196	0.1	5	0.0	1,564	0.0
		851	o-oo--ooo--oo B Train	66,319	4.3	33,462	6.2	9,949	2.7	24,784	7.5	11,227	5.0	449	0.3	146,190	4.6
		951	o-oo-ooo-ooo B Train	37,827	2.4	24,782	4.6	4,633	1.3	15,214	4.6	5,269	2.3	-	-	87,725	2.8
		1032	o-oo-ooo-oooo B Train	1	0.0	-	-	-	-	-	-	-	-	-	-	1	0.0
Total				1,549,790	100.0	542,567	100.0	366,613	100.0	330,473	100.0	226,699	100.0	171,537	100.0	3,187,679	100.0
Percentage from the total				*48.6*		*17.0*		*11.5*		*10.4*		*7.1*		*5.4*		*100.0*	

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

Note: [1]Percentage of each PAT class from the total number of heavy vehicles per WiM site.
[2]Percentage of each WiM site total from the overall total of heavy vehicles at all WiM sites.
[3]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, 7.0 percent (38,236) of all heavy vehicles were PAT type 45. 50.7 percent (1,549,790) of the overall total of vehicles at all WiM sites were recorded at Drury WiM site.

14.0 VEHICLE FLEET DISTRIBUTION TABLES (continued)

Table 8.0 | Annual average daily heavy vehicles frequency by vehicle type and by WiM site (2010-2014)

Year	Vehicle Type	WiM Site						Average
		Drury	Eskdale	Hamanatua Bridge	Te Puke	Tokoroa	Waipara	
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
2014	Rigid	1,871	235	278	533	441	314	613
	T&T	1,455	274	204	420	656	484	583
	Artic	861	67	8	134	236	151	244
	A&B Train	305	46	1	45	161	131	115
2014 Total		4,492	623	492	1,132	1,495	1,080	1,554

Symbol: - no data
Note: [1]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.
[2]Average was computed by dividing the overall total heavy vehicles over the total accepted days.

Table 9.0 | Annual daily average heavy vehicles frequency by selected PAT class and by WiM site (2010–2014)

Year	Vehicle Type	WiM Site						Average
		Drury	Eskdale	Hamanatua Bridge	Te Puke	Tokoroa	Waipara	
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	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	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	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	1,640	177	62	513	542	423	578
2013 Total		4,212	596	470	1,864	1,443	1,074	1,668
2014	21	952	85	63	253	221	183	293
	31	469	30	18	91	87	54	125
	45	239	107	165	146	105	57	137
	751	406	32	16	80	81	39	109
	891	618	163	159	226	398	301	311
	Others	1,808	206	71	336	601	447	578
2014 Total		4,492	623	492	1,132	1,493	1,081	1,552

Interpretation (for tables 8.0 and 9.0):

- Average daily heavy vehicle volumes increased across all WiM sites with a range between 0.7% of Waipara site to 6.6% of Drury site, except Te Puke site which had a decrease 39% (Te puke site was not fully operated in 2014 and has now been relocated to TEL).

- During 2014 the Drury WiM site had the highest annual average daily heavy vehicles, with an average of 4,492 vehicles per day.

Table 9.1 | Annual number of heavy vehicles by number of axles and site (2012–)

Year	Site	Vehicles < 7 axles	Vehicles 7 axles	Vehicles 8 axles	Vehicles 9 axles	Vehicles 10+ axles	Total Vehicles
2012	Drury	855,264	188,872	423,119	41,750	3,504	1,512,509
	Eskdale	102,100	20,304	93,379	5,171	33	220,987
	Hamanatua Bridge	98,418	12,249	48,473	38	–	159,178
	Te Puke	244,406	44,339	144,584	5,132	2,009	440,470
	Tokoroa	179,976	40,693	196,214	24,235	100	441,218
	Waipara	146,144	29,402	132,172	16,590	39	324,347
	Total	1,626,308	335,859	1,037,941	92,916	5,685	3,098,709
2013	Drury	865,372	197,071	404,623	63,278	3,003	1,533,347
	Eskdale	95,015	18,285	81,608	9,350	9	204,267
	Hamanatua Bridge	103,952	10,086	56,992	228	–	171,258
	Te Puke	331,616	54,202	178,388	19,626	3,270	587,102
	Tokoroa	199,626	50,931	210,697	39,332	96	500,682
	Waipara	86,406	15,180	75,604	12,781	170	190,141
	Total	1,681,987	345,755	1,007,912	144,595	6,548	3,186,797
2014	Drury	877,959	208,077	354,783	106,770	2,201	1,549,790
	Eskdale	102,216	19,853	81,608	22,917	105	226,699
	Hamanatua Bridge	103,851	10,016	56,002	1,667	1	171,537
	Te Puke	208,519	34,962	96,384	23,984	2,764	366,613
	Tokoroa	214,968	54,361	204,915	67,701	622	542,567
	Waipara	131,907	27,724	129,985	40,358	499	330,473
	Total	1,639,420	354,993	923,677	263,397	6,192	3,187,679

Interpretation:

- Hamanatua Bridge recorded no vehicles with 10 more more axles (i.e. 10 or 11) in 2012 or 2013, and only 1 in 2014.
- Although the vehicles with 8 axles still have the largest proportion, this figure is declining, while the number of vehicles with 9 axles is consistently and markedly increasing each year. This is likely to indicate that drivers / haulage companies are moving towards the use of HPMV vehicles, which is a positive sign.

14.0 VEHICLE FLEET OVERWEIGHT 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 overweight – This indicates the number of heavy vehicles overweight for each PAT type.

Table 10.0 | 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	%
				Total Volume	%	Total Volume	%	Total Volume	%	Total Volume	%	Total Volume	%	Total Volume	%		
Rigid	Bus & MCV	20	o--o (short truck or bus)	3	0.0	–	–	19	0.0	1	0.0	1	0.0	10	0.1	34	0.0
		21	o----o(truck or bus)	613	0.4	74	0.1	176	0.3	119	0.4	28	0.1	14	0.1	1,024	0.3
	Bus & HCV1	31	o--oo (truck or bus/coach)	26,149	18.2	3,541	4.9	4,078	7.3	1,330	4.8	893	2.3	664	4.2	36,655	10.3
		34	oo--o (twin steer truck)	–	–	–	–	5	0.0	–	–	–	–	6	0.0	11	0.0
		301	o--oo (tractor without semi-trailer)	89	0.1	6	0.0	8	0.0	–	–	–	–	–	–	103	0.0
	HCV1	45	oo--oo (heavy truck)	1,925	1.3	254	0.3	518	0.9	158	0.6	46	0.1	10	0.1	2,911	0.8
		47	o--ooo (heavy truck)	19	0.0	2	0.0	–	–	–	–	5	0.0	–	–	26	0.0
		511	oo--ooo (heavy truck)	351	0.2	9	0.0	8	0.0	5	0.0	3	0.0	–	–	376	0.1
	Bus & MCV	401	o--o--oo(truck tow light 2 ax trailer)	4	0.0	2	0.0	–	–	–	–	2	0.0	–	–	8	0.0
	Bus & HCV1	402	o--oo---o(truck tow light 1 ax trailer)	4	0.0	3	0.0	5	0.0	–	–	1	0.0	–	–	13	0.0
	HCV1	40	o--o--o--o (truck tow heavy trailer)	–	–	–	–	–	–	–	–	–	–	–	–	0	–
	HCV2	52	o--oo-o--o T&T	11	0.0	14	0.0	16	0.0	12	0.0	8	0.0	6	0.0	67	0.0
		62	o--oo--o-o-o (T+T)	196	0.1	602	0.8	132	0.2	291	1.1	170	0.4	97	0.6	1,488	0.4
		63	o--oo-o--oo T & T	388	0.3	12	0.0	69	0.1	12	0.0	4	0.0	26	0.2	511	0.1
		66	oo--oo--o--o (T+T)	8	0.0	–	–	34	0.1	3	0.0	2	0.0	–	–	47	0.0
		77	oo--oo--o-oo (T+T)	1,748	1.2	1,107	1.5	986	1.8	443	1.6	2,124	5.5	570	3.6	6,978	2.0
		503	o--oo--oo (truck tow light trailer)	3	0.0	–	–	–	–	–	–	1	0.0	–	–	4	0.0
		751	o-oo--oo--oo B-train or T&T	28,752	20.0	4,652	6.4	7,507	13.4	1,601	5.8	2,796	7.3	499	3.1	45,807	12.9
		771	oo--o--oo--oo (T+T)	–	–	6	0.0	1	0.0	–	–	–	–	–	–	7	0.0
		891	oo--oo-oo--ooT&T	31,557	21.9	30,440	41.8	22,800	40.6	12,170	43.9	20,138	52.4	13,028	81.5	130,133	36.7
		914	oo-oo--ooo-ooT&T	142	0.1	154	0.2	41	0.1	56	0.2	91	0.2	3	0.0	487	0.1
		915	oo-oo--oo-ooo T&T	22,386	15.6	16,380	22.5	8,241	14.7	7,218	26.1	9,029	23.5	896	5.6	64,150	18.1
		1020	oo-oo-ooo-ooo B Train	812	0.6	245	0.3	2,047	3.6	64	0.2	37	0.1	–	–	3,205	0.9
Artic	HCV1	30	o--o-----o(artic e.g. bread truck)	–	–	–	–	–	–	–	–	–	–	–	–	0	–
		41	o--o--oo (artic A112)	30	0.0	3	0.0	2	0.0	1	0.0	–	–	–	–	36	0.0
		42	o--oo--o (artic A121)	–	–	2	0.0	1	0.0	–	–	–	–	1	0.0	4	0.0
	HCV2	53	o-oo--oo T&T	732	0.5	18	0.0	60	0.1	10	0.0	9	0.0	1	0.0	830	0.2
		57	o--o-----ooo (artic)	3	0.0	1	0.0	–	–	–	–	1	0.0	–	–	5	0.0
		68	oo--oo--oo T & T	–	–	8	0.0	17	0.0	1	0.0	–	–	–	–	26	0.0
		69	o-oo--ooo	5,344	3.7	1,454	2.0	2,308	4.1	172	0.6	217	0.6	65	0.4	9,560	2.7
		713	oo-oo--ooo Tri Artic	46	0.0	45	0.1	44	0.1	17	0.1	6	0.0	–	–	158	0.0
		747	o--ooo---ooo Tri Artic	3	0.0	4	0.0	–	–	–	–	2	0.0	–	–	9	0.0
		791	o-oo-oooo Quad Artic	2,593	1.8	1,449	2.0	462	0.8	315	1.1	126	0.3	42	0.3	4,987	1.4
		826	oo-oo--oooo Quad Artic	6,418	4.5	3,176	4.4	2,997	5.3	400	1.4	688	1.8	–	–	13,679	3.9
		847	o--ooo---oooo Quad Artic	74	0.1	8	0.0	3	0.0	2	0.0	–	–	–	–	87	0.0
A&B Train	HCV2	74	o-oo--oo-o--o A Train	2	0.0	2	0.0	2	0.0	–	–	–	–	1	0.0	7	0.0
		811	o--oo--oo--ooo (B train)	197	0.1	70	0.1	40	0.1	7	0.0	30	0.1	2	0.0	346	0.1
		851	o-oo--ooo--oo B Train	7,105	4.9	3,993	5.5	2,186	3.9	1,403	5.1	1,033	2.7	39	0.2	15,759	4.4
		951	o-oo-ooo-ooo B Train	6,223	4.3	5,008	6.9	1,327	2.4	1,894	6.8	922	2.4	–	–	15,374	4.3
		1032	o-oo-ooo-oooo B Train	1	0.0	–	–	–	–	–	–	–	–	–	–	1	0.0
Total				143,931	100	72,744	100	56,140	100	27,705	100	38,413	100	15,980	100	354,913	100
Percentage from the total				40.6		20.5		15.8		7.8		10.8		4.5		100	

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

Note:
[1]Percentage of each PAT class from the total number of overweight vehicles per WiM site.
[2]Percentage of overweight vehicle at each WiM site from the overall total of overweight at all WiM sites.
[3]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 40.6 percent of this passed at Drury WiM site. 21.9 percent (31,557) of all overweight vehicles which crossed at the Drury WiM site were PAT class 891.

15.0 VEHICLE FLEET OVERWEIGHT TABLES (continued)

Table 11.0 | Annual average daily overweight vehicles frequency[1] by vehicle type and by WiM site

Year	Vehicle Type	WiM Site						Average
		Drury	Eskdale	Hamanatua Bridge	Te Puke	Tokoroa	Waipara	
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
2014	Rigid	84	3	2	15	11	5	20
	T&T	249	95	43	129	148	71	123
	Artic	44	3	0	18	17	3	14
	A&B Train	39	5	0	11	25	11	15
2014 Total		395	112	44	178	210	157	173

Symbol: - no data
... Below the number of accepted days

Note: [1]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.
[2]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.

Table 12.0 | Annual average daily overweight vehicles frequency by selected PAT class and by WiM site

Year	Vehicle Type	WiM Site						Average
		Drury	Eskdale	Hamanatua Bridge	Te Puke	Tokoroa	Waipara	
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
2010 Total		264	106	-	257	88	86	159
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
2011 Total		314	80	-	113	114	111	148
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	0	14	15	5	10
	891	101	57	16	103	99	33	66
	Others	56	8	2	30	28	13	22
2012 Total		293	83	21	203	178	60	137
2013	31	54	2	2	16	7	4	15
	751	66	8	2	20	12	8	20
	826	13	2	0	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
2013 Total		315	74	55	212	138	105	154
2014	31	76	2	2	13	10	4	18
	751	83	8	1	23	13	5	22
	826	19	2	0	9	9	1	7
	851	21	3	0	7	11	5	8
	891	91	55	37	70	84	40	63
	Others	127	35	5	51	74	35	55
2014 Total		417	112	45	173	201	90	172

Interpretation:

- For vehicle types, T&T vehicles were the most frequent overweight vehicle per day in all WiM sites by a considerable margin (daily average of 123). Rigid vehicle type was the second most frequent (20).
- For PAT classes, class 891 was the most frequently overweight (daily average of 63).
- The number of overweight Artic and A&B train vehicles remained about the same.
- The highest frequency of overweight T&T vehicles was at the Drury site, with an average of 249 overweight vehicles per day.

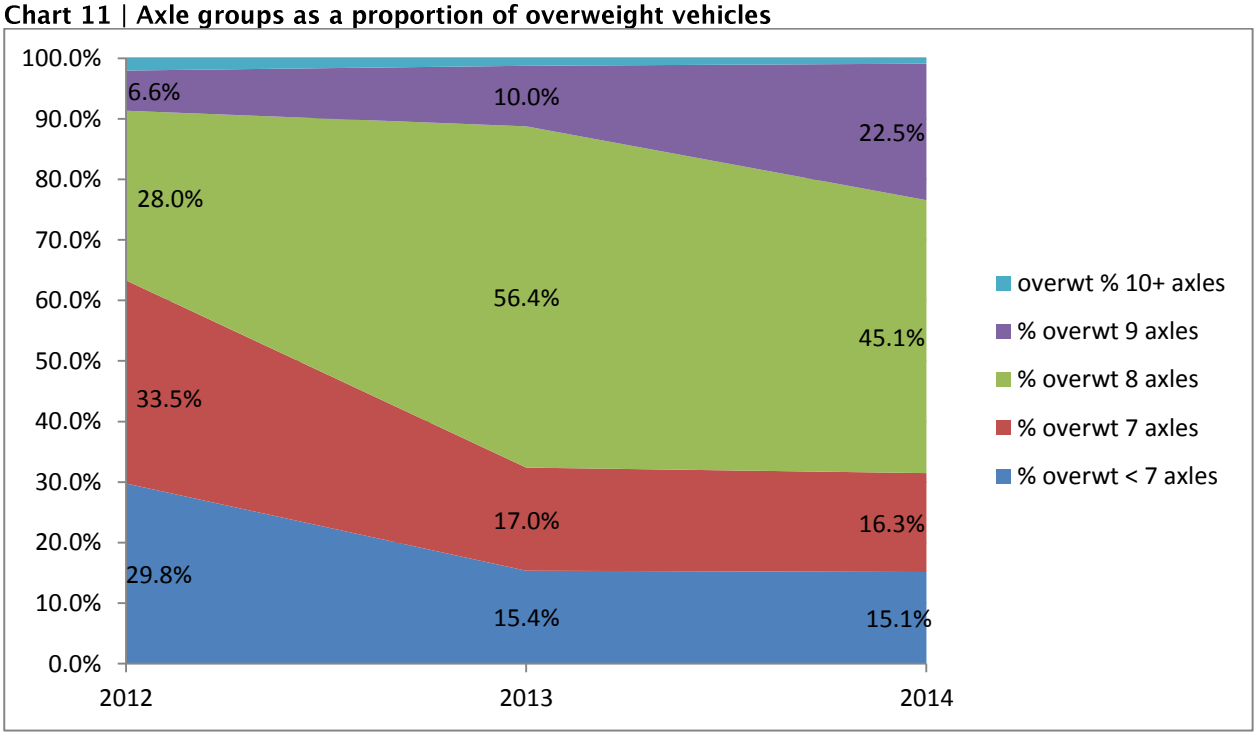
Table 12.1 | Number of overweight vehicles by no. of axles and site

Year	Site	Overweight < 7 axles	Overweight 7 axles	Overweight 8 axles	Overweight 9 axles	Overweight 10+ axles	Total Overweight
	Drury	25,800	24,661	16,295	3,460	1,623	71,839
	Eskdale	1,771	4,684	2,663	675	4	9,797
	Hamanatua Bridge	940	919	29	–	–	1,888
	Te Puke	7,995	7,347	10,357	1,473	1,314	28,486
	Tokoroa	4,962	8,112	9,106	2,983	18	25,181
	Waipara	1,813	3,082	2,316	1,065	7	8,283
2012	Total	43,281	48,805	40,766	9,656	2,966	145,474
	Drury	27,861	28,152	47,713	9,560	1,368	114,654
	Eskdale	1,338	4,578	17,177	2,148	–	25,241
	Hamanatua Bridge	897	1,561	17,508	57	–	20,023
	Te Puke	9,006	7,331	40,547	7,650	2,239	66,773
	Tokoroa	4,558	6,178	30,039	7,242	28	48,045
	Waipara	1,363	2,138	12,292	2,664	42	18,499
2013	Total	45,023	49,938	165,276	29,321	3,677	293,235
	Drury	35,873	33,144	45,351	28,751	813	143,932
	Eskdale	1,391	5,054	21,889	10,042	37	38,413
	Hamanatua Bridge	900	1,112	13,069	899	–	15,980
	Te Puke	7,456	9,002	28,026	9,609	2,047	56,140
	Tokoroa	6,005	7,265	37,687	21,542	245	72,744
	Waipara	2,115	2,376	13,982	9,168	64	27,705
2014	Total	53,740	57,953	160,004	80,011	3,206	354,914

Interpretation:

- Until 2012, 8 axle vehicles had been a growing proportion of overweight vehicles. However 9 axle vehicles are also a growing proportion, and the growth of 9 axle vehicles here is now at the expense of 8 axle vehicles. This is graphically illustrated below in Chart 11.

Chart 11 | Axle groups as a proportion of overweight vehicles



15.0 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 13.0 | 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	%
				Total Volume	%	Total Volume	%	Total Volume	%	Total Volume	%	Total Volume	%	Total Volume	%		
A&B Train	HCV2	74	o-oo--oo-o--o A Train	-	0.0	2	0.0	1	0.0	-	0.0	-	0.0	-	0.0	3	0.0
		811	o--oo--oo--ooo (B train)	197	0.2	70	0.1	40	0.1	7	0.0	30	0.1	2	0.0	346	0.1
		851	o-oo--ooo--oo B Train	7,105	6.7	3,993	6.0	2,186	4.5	1,403	5.5	1,033	2.8	39	0.3	15,759	5.3
		951	o-oo-ooo-ooo B Train	6,223	5.8	5,008	7.5	1,327	2.7	1,894	7.4	922	2.5	-	0.0	15,374	5.1
		1032	o-oo-ooo-oooo B Train	1	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	1	0.0
Artic	HCV2	53	o-oo--oo T&T	1	0.0	3	0.0	8	0.0	-	0.0	-	0.0	-	0.0	12	0.0
		68	oo--oo--oo T & T	-	0.0	7	0.0	14	0.0	-	0.0	-	0.0	-	0.0	21	0.0
		69	o-oo--ooo	188	0.2	199	0.3	108	0.2	31	0.1	18	0.0	30	0.2	574	0.2
		713	oo-oo--ooo Tri Artic	46	0.0	45	0.1	44	0.1	17	0.1	6	0.0	-	0.0	158	0.1
		747	o--ooo---ooo Tri Artic	-	0.0	2	0.0	-	0.0	-	0.0	-	0.0	-	0.0	2	0.0
		791	o-oo-oooo Quad Artic	422	0.4	378	0.6	121	0.2	36	0.1	30	0.1	15	0.1	1,002	0.3
		826	oo-oo--oooo Quad Artic	6,418	6.0	3,176	4.8	2,997	6.2	400	1.6	688	1.9	-	0.0	13,679	4.6
		847	o--ooo---oooo Quad Artic	74	0.1	8	0.0	3	0.0	2	0.0	-	0.0	-	0.0	87	0.0
Rigid	HCV1	45	oo--oo	-	0.0	2	0.0	2	0.0	-	0.0	-	0.0	-	0.0	4	0.0
T&T	HCV2	52	o--oo-o--o T&T	-	0.0	5	0.0	-	0.0	-	0.0	-	0.0	-	0.0	5	0.0
		62	o--oo--o-o-o (T+T)	145	0.1	555	0.8	116	0.2	247	1.0	137	0.4	90	0.6	1,290	0.4
		63	o--oo-o--oo T & T	388	0.4	12	0.0	69	0.1	12	0.0	4	0.0	26	0.2	511	0.2
		66	oo--oo-o--o T & T	1	0.0	-	0.0	6	0.0	1	0.0	-	0.0	-	0.0	8	0.0
		77	oo--oo-o--oo	1,748	1.6	1,107	1.7	986	2.0	443	1.7	2,124	5.7	570	3.8	6,978	2.3
		751	o-oo--oo--oo B-train or T&T	28,752	27.0	4,652	7.0	7,507	15.4	1,601	6.3	2,796	7.5	499	3.3	45,807	15.3
		771	oo--o--oo--oo (T+T)	-	0.0	-	0.0	1	0.0	-	0.0	-	0.0	-	0.0	1	0.0
		891	oo--oo-oo--ooT&T	31,557	29.6	30,440	45.8	22,800	46.9	12,170	47.5	20,138	54.3	13,028	85.7	130,133	43.4
		914	oo-oo--ooo-ooT&T	142	0.1	154	0.2	41	0.1	56	0.2	91	0.2	3	0.0	487	0.2
		915	oo-oo--oo-ooo T&T	22,386	21.0	16,380	24.7	8,241	16.9	7,218	28.2	9,029	24.3	896	5.9	64,150	21.4
		1020	oo-oo-ooo-ooo B Train	812	0.8	245	0.4	2,047	4.2	64	0.2	37	0.1	-	0.0	3,205	1.1
Total				106,606	100	66,443	100	48,665	100	25,602	100	37,083	100	15,198	100	299,597	100
Percentage from the total				35.6		22.2		16.2		8.5		12.4		5.1		100.0	

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

Note:
[1]Percentage of each PAT class from the total number of heavy vehicles recorded as >44T per WiM site.
[2]Percentage of each WiM site from the overall total number of heavy vehicles recorded as >44T at all WiM sites.
[3]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, 4,652 (7 percent) of vehicles with gross mass more than 44 tonnes were PAT class 751 vehicles.
- PAT Class 891 was the most frequent class of all vehicles weighing more than 44 tones gross mass, comprising 43.4 percent of vehicles across all WiM sites (130,133 in total). These were most frequently recorded at the Drury site (where there were 31,557).
- More than a third (35.6 percent) of all vehicles over 44 tonnes were recorded at Drury.

16.0 VEHICLE FLEET >44T/50T DISTRIBUTION TABLES (continued)

Table 13.1 | 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		Hamamanaua Bridge		Total Volume	%
				Total Volume	%	Total Volume	%	Total Volume	%	Total Volume	%	Total Volume	%	Total Volume	%		
A&B Train	HCV2	74	o-oo--oo-o--o A Train	-	0.0	2	0.0	1	0.0	-	0.0	-	0.0	-	0.0	3	0.0
		811	o--oo--oo--ooo (B train)	10	0.1	2	0.0	7	0.1	6	0.3	-	0.0	1	1.1	26	0.1
		851	o-oo--ooo--oo B Train	212	2.4	81	1.7	189	2.0	1	0.0	37	1.1	-	0.0	520	1.8
		951	o-oo-ooo-ooo B Train	381	4.2	329	6.7	408	4.4	27	1.3	81	2.5	-	0.0	1,226	4.3
		1032	o-oo-ooo-oooo B Train	1	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	1	0.0
Artic	HCV2	53	o-oo--oo T&T	-	0.0	2	0.0	1	0.0	-	0.0	-	0.0	-	0.0	3	0.0
		68	oo--oo--oo T & T	-	0.0	7	0.1	6	0.1	-	0.0	-	0.0	-	0.0	13	0.0
		69	o-oo--ooo	7	0.1	46	0.9	6	0.1	12	0.6	2	0.1	7	7.9	80	0.3
		713	oo-oo--ooo Tri Artic	3	0.0	8	0.2	-	0.0	-	0.0	-	0.0	-	0.0	11	0.0
		791	o-oo-oooo Quad Artic	2	0.0	5	0.1	1	0.0	3	0.1	-	0.0	-	0.0	11	0.0
		826	oo-oo--oooo Quad Artic	33	0.4	17	0.3	120	1.3	-	0.0	2	0.1	-	0.0	172	0.6
T&T	HCV2	52	o--oo-o--o T&T	-	0.0	1	0.0	-	0.0	-	0.0	-	0.0	-	0.0	1	0.0
		62	o--oo--o-o-o (T+T)	22	0.2	356	7.3	65	0.7	140	6.5	83	2.6	56	62.9	722	2.5
		63	o--oo-o--oo T & T	9	0.1	3	0.1	12	0.1	1	0.0	-	0.0	13	14.6	38	0.1
		66	oo--oo-o--o T & T	-	0.0	-	0.0	1	0.0	-	0.0	-	0.0	-	0.0	1	0.0
		77	oo--oo-o--oo	15	0.2	11	0.2	89	1.0	9	0.4	-	0.0	1	1.1	125	0.4
		751	o-oo--oo--oo B-train or T&T	544	6.1	15	0.3	227	2.5	3	0.1	9	0.3	2	2.2	800	2.8
		891	oo--oo-oo--ooT&T	1,434	16.0	451	9.2	2,075	22.5	51	2.4	415	12.8	5	5.6	4,431	15.5
		914	oo-oo--ooo-ooT&T	6	0.1	5	0.1	4	0.0	3	0.1	2	0.1	-	0.0	20	0.1
		915	oo-oo--oo-ooo T&T	5,634	62.7	3,489	71.5	4,352	47.2	1,894	88.1	2,622	80.6	4	4.5	17,995	63.0
		1020	oo-oo-ooo-ooo B Train	667	7.4	52	1.1	1,665	18.0	-	0.0	1	0.0	-	0.0	2,385	8.3
Total				6,301	70	3,541	73	6,017	65	1,894	88	2,623	81	4	5	20,380	71
Percentage from the total				30.9		17.4		29.5		9.3		12.9		0.0		100.0	

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

Note: [1]Percentage of each PAT class from the total number of overweight vehicles recorded as >50T per WiM site.
[2]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 most frequent on the whole by a considerable margin, with 63 percent of all vehicles across all sites (17,995).
- Te Puke is over-represented for vehicles with a mass of more than 50 tonnes.Although just 11 percent of all heavy vehicles were recorded at the Te Puke WiM site (see table 2.0 above), 29.5 percent of all vehicles with a mass of more than 50 tonnes were recorded at the Te Puke site.
- In terms of vehicle group type, T&T had the highest proportion of gross mass over 50 tonnes with 92.7 percent. This was 90 percent for 2013.
- Although the overall proportion of vehicles over 50 tonnes made up of T&T vehicles is about the same as in 2013, the makeup of this group has changed:
  - In 2013, PAT Class 915 made up just 38.2 percent of all vehicles over 50 tonnes and 42.5 percent of all T&T vehicles over 50 tonnes.
  - Now this PAT class makes up 63 percent of all vehicles over 50 tonnes and 67.7 percent of all T&T vehicles over 50 tonnes.
  - Looking at earlier years, PAT class 915 made up even smaller percentages of all vehicles over 50 tonnes (less than 5 percent for 2011 and 2012). T&T vehicles over 50 tonnes are becoming less diverse, becoming dominated by PAT class 915.

16.0 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 14.0 | 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		Hamamanaua Bridge		Tonne	%
				Tonne	%	Tonne	%	Tonne	%	Tonne	%	Tonne	%	Tonne	%		
A&B Train	HCV2	74	o-oo--oo-o--o A Train	715	0.0	232	0.0	206	0.0	-	0.0	11	0.0	529	0.0	1,692	0.0
	HCV2	622	o--o--oo--o-o (A train)	197	0.0	185	0.0	21	0.0	183	0.0	45	0.0	12	0.0	643	0.0
	HCV2	811	o--oo--oo--ooo (B train)	32,033	0.1	10,915	0.1	3,503	0.0	1,349	0.0	7,262	0.1	188	0.0	55,250	0.1
		851	o-oo--ooo--oo B Train	2,249,144	6.6	1,213,687	8.2	342,644	4.1	869,857	10.2	386,568	6.4	14,943	0.4	5,076,841	6.7
		951	o-oo-ooo-ooo B Train	1,392,271	4.1	962,718	6.5	169,453	2.0	561,686	6.6	194,939	3.2	-	0.0	3,281,066	4.3
		1032	o-oo-ooo-oooo B Train	53	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	53	0.0
Artic	Bus & HCV1	30	o-o--o	30,621	0.1	7,759	0.1	4,182	0.0	6,650	0.1	2,626	0.0	303	0.0	52,140	0.1
	HCV1	41	o-o--oo	220,862	0.6	65,693	0.4	17,947	0.2	30,161	0.4	30,818	0.5	4,170	0.1	369,650	0.5
		42	o-oo--o	1,310	0.0	423	0.0	285	0.0	99	0.0	136	0.0	34	0.0	2,285	0.0
	HCV2	53	o-oo--oo T&T	634,576	1.9	96,013	0.6	49,279	0.6	72,435	0.9	32,438	0.5	24,509	0.6	909,249	1.2
		57	o--o-----ooo (artic)	39,667	0.1	23,649	0.2	2,953	0.0	4,006	0.0	14,071	0.2	183	0.0	84,528	0.1
		68	oo--oo--oo T & T	469,941	1.4	266,168	1.8	19,558	0.2	111,699	1.3	28,733	0.5	4,472	0.1	900,569	1.2
		69	o-oo--ooo	2,836,258	8.3	576,725	3.9	546,533	6.5	281,771	3.3	113,825	1.9	20,127	0.5	4,375,237	5.8
		713	oo-oo--ooo Tri Artic	411,327	1.2	136,869	0.9	64,757	0.8	48,879	0.6	41,890	0.7	102	0.0	703,824	0.9
		747	o--ooo---ooo Tri Artic	2,465	0.0	1,170	0.0	-	0.0	609	0.0	564	0.0	-	0.0	4,807	0.0
		791	o-oo-oooo Quad Artic	1,162,037	3.4	474,160	3.2	98,106	1.2	347,032	4.1	60,674	1.0	7,964	0.2	2,149,972	2.8
		826	oo-oo--oooo Quad Artic	2,410,245	7.1	932,488	6.3	443,421	5.3	457,645	5.4	365,844	6.0	603	0.0	4,610,245	6.1
		847	o--ooo---oooo Quad Artic	27,507	0.1	1,429	0.0	650	0.0	1,564	0.0	61	0.0	-	0.0	31,210	0.0
Rigid	Bus & HCV1	31	o--oo	2,305,115	6.8	440,733	3.0	416,356	5.0	228,967	2.7	151,420	2.5	90,729	2.2	3,633,319	4.8
		34	oo--o	2,355	0.0	2,256	0.0	1,073	0.0	941	0.0	2,157	0.0	477	0.0	9,258	0.0
		301	o--oo (tractor without semi-trailer)	21,149	0.1	3,017	0.0	4,472	0.1	2,241	0.0	944	0.0	567	0.0	32,389	0.0
	Bus & MCV	20	o-o (wb 2.0-3.2m, gw >= 3.5t)	298,943	0.9	43,842	0.3	58,297	0.7	27,332	0.3	19,889	0.3	47,794	1.2	496,094	0.7
		21	o--o (wb >3.2m, gw >= 3.5t)	2,118,528	6.2	523,950	3.5	531,039	6.3	349,523	4.1	195,221	3.2	139,207	3.4	3,857,466	5.1
	HCV1	45	oo--oo	1,400,329	4.1	628,750	4.2	812,393	9.7	293,859	3.5	621,196	10.2	957,043	23.1	4,713,569	6.2
		47	o--ooo	1,494	0.0	184	0.0	203	0.0	1,671	0.0	443	0.0	8	0.0	4,002	0.0
		511	oo--ooo (heavy truck)	23,848	0.1	2,601	0.0	3,464	0.0	1,015	0.0	448	0.0	57	0.0	31,432	0.0
T&T	Bus & HCV1	44	oo-o--o	113	0.0	546	0.0	37	0.0	27	0.0	64	0.0	71	0.0	856	0.0
		402	o--oo---o(truck tow light 1 ax trailer)	48,692	0.1	18,584	0.1	9,106	0.1	10,677	0.1	3,466	0.1	1,037	0.0	91,560	0.1
	Bus & MCV	300	o--o--o(truck towing light trailer)	136,695	0.4	19,128	0.1	19,422	0.2	23,570	0.3	9,371	0.2	5,064	0.1	213,248	0.3
		401	o--o--oo(truck tow light 2 ax trailer)	110,784	0.3	39,842	0.3	27,799	0.3	43,685	0.5	19,335	0.3	9,497	0.2	250,941	0.3
	HCV2	52	o--oo-o--o T&T	90,086	0.3	14,997	0.1	10,574	0.1	11,850	0.1	7,559	0.1	16,569	0.4	151,634	0.2
		61	o-o--o-o--oo T & T	83	0.0	68	0.0	-	0.0	6	0.0	-	0.0	-	0.0	156	0.0
		62	o--oo--o-o-o (T+T)	41,806	0.1	47,496	0.3	14,424	0.2	25,066	0.3	20,779	0.3	11,599	0.3	161,169	0.2
		63	o--oo-o--oo T & T	372,410	1.1	62,616	0.4	44,718	0.5	33,340	0.4	8,550	0.1	17,748	0.4	539,381	0.7
		66	oo--oo-o--o T & T	36,239	0.1	9,047	0.1	8,567	0.1	10,212	0.1	8,438	0.1	1,508	0.0	74,009	0.1
		77	oo--oo-o--oo	490,208	1.4	209,726	1.4	137,148	1.6	115,231	1.4	192,334	3.2	163,663	4.0	1,308,310	1.7
		503	o--oo--oo (truck tow light trailer)	2,688	0.0	2,435	0.0	422	0.0	4,428	0.1	987	0.0	47	0.0	11,005	0.0
		751	o-oo--oo--oo B-train or T&T	4,768,829	14.0	999,565	6.7	909,691	10.8	393,569	4.6	436,018	7.2	174,753	4.2	7,682,424	10.1
		771	oo--o--oo--oo (T+T)	-	0.0	1,134	0.0	1,789	0.0	-	0.0	59	0.0	-	0.0	2,982	0.0
		891	oo--oo-oo--ooT&T	7,215,912	21.2	5,222,329	35.3	2,737,438	32.6	3,163,126	37.2	2,340,824	38.6	2,350,292	56.8	23,029,921	30.3
		914	oo-oo--ooo-ooT&T	30,044	0.1	25,459	0.2	8,814	0.1	34,025	0.4	15,131	0.2	338	0.0	113,809	0.1
		915	oo-oo--oo-ooo T&T	2,579,025	7.6	1,698,492	11.5	757,630	9.0	904,289	10.6	723,064	11.9	72,019	1.7	6,734,517	8.9
		1020	oo-oo-ooo-ooo B Train	90,489	0.3	26,327	0.2	130,984	1.6	17,783	0.2	4,205	0.1	45	0.0	269,831	0.4
Tonne				34,074,137	100	14,802,064	100	8,405,620	100	8,490,514	100	6,055,081	100	4,137,533	100	75,964,947	100
Percentage from the total				*44.9*		*19.5*		*11.1*		*11.2*		*8.0*		*5.4*		*100.0*	

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

Note: [1]Percentage of each PAT class from the overall gross mass per WiM site.
[2]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 23 million tonnes (30.3 percent). PAT Classes 751 (7.7 million tonnes) and 915 (6.7 million tonnes) ranked the second and third with highest gross mass recorded during 2014. PAT class 915 was not in the top three in previous years.

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 15.0 | Overweight 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		Hamamanaua Bridge		Tonne	%
				Tonne	%	Tonne	%	Tonne	%	Tonne	%	Tonne	%	Tonne	%		
A&B Train	HCV2	74	o-oo--oo-o--o A Train	83	0.0	117	0.0	103	0.0	-	0.0	-	0.0	42	0.0	344	0.0
		811	o--oo--oo--ooo (B train)	9,456	0.2	3,301	0.1	1,955	0.1	403	0.0	1,411	0.1	106	0.0	16,631	0.1
		851	o-oo--ooo--oo B Train	333,019	5.5	186,521	5.6	104,499	4.1	65,128	5.2	48,442	2.7	1,788	0.2	739,395	4.7
		951	o-oo-ooo-ooo B Train	296,311	4.9	238,366	7.2	65,882	2.6	89,333	7.1	44,162	2.5	-	0.0	734,054	4.7
		1032	o-oo-ooo-oooo B Train	53	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	53	0.0
Artic	HCV1	41	o-o--oo	940	0.0	94	0.0	63	0.0	31	0.0	-	0.0	-	0.0	1,127	0.0
		42	o-oo--o	-	0.0	50	0.0	25	0.0	-	0.0	-	0.0	27	0.0	101	0.0
	HCV2	53	o-oo--oo T&T	28,167	0.5	753	0.0	2,405	0.1	380	0.0	346	0.0	39	0.0	32,089	0.2
		57	o--o-----ooo (artic)	102	0.0	35	0.0	-	0.0	-	0.0	36	0.0	-	0.0	172	0.0
		68	oo--oo--oo T & T	-	0.0	449	0.0	843	0.0	44	0.0	-	0.0	-	0.0	1,335	0.0
		69	o-oo--ooo	221,895	3.7	61,901	1.9	96,181	3.7	7,369	0.6	9,108	0.5	2,965	0.4	399,418	2.5
		713	oo-oo--ooo Tri Artic	2,184	0.0	2,164	0.1	2,078	0.1	807	0.1	275	0.0	-	0.0	7,507	0.0
		747	o--ooo---ooo Tri Artic	132	0.0	180	0.0	-	0.0	-	0.0	87	0.0	-	0.0	399	0.0
		791	o-oo-oooo Quad Artic	113,302	1.9	63,925	1.9	20,479	0.8	13,713	1.1	5,522	0.3	1,875	0.3	218,815	1.4
		826	oo-oo--oooo Quad Artic	298,098	4.9	147,600	4.4	140,553	5.4	18,408	1.5	31,948	1.8	-	0.0	636,607	4.0
		847	o--ooo---oooo Quad Artic	3,415	0.1	373	0.0	141	0.0	92	0.0	-	0.0	-	0.0	4,021	0.0
Rigid	Bus & HCV1	31	o--oo	551,661	9.1	73,737	2.2	85,275	3.3	27,583	2.2	18,629	1.0	13,523	1.9	770,407	4.9
		34	oo--o	-	0.0	-	0.0	109	0.0	-	0.0	-	0.0	150	0.0	259	0.0
		301	o--oo (tractor without semi-trailer)	2,039	0.0	166	0.0	186	0.0	-	0.0	-	0.0	-	0.0	2,391	0.0
	Bus & MCV	20	o-o (wb 2.0-3.2m, gw >= 3.5t)	47	0.0	-	0.0	307	0.0	16	0.0	21	0.0	167	0.0	556	0.0
		21	o--o (wb >3.2m, gw >= 3.5t)	9,731	0.2	1,179	0.0	2,778	0.1	1,893	0.1	439	0.0	219	0.0	16,238	0.1
	HCV1	45	oo--oo	54,515	0.9	7,783	0.2	15,078	0.6	4,656	0.4	1,289	0.1	336	0.0	83,657	0.5
		47	o--ooo	545	0.0	53	0.0	-	0.0	-	0.0	137	0.0	-	0.0	734	0.0
		511	oo--ooo (heavy truck)	10,973	0.2	278	0.0	240	0.0	149	0.0	95	0.0	-	0.0	11,733	0.1
T&T	Bus & HCV1	402	o--oo---o(truck tow light 1 ax trailer)	126	0.0	93	0.0	154	0.0	-	0.0	31	0.0	-	0.0	403	0.0
	Bus & MCV	300	o--o--o(truck towing light trailer)	22	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	22	0.0
		401	o--o--oo(truck tow light 2 ax trailer)	85	0.0	49	0.0	-	0.0	-	0.0	40	0.0	-	0.0	174	0.0
	HCV2	52	o--oo-o--o T&T	434	0.0	612	0.0	630	0.0	469	0.0	321	0.0	234	0.0	2,700	0.0
		62	o--oo--o-o-o (T+T)	9,321	0.2	31,962	1.0	6,811	0.3	14,860	1.2	8,648	0.5	5,147	0.7	76,747	0.5
		63	o--oo-o--oo T & T	18,119	0.3	592	0.0	3,343	0.1	558	0.0	186	0.0	1,349	0.2	24,146	0.2
		66	oo--oo-o--o T & T	350	0.0	-	0.0	1,505	0.1	133	0.0	88	0.0	-	0.0	2,076	0.0
		77	oo--oo-o--oo	81,701	1.4	51,446	1.5	46,718	1.8	20,658	1.6	98,862	5.5	26,225	3.6	325,609	2.1
		503	o--oo--oo (truck tow light trailer)	88	0.0	-	0.0	-	0.0	-	0.0	27	0.0	-	0.0	114	0.0
		751	o-oo--oo--oo B-train or T&T	1,350,166	22.3	215,411	6.5	351,249	13.6	74,132	5.9	130,252	7.2	23,014	3.2	2,144,222	13.6
		771	oo--o--oo--oo (T+T)	-	0.0	249	0.0	46	0.0	-	0.0	-	0.0	-	0.0	295	0.0
		891	oo--oo-oo--ooT&T	1,489,062	24.6	1,418,820	42.6	1,089,600	42.2	563,240	44.6	946,206	52.6	599,282	83.3	6,106,209	38.8
		914	oo-oo--ooo-ooT&T	6,769	0.1	7,275	0.2	1,976	0.1	2,613	0.2	4,281	0.2	137	0.0	23,050	0.1
		915	oo-oo--oo-ooo T&T	1,104,516	18.3	804,579	24.1	425,904	16.5	353,895	28.0	447,232	24.8	42,736	5.9	3,178,861	20.2
		1020	oo-oo-ooo-ooo B Train	44,578	0.7	12,012	0.4	112,434	4.4	2,963	0.2	1,766	0.1	-	0.0	173,752	1.1
Tonne				6,041,995	100	3,332,119	100	2,579,543	100	1,263,520	100	1,799,880	100	719,357	100	15,736,413	100
Percentage from the total				*38.4*		*21.2*		*16.4*		*8.0*		*11.4*		*4.6*		*100.0*	

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

Note: [1]Percentage of each PAT class from the overall overweight gross mass per WiM site.
[2]Percentage of each WiM site from the overall overweight gross mass at all WiM sites.

Interpretation:

- The estimated gross mass of overweight vehicles across all PAT types was just over 15.7 million tonnes.
- The mass of PAT Class 891 vehicles above their maximum limits was greater than any other PAT class across all sites, with 38.8 percent of all the mass of overweight vehicles.
- The proportion of the mass of overweight vehicles with 9 axles has more than doubled (from 11% in 2013 to 25% in 2014), while the proportion made up by 8 axle combinations has declined.

17.0 AVERAGE ESTIMATED GHVM PER VEHICLE

The average estimated GHVM per vehicle is derived by dividing the total estimated gross mass for a PAT type by the heavy vehicle frequency in that PAT type, per WiM site and overall.

Table 16.0 | 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		
A&B Train	HCV2	74	o-oo--oo-o--o A Train	29.8	16	38.6	6	41.2	2	.	.	10.5	33	33.1	9	32.50	15
		622	o--o--oo--o-o (A train)	9.0	37	13.2	35	10.5	33	12.2	28	11.3	30	6.0	34	10.90	36
		811	o--oo--oo--ooo (B train)	34.6	8	35.4	12	38.9	5	34.6	9	37.1	6	37.6	6	35.30	11
		851	o-oo--ooo--oo B Train	33.9	10	36.3	10	34.4	12	35.1	6	34.4	10	33.3	8	34.70	12
		951	o-oo-ooo-ooo B Train	36.8	4	38.8	5	36.6	8	36.9	3	37.0	8	.	.	37.40	4
		1032	o-oo-ooo-oooo B Train	52.5	1	.	.	.	.	.	.	.	.	.	.	52.50	1
Artic	Bus & HCV1	30	o-o--o	11.2	34	10.1	37	10.5	33	9.9	30	11.1	31	10.1	28	10.80	37
	HCV1	41	o-o--oo	14.9	28	16.6	28	12.8	31	15.4	25	16.3	25	15.9	21	15.20	29
		42	o-oo--o	10.8	36	10.8	36	17.8	24	5.2	39	10.4	34	11.2	26	10.80	37
	HCV2	53	o-oo--oo T&T	22.7	23	22.1	24	23.0	20	22.1	22	18.9	22	21.5	19	22.40	23
		57	o--o-----ooo (artic)	16.8	27	18.1	26	11.7	32	11.9	29	17.5	24	8.7	31	16.70	27
		68	oo--oo--oo T & T	28.5	19	30.2	16	24.0	19	29.9	16	26.3	17	21.8	18	28.90	18
		69	o-oo--ooo	26.8	20	27.6	19	27.7	17	27.0	17	26.6	16	26.2	15	27.00	20
		713	oo-oo--ooo Tri Artic	29.1	18	30.1	17	28.0	16	31.6	15	28.4	15	25.5	16	29.30	17
		747	o--ooo---ooo Tri Artic	34.7	7	37.7	8	.	.	33.8	12	37.6	5	.	.	35.60	10
		791	o-oo-oooo Quad Artic	30.2	15	32.6	15	30.4	14	31.9	14	29.0	14	29.5	11	31.00	16
		826	oo-oo--oooo Quad Artic	32.8	12	35.2	13	33.8	13	34.9	7	33.7	11	27.4	13	33.60	14
		847	o--ooo---oooo Quad Artic	36.1	6	39.7	4	38.2	6	34.7	8	30.5	13	.	.	36.20	7
Rigid	Bus & HCV1	31	o--oo	14.3	30	14.0	33	14.1	29	13.8	26	13.8	27	14.2	24	14.20	30
		34	oo--o	11.0	35	14.4	30	10.3	35	8.9	32	6.5	38	14.9	22	9.80	39
		301	o--oo (tractor without semi-trailer)	12.9	31	9.5	38	14.3	28	7.3	33	10.8	32	11.3	25	11.90	34
	Bus & MCV	20	o-o (wb 2.0-3.2m, gw >= 3.5t)	4.3	42	4.6	42	4.4	40	4.6	40	4.3	41	4.3	36	4.30	43
		21	o--o (wb >3.2m, gw >= 3.5t)	6.4	39	6.5	40	6.5	37	6.3	35	6.3	39	6.3	32	6.40	41
	HCV1	45	oo--oo	17.0	26	16.4	29	17.2	25	17.0	23	16.0	26	16.7	20	16.70	27
		47	o--ooo	18.2	25	14.1	32	15.6	26	16.7	24	17.7	23	4.0	37	17.00	26
		511	oo--ooo (heavy truck)	25.9	21	22.8	23	21.5	22	23.6	20	22.4	21	14.3	23	24.90	22
T&T	Bus & HCV1	44	oo-o--o	6.3	40	18.8	25	9.3	36	5.3	38	7.1	37	10.1	28	11.90	34
		402	o--oo---o(truck tow light 1 ax trailer)	12.3	32	13.5	34	12.9	30	9.9	30	9.6	35	10.7	27	12.10	33
	Bus & MCV	300	o--o--o(truck towing light trailer)	6.1	41	5.7	41	5.7	39	5.4	37	5.6	40	5.7	35	5.90	42
		401	o--o--oo(truck tow light 2 ax trailer)	7.0	38	7.6	39	6.4	38	6.6	34	7.2	36	6.1	33	6.90	40
	HCV2	52	o--oo-o--o T&T	21.0	24	24.4	22	21.6	21	22.7	21	23.1	20	23.8	17	21.80	24
		61	o-o--o-o--oo T & T	11.8	33	17.0	27	.	.	5.5	36	.	.	.	.	13.00	32
		62	o--oo--o-o-o (T+T)	31.3	14	41.9	2	35.6	10	40.0	1	33.3	12	36.5	7	36.30	6
		63	o--oo-o--oo T & T	29.5	17	26.4	20	29.2	15	25.8	19	25.1	18	28.7	12	28.70	19
		66	oo--oo-o--o T & T	25.5	22	26.3	21	26.4	18	26.8	18	23.9	19	26.9	14	25.70	21
		77	oo--oo-o--oo	32.0	13	36.8	9	39.1	4	34.5	10	42.7	1	37.9	5	35.70	9
		503	o--oo--oo (truck tow light trailer)	14.6	29	14.4	30	15.6	26	12.5	27	13.7	28	9.3	30	13.60	31
		751	o-oo--oo--oo B-train or T&T	34.0	9	33.9	14	35.2	11	33.0	13	37.1	6	32.3	10	34.20	13
		771	oo--o--oo--oo (T+T)	.	.	28.4	18	17.9	23	.	.	11.7	29	.	.	20.60	25
		891	oo--oo-oo--ooT&T	33.8	11	36.1	11	37.4	7	34.4	11	39.5	4	42.3	3	36.10	8
		914	oo-oo--ooo-ooT&T	36.2	5	38.2	7	35.7	9	36.9	3	36.7	9	42.3	3	36.90	5
		915	oo-oo--oo-ooo T&T	37.9	3	40.2	3	39.7	3	37.3	2	42.0	2	43.4	2	39.00	3
		1020	oo-oo-ooo-ooo B Train	41.1	2	42.3	1	47.4	1	35.6	5	40.0	3	44.5	1	43.60	2
Tonne				22.0		27.3		22.9		25.7		26.7		24.1		23.8	

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

Interpretation:

- During 2014, the average estimated gross mass per vehicle was 23.8 tonnes regardless of PAT class. This is approximately the same as 23.3 tonnes in 2013.
- The Tokoroa site had the highest average estimated gross mass per vehicle at 27.3 tonnes (up from 26.8 tonnes in 2013), followed by Eskdale at 26.7 tonnes per vehicle (up from 26.0 in 2013).
- PAT class 1032 had the highest average estimated gross mass per vehicle by a substantial margin at 52.5 tonnes. Class 1020 follows with 43.6 tonnes per vehicle.

18.0 AVERAGE ESTIMATED GROSS MASS PER VEHICLE (continued)

Table 17.0 | 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	15.5	34	0.0	34	16.1	31	15.5	26	20.5	27	16.7	19	16.4	37
		21	o----o	15.9	33	15.9	33	15.8	32	15.9	25	15.7	29	15.6	20	15.9	38
	Bus & HCV1	31	o--oo	21.1	32	20.8	32	20.9	30	20.7	24	20.9	26	20.4	18	21.0	36
		34	oo--o	0.0	35	0.0	34	21.7	29	0.0	27	0.0	30	25.0	17	23.5	33
		301	o--oo	22.9	30	27.7	28	23.3	28	0.0	27	0.0	30	0.0	21	23.2	34
	HCV1	45	oo--oo	28.3	29	30.6	27	29.1	26	29.5	23	28.0	23	33.6	15	28.7	29
		47	o--ooo	28.7	28	26.5	29	0.0	33	0.0	27	27.3	24	0.0	21	28.2	31
		511	oo--ooo	31.3	26	30.8	25	30.0	25	29.7	22	31.5	21	0.0	21	31.2	27
T&T	Bus & MCV	401	o--o--oo	21.3	31	24.5	31	0.0	33	0.0	27	20.0	28	0.0	21	21.8	35
	Bus & HCV1	402	o--oo---o	31.5	24	30.8	25	30.7	24	0.0	27	30.5	22	0.0	21	31.0	28
	HCV2	52	o--oo-o--o	39.4	21	43.7	19	39.4	22	39.1	19	40.1	18	39.0	13	40.3	23
		62	o--oo--o-o-o	47.6	7	53.2	3	51.6	3	51.1	2	50.9	1	53.1	1	51.6	3
		63	o--oo-o--oo	46.7	13	49.4	4	48.4	8	46.5	8	46.5	11	52.0	3	47.3	11
		66	oo--oo--o--o	43.8	17	0.0	34	44.3	19	44.2	15	44.0	14	0.0	21	44.2	19
		77	oo--oo--o-oo	46.7	12	46.5	15	47.4	12	46.6	7	46.5	10	46.0	6	46.7	15
		503	o--oo--oo	29.2	27	0.0	34	0.0	33	0.0	27	26.5	25	0.0	21	28.5	30
		751	o-oo--oo--oo	47.0	10	46.3	16	46.8	16	46.3	10	46.6	9	46.1	5	46.8	14
		771	oo--o--oo--oo	0.0	35	41.5	22	45.5	17	0.0	27	0.0	30	0.0	21	42.1	21
		891	oo--oo-oo--oo	47.2	9	46.6	13	47.8	11	46.3	12	47.0	7	46.0	7	46.9	12
		914	oo-oo--ooo-oo	47.7	5	47.2	9	48.2	9	46.7	6	47.0	5	45.5	10	47.3	10
		915	oo-oo--oo-ooo	49.3	3	49.1	5	51.7	2	49.0	3	49.5	2	47.7	4	49.6	5
		1020	oo-oo-ooo-ooo	54.9	1	49.0	6	55.0	1	46.3	11	47.7	4	0.0	21	54.3	1
		41	o--o--oo	31.3	25	31.2	24	31.5	23	30.5	21	0.0	30	0.0	21	31.3	26
		42	o--oo--o	0.0	35	25.0	30	24.5	27	0.0	27	0.0	30	26.5	16	25.3	32
Artic	HCV2	53	o-oo--oo	38.5	22	41.8	21	40.1	21	38.0	20	38.4	19	38.5	14	38.7	24
		57	o--o-----ooo	33.8	23	34.5	23	0.0	33	0.0	27	35.5	20	0.0	21	34.3	25
		68	oo--oo--oo	0.0	35	56.4	2	49.6	6	43.5	17	0.0	30	0.0	21	51.5	4
		69	o-oo--ooo	41.5	19	42.6	20	41.7	20	42.8	18	42.0	17	45.6	9	41.8	22
		713	oo-oo--ooo	47.5	8	48.1	7	47.2	13	47.4	4	45.8	13	0.0	21	47.5	9
		747	o--ooo---ooo	43.8	16	45.0	17	0.0	33	0.0	27	43.5	16	0.0	21	44.3	18
		791	o-oo-oooo	43.7	18	44.1	18	44.3	18	43.5	16	43.8	15	44.6	11	43.9	20
		826	oo-oo--oooo	46.4	14	46.5	14	46.9	14	46.0	13	46.4	12	0.0	21	46.5	16
		847	o--ooo---oooo	46.1	15	46.6	12	46.8	15	46.0	14	0.0	30	0.0	21	46.2	17
A&B Train	HCV2	74	o-oo--oo-o--o	41.5	20	58.5	1	51.5	4	0.0	27	0.0	30	41.5	12	49.2	6
		811	o--oo--oo--ooo	48.0	4	47.2	10	48.9	7	57.8	1	47.0	6	53.0	2	48.1	7
		851	o-oo--ooo--oo	46.9	11	46.7	11	47.8	10	46.4	9	46.9	8	45.8	8	46.9	13
		951	o-oo-ooo-ooo	47.6	6	47.6	8	49.6	5	47.2	5	47.9	3	0.0	21	47.7	8
		1032	o-oo-ooo-oooo	52.5	2	0.0	34	0.0	33	0.0	27	0.0	30	0.0	21	52.5	2
Tonne				42.0		45.8		46.0		45.6		46.9		45.0		44.3	

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

Interpretation:

- On the whole, overweight vehicles were heavier in 2014 than in 2013. The average estimated gross mass per overweight vehicle during 2014 was 44.3 tonnes, up from 44 tonnes in 2013.
- PAT class 1020 continued to havethe highest average estimated gross mass with 54.3 tonnes per overweight vehicle. This compares to 54.4 tonnes in 2013
- Only the Drury WiM site had an average mass for overweight vehicles of less than 44 tonnes, but because it is a site with high volume, this brought the average across all sites to less than 45 tonnes (even though most sites had an average mass for overweight vehicles of more than 45 tonnes).
- Waipara and Hamanatua Bridge were the only sites to see a decrease in the average weight of overweight vehicles, of .1 and .4 tonnes, respectively.
- 9 axle vehicles now make up 13.2% of all gross mass, almost twice the proportion as in 2013. This growth comes at the expense of classes 891 and 851.

18.0 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 19.0 | Site: 00200176 (Te Puke)

Load (kN)	SAST	SADT	TADT	TSST	TRDT	QADT
10	1%	5%	0%	-	-	-
20	27%	33%	3%	0%	0%	-
30	20%	24%	3%	0%	0%	0%
40	11%	13%	6%	0%	1%	1%
50	21%	9%	8%	1%	4%	4%
60	16%	7%	6%	3%	9%	5%
70	3%	4%	6%	14%	11%	5%
80	0%	3%	5%	31%	9%	6%
90	0%	1%	6%	25%	6%	8%
100	0%	0%	9%	17%	4%	9%
110	-	0%	10%	7%	4%	6%
120	-	0%	10%	1%	4%	4%
130	-	0%	9%	0%	5%	3%
140	-	0%	7%	0%	5%	3%
150	-	0%	6%	0%	6%	3%
160	-	0%	4%	0%	6%	3%
170	-	-	1%	0%	7%	4%
180	-	-	0%	0%	6%	4%
190	-	-	0%	0%	6%	5%
200	-	-	0%	0%	3%	8%
210	-	-	0%	0%	1%	11%
220	-	-	0%	0%	0%	6%
230	-	-	0%	-	0%	2%
240	-	-	0%	-	0%	1%
250	-	-	0%	-	0%	0%
260	-	-	0%	-	0%	0%
270	-	-	0%	-	0%	0%
280	-	-	0%	-	0%	0%
290	-	-	0%	-	-	0%
300	-	-	-	-	-	0%
320	-	-	-	-	0%	-
330	-	-	-	-	0%	-

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

19.0 AXLE GROUP DISTRIBUTION TABLES (continued)

Table 19.1 | Site: 01N00463 (Drury)

Load (kN)	SAST	SADT	TADT	TSST	TRDT	QADT
10	0.6%	5.9%	0.3%	–	–	–
20	21.7%	31.0%	2.3%	0.0%	0.0%	–
30	17.0%	25.3%	3.5%	0.1%	0.2%	0.0%
40	10.8%	13.8%	8.6%	0.3%	1.5%	0.1%
50	21.4%	9.2%	7.6%	0.6%	6.1%	1.1%
60	23.1%	6.2%	9.1%	2.8%	7.8%	7.1%
70	4.9%	4.3%	7.4%	13.4%	8.5%	7.5%
80	0.5%	2.7%	6.5%	22.3%	7.4%	8.5%
90	0.0%	1.1%	6.4%	24.6%	7.2%	5.9%
100	0.0%	0.3%	7.2%	21.9%	7.2%	5.0%
110	–	0.1%	8.5%	11.3%	6.6%	4.8%
120	–	0.0%	9.0%	2.4%	6.6%	4.1%
130	–	0.0%	8.0%	0.4%	6.4%	4.3%
140	–	0.0%	6.5%	0.0%	6.4%	4.5%
150	–	0.0%	4.9%	0.0%	5.9%	4.5%
160	–	0.0%	2.6%	–	5.5%	4.3%
170	–	–	1.1%	–	5.0%	4.4%
180	–	–	0.4%	–	5.0%	4.7%
190	–	–	0.1%	0.0%	3.7%	6.5%
200	–	–	0.0%	0.0%	1.6%	9.3%
210	–	–	0.0%	–	0.8%	7.9%
220	–	–	0.0%	0.0%	0.4%	3.5%
230	–	–	0.0%	–	0.1%	1.3%
240	–	–	0.0%	–	0.1%	0.5%
250	–	–	–	–	0.0%	0.2%
260	–	–	0.0%	–	0.0%	0.1%
270	–	–	–	–	0%	0%

Table 19.2 | Site: 01N00628 (Tokoroa)

Load (kN)	SAST	SADT	TADT	TSST	TRDT	QADT
10	2%	4%	0%	–	–	–
20	19%	27%	1%	0%	0%	–
30	14%	24%	4%	0%	0%	0%
40	10%	14%	7%	0%	1%	0%
50	22%	12%	6%	0%	3%	0%
60	29%	9%	6%	2%	5%	1%
70	4%	5%	6%	10%	6%	4%
80	0%	3%	6%	26%	6%	5%
90	0%	1%	8%	28%	6%	6%
100	0%	0%	11%	27%	8%	5%
110	–	0%	12%	7%	9%	6%
120	–	0%	10%	1%	9%	5%
130	–	0%	8%	0%	9%	5%
140	–	0%	7%	0%	9%	6%
150	–	0%	5%	0%	9%	6%
160	–	0%	2%	0%	8%	6%
170	–	–	1%	0%	6%	6%
180	–	–	0%	0%	4%	7%
190	–	–	0%	0%	2%	8%
200	–	–	0%	0%	1%	8%
210	–	–	0%	–	0%	7%
220	–	–	0%	–	0%	4%
230	–	–	0%	–	0%	2%
240	–	–	0%	–	0%	1%
250	–	–	0%	–	0%	0%
260	–	–	0%	–	0%	0%
270	–	–	0%	–	0%	0%

19.0 AXLE GROUP DISTRIBUTION TABLES (continued)

Table 19.3: Site: 01S00285 (Waipara)

Load (kN)	SAST	SADT	TADT	TSST	TRDT	QADT
10	4%	6%	0%	–	–	–
20	32%	42%	4%	0%	–	–
30	13%	22%	4%	0%	0%	–
40	7%	10%	7%	0%	4%	0%
50	24%	7%	8%	0%	5%	0%
60	19%	5%	7%	2%	6%	1%
70	1%	3%	5%	11%	5%	4%
80	0%	3%	6%	30%	5%	4%
90	0%	1%	9%	29%	6%	6%
100	0%	0%	10%	24%	8%	6%
110	–	0%	10%	3%	9%	6%
120	–	0%	9%	0%	10%	5%
130	–	0%	7%	0%	10%	6%
140	–	0%	7%	0%	9%	7%
150	–	0%	4%	0%	7%	7%
160	–	0%	1%	0%	7%	8%
170	–	–	0%	–	5%	8%
180	–	–	0%	–	3%	9%
190	–	–	0%	0%	1%	10%
200	–	–	0%	0%	0%	8%
210	–	–	0%	–	0%	4%
220	–	–	0%	–	0%	2%
230	–	–	0%	–	0%	1%
240	–	–	0%	–	0%	0%
250	–	–	0%	–	0%	0%
260	–	–	–	–	0%	0%
270	–	–	–	–	0%	0%

Table 19.4 | Site: 00500259 (Eskdale)

Load (kN)	SAST	SADT	TADT	TSST	TRDT	QADT
10	2%	5%	0%	–	–	–
20	25%	30%	2%	0%	0%	–
30	15%	24%	3%	0%	0%	0%
40	10%	11%	4%	0%	2%	0%
50	23%	9%	4%	1%	4%	1%
60	21%	7%	4%	4%	6%	3%
70	4%	8%	5%	15%	6%	6%
80	0%	5%	6%	28%	5%	6%
90	0%	1%	10%	27%	5%	6%
100	0%	0%	11%	20%	6%	5%
110	–	0%	13%	5%	7%	5%
120	–	0%	13%	0%	7%	5%
130	–	0%	10%	0%	8%	5%
140	–	0%	8%	0%	9%	5%
150	–	0%	6%	0%	10%	6%
160	–	–	2%	–	9%	6%
170	–	–	0%	–	7%	7%
180	–	–	0%	–	4%	7%
190	–	–	0%	–	2%	8%
200	–	–	0%	–	1%	8%
210	–	–	0%	–	0%	5%
220	–	–	0%	–	0%	2%
230	–	–	0%	–	0%	1%
240	–	–	0%	–	0%	0%
250	–	–	–	–	0%	0%
260	–	–	0%	–	–	0%
270	–	–	–	–	–	0%

19.0 AXLE GROUP DISTRIBUTION TABLES (continued)

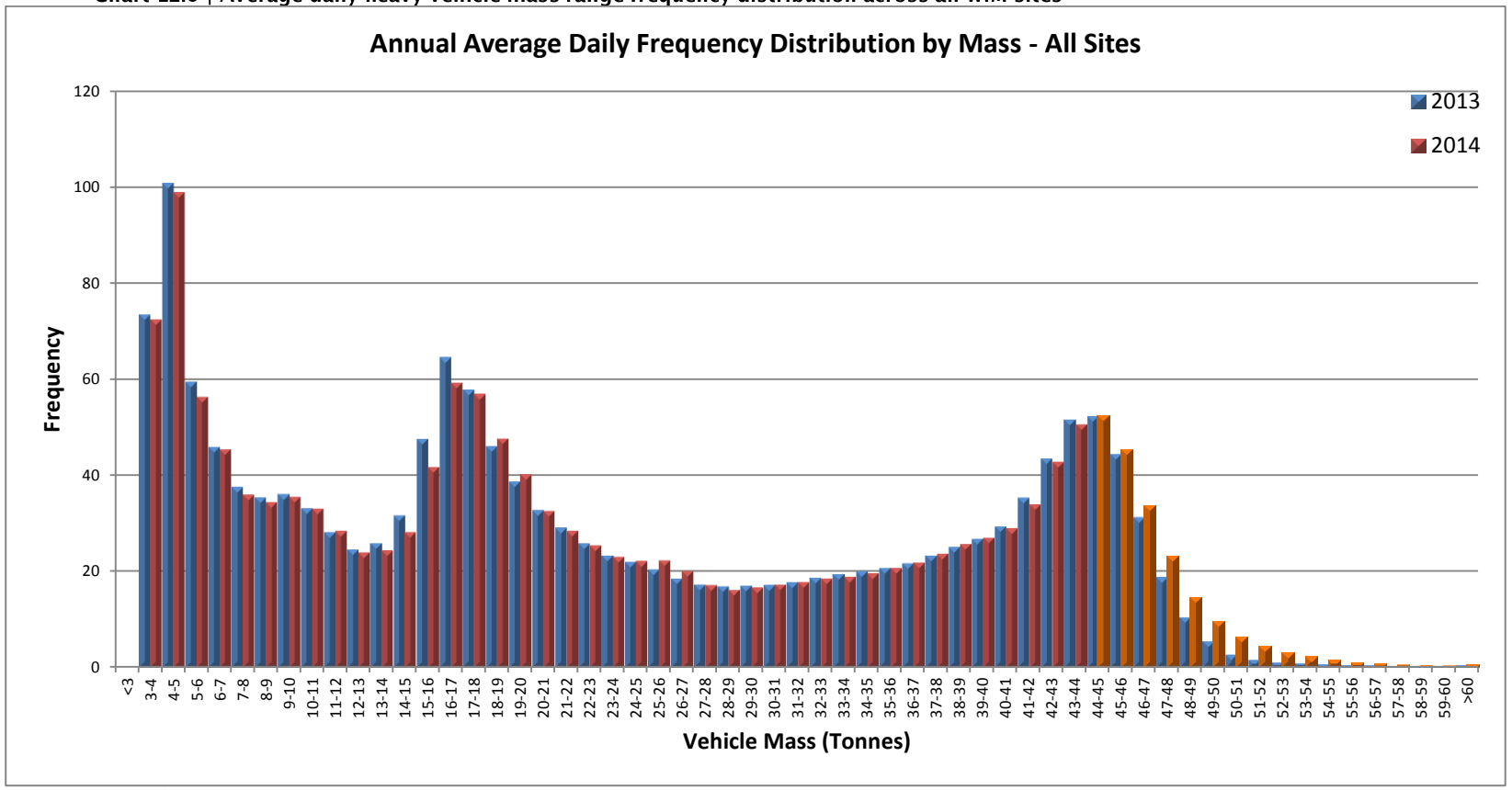
Table 19.5 | Site: 03500321 (Hamanatua Bridge)

Load (kN)	SAST	SADT	TADT	TSST	TRDT	QADT
10	1%	4%	1%	–	–	–
20	36%	36%	2%	0%	0%	–
30	30%	27%	1%	0%	0%	–
40	8%	10%	2%	0%	0%	–
50	13%	6%	2%	1%	3%	0%
60	10%	4%	2%	1%	6%	–
70	3%	6%	3%	15%	8%	2%
80	0%	5%	4%	42%	5%	4%
90	0%	1%	14%	34%	3%	11%
100	0%	0%	20%	7%	2%	30%
110	–	0%	18%	0%	5%	5%
120	–	0%	9%	0%	12%	1%
130	–	0%	4%	0%	14%	2%
140	–	0%	7%	–	13%	1%
150	–	0%	10%	0%	10%	2%
160	–	0%	3%	0%	6%	2%
170	–	–	0%	0%	5%	3%
180	–	–	0%	0%	2%	2%
190	–	–	0%	–	1%	4%
200	–	–	0%	–	0%	5%
210	–	–	0%	–	1%	6%
220	–	–	0%	–	0%	4%
230	–	–	0%	–	0%	4%
240	–	–	0%	–	0%	3%
250	–	–	0%	–	0%	2%
260	–	–	0%	–	0%	2%
270	–	–	0%	–	0%	1%

19.0 APPENDIX A – HEAVY VEHICLES MASS RANGE FREQUENCY DISTRIBUTION BY WiM SITE CHARTS

NOTE: For all comparisons of Annual Average Daily Traffic across different years, note that this figure is based on an extrapolation from the actual time period surveyed to obtain average figures, which may not be the same from one year to the next. Different times of the year have different traffic characteristics, which can impact the calculated Annual Average Daily Traffic.

Chart 12.0 | Average daily heavy vehicle mass range frequency distribution across all WiM sites

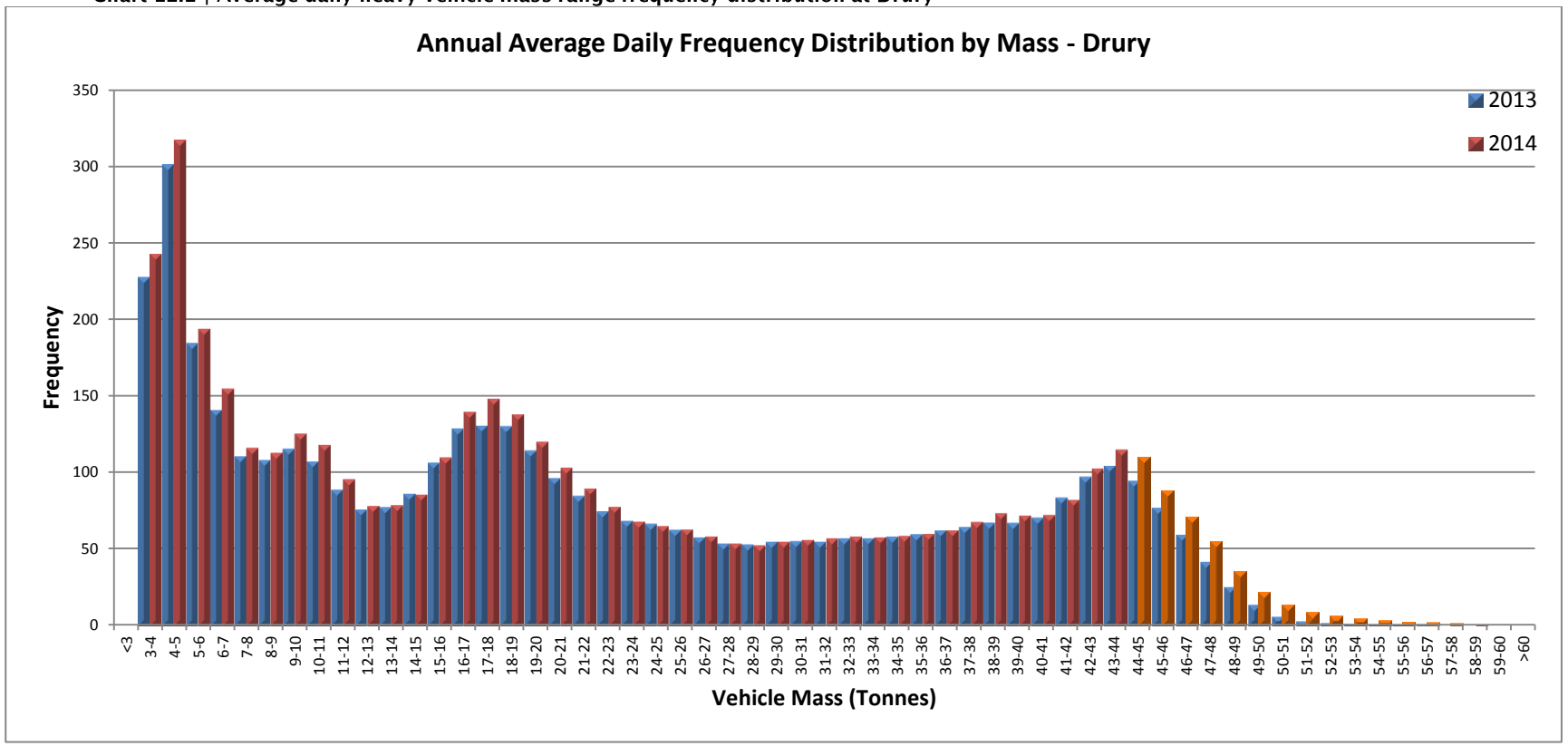


Key: = 2014 over 44 tones (legal limit without HPMV or overweight permit.)

Interpretation: The three largest groupings for 2014 across all WiM sites were 4–5 tonnes, 3–4 tonnes and 16–17 tonnes. There was no marked increase in the frequency of vehicles in most mass groups apart from over 44 tonnes, where 2014 was consistently higher than 2013.

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

Chart 12.1 | Average daily heavy vehicle mass range frequency distribution at Drury

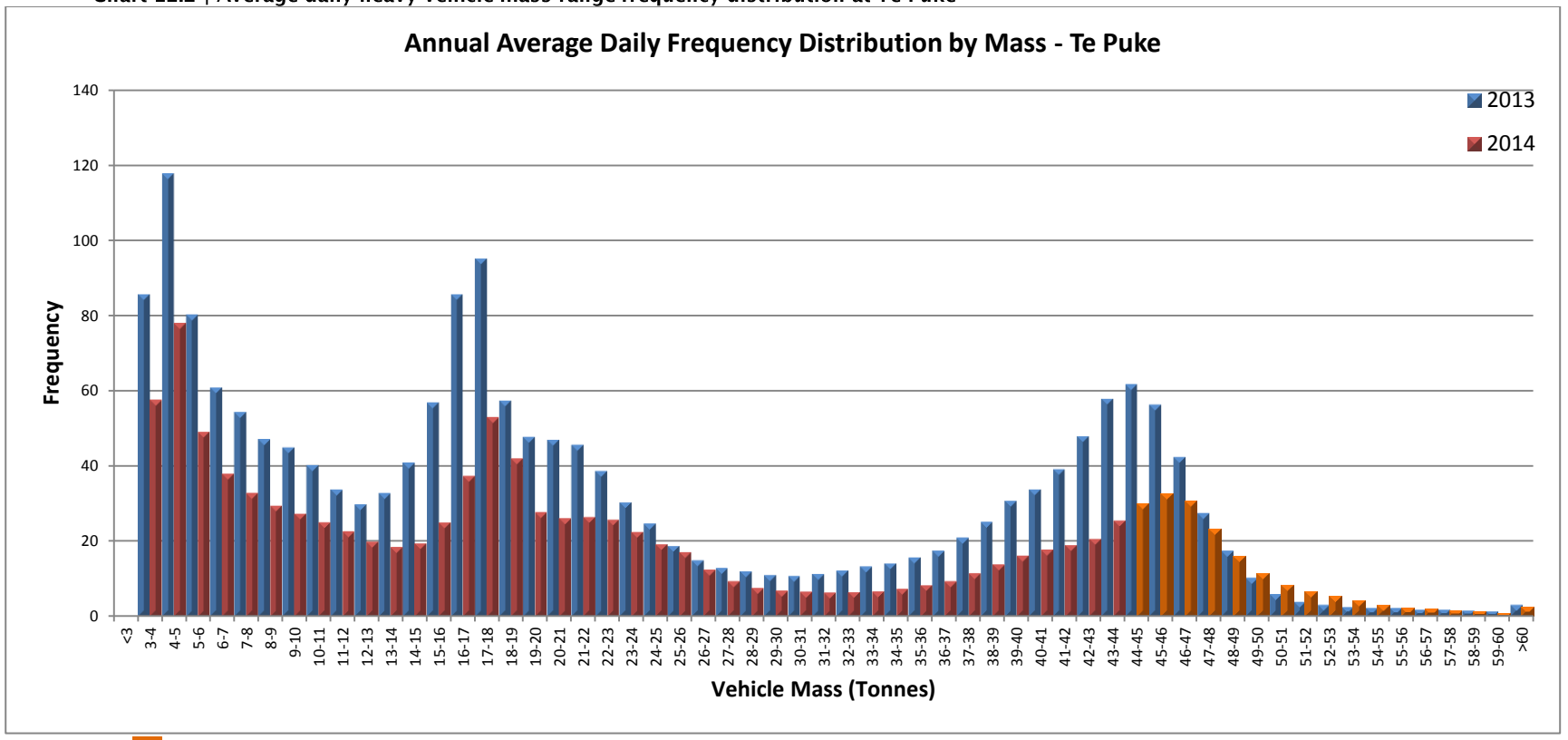


Key: = 2014 over 44 tones (legal limit without HPMV or overweight permit.)

Interpretation: The increase from 2013 to 2014 for Drury was in vehicles 23 tonnes and under as well as those 43 tonnes and over.

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

Chart 12.2 | Average daily heavy vehicle mass range frequency distribution at Te Puke

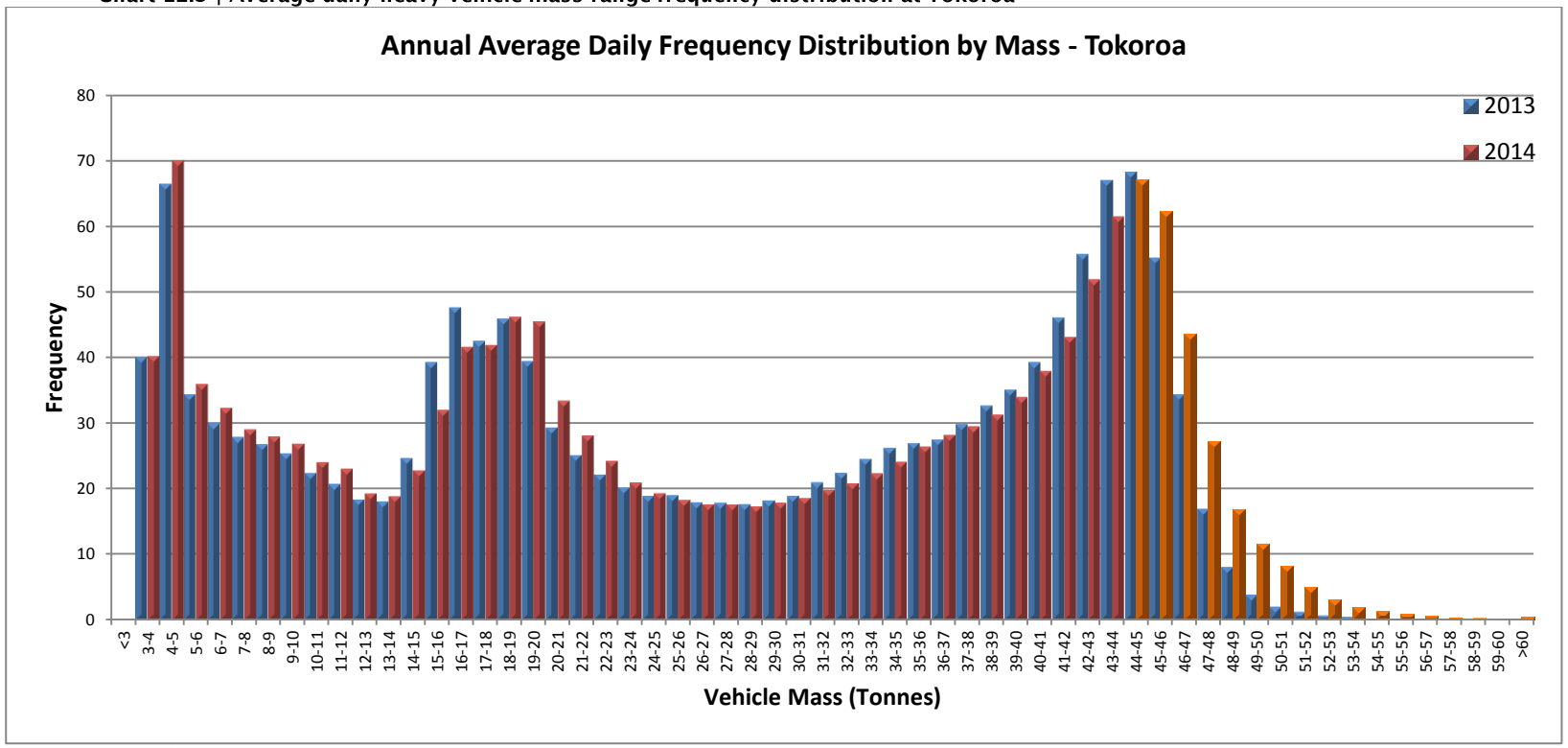


Key: = 2014 over 44 tones (legal limit without HPMV or overweight permit.)

Interpretation: At Te Puke, the frequency of vehicles in most mass bands was markedly lower in 2014 than reported in 2013, apart from vehicles 49–55 tonnes, where there were more in 2014 than in 2013.

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

Chart 12.3 | Average daily heavy vehicle mass range frequency distribution at Tokoroa

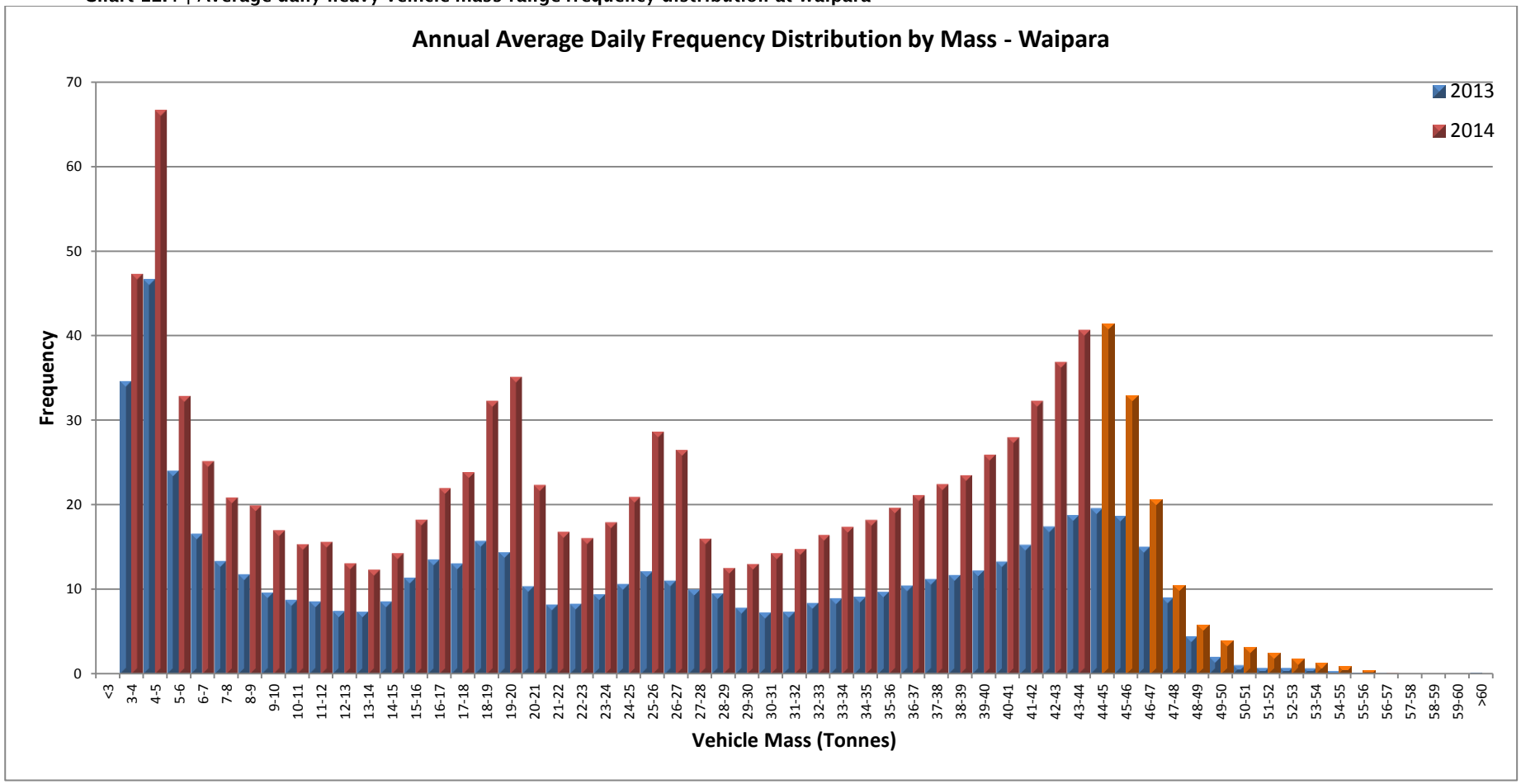


Key: = 2014 over 44 tones (legal limit without HPMV or overweight permit.)

Interpretation: Vehicles at the Tokoroa WiM site followed the trend and were proportionally less compliant in 2014 than in 2013. For 2014 there were increases in the frequency of vehicles up to 25 tonnes, but a much more marked increase in the frequency of vehicles greater than 44 tonnes.

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

Chart 12.4 | Average daily heavy vehicle mass range frequency distribution at Waipara

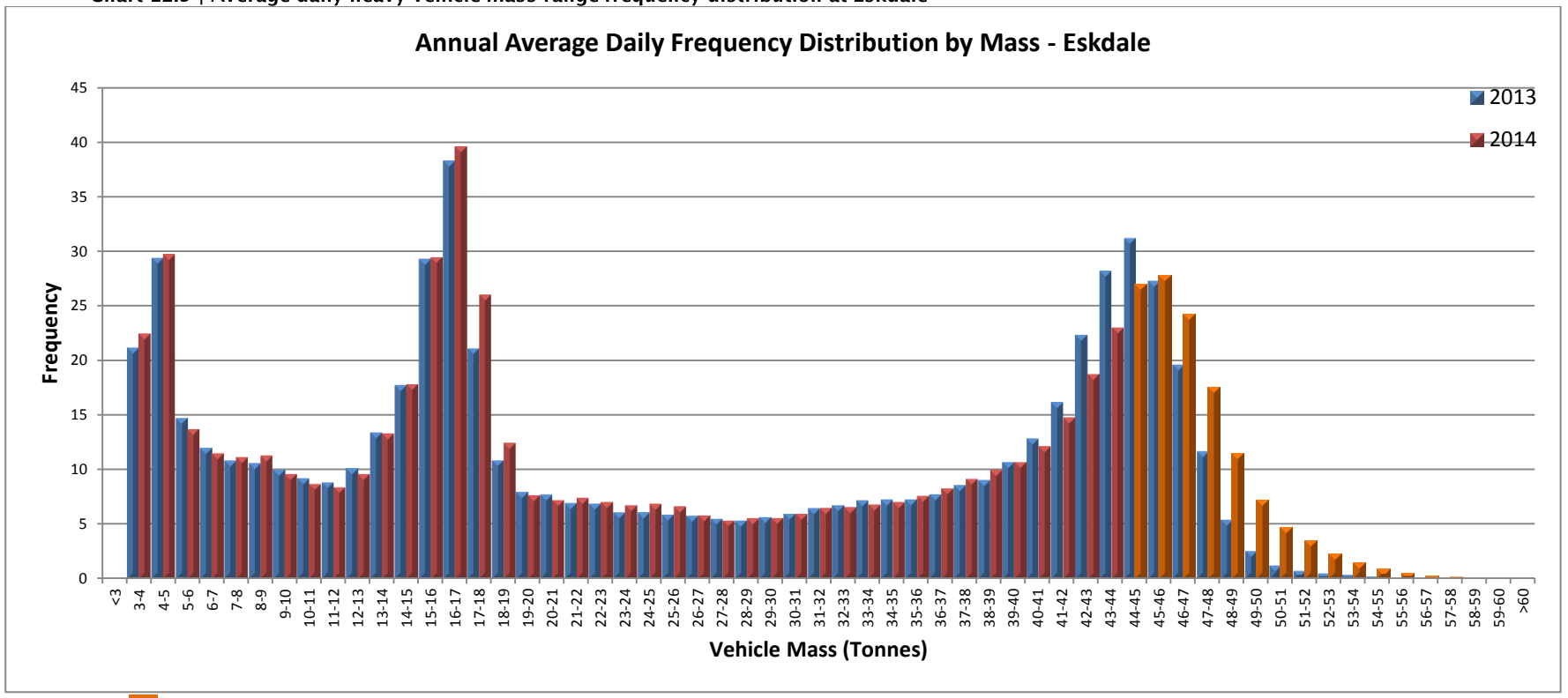


Key: = 2014 over 44 tones (legal limit without HPMV or overweight permit.)

Interpretation: Vehicles at the Waipara WiM site were more frequent in all mass ranges.

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

Chart 12.5 | Average daily heavy vehicle mass range frequency distribution at Eskdale

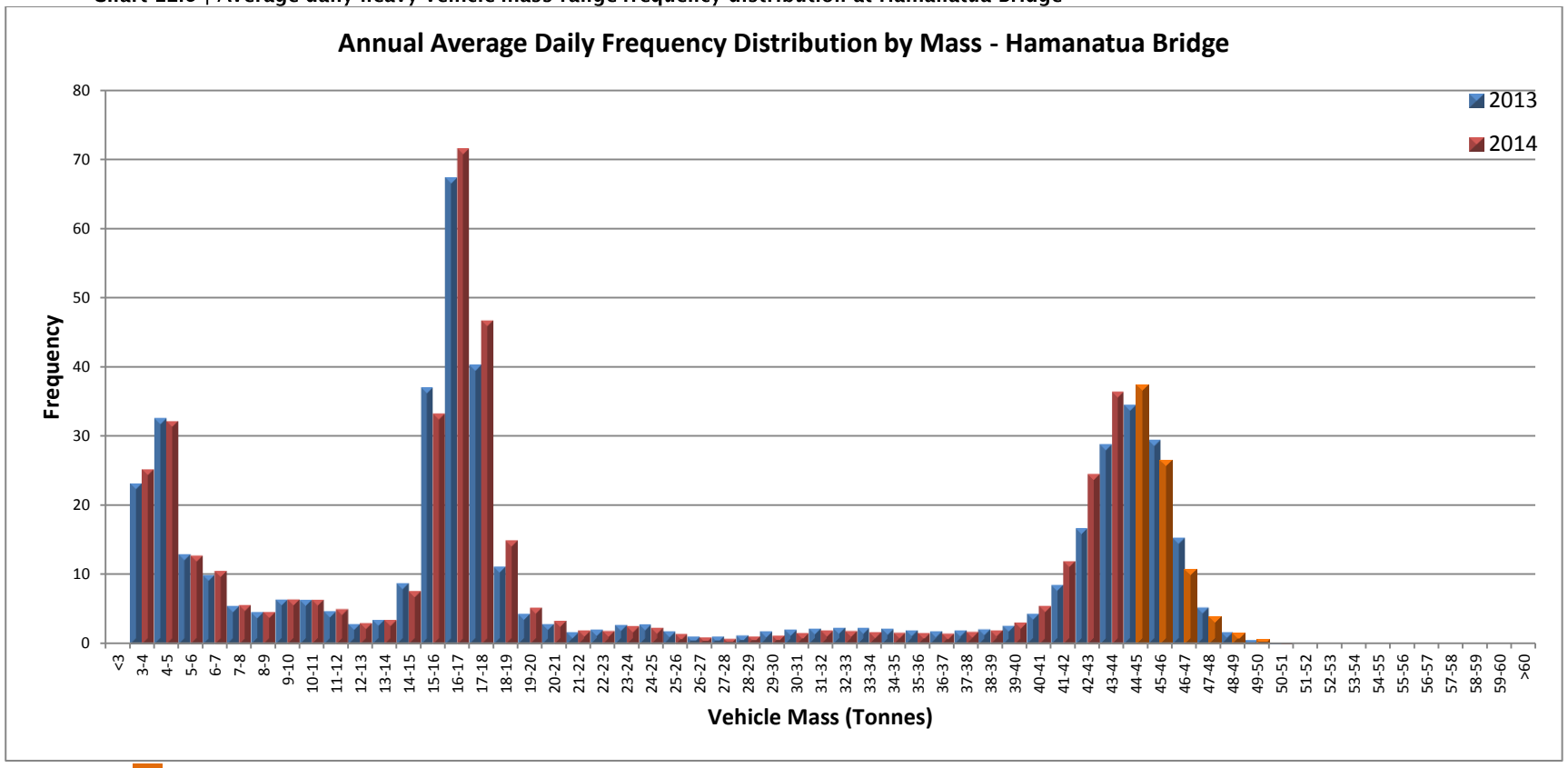


Key: = 2014 over 44 tones (legal limit without HPMV or overweight permit.)

Interpretation: Vehicles at the Eskdale WiM site were noticeably more frequent in only a few mass ranges below 45 tonnes in 2014, but more frequent in all mass ranges from 45 tonnes upward.

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

Chart 12.6 | Average daily heavy vehicle mass range frequency distribution at Hamanatua Bridge

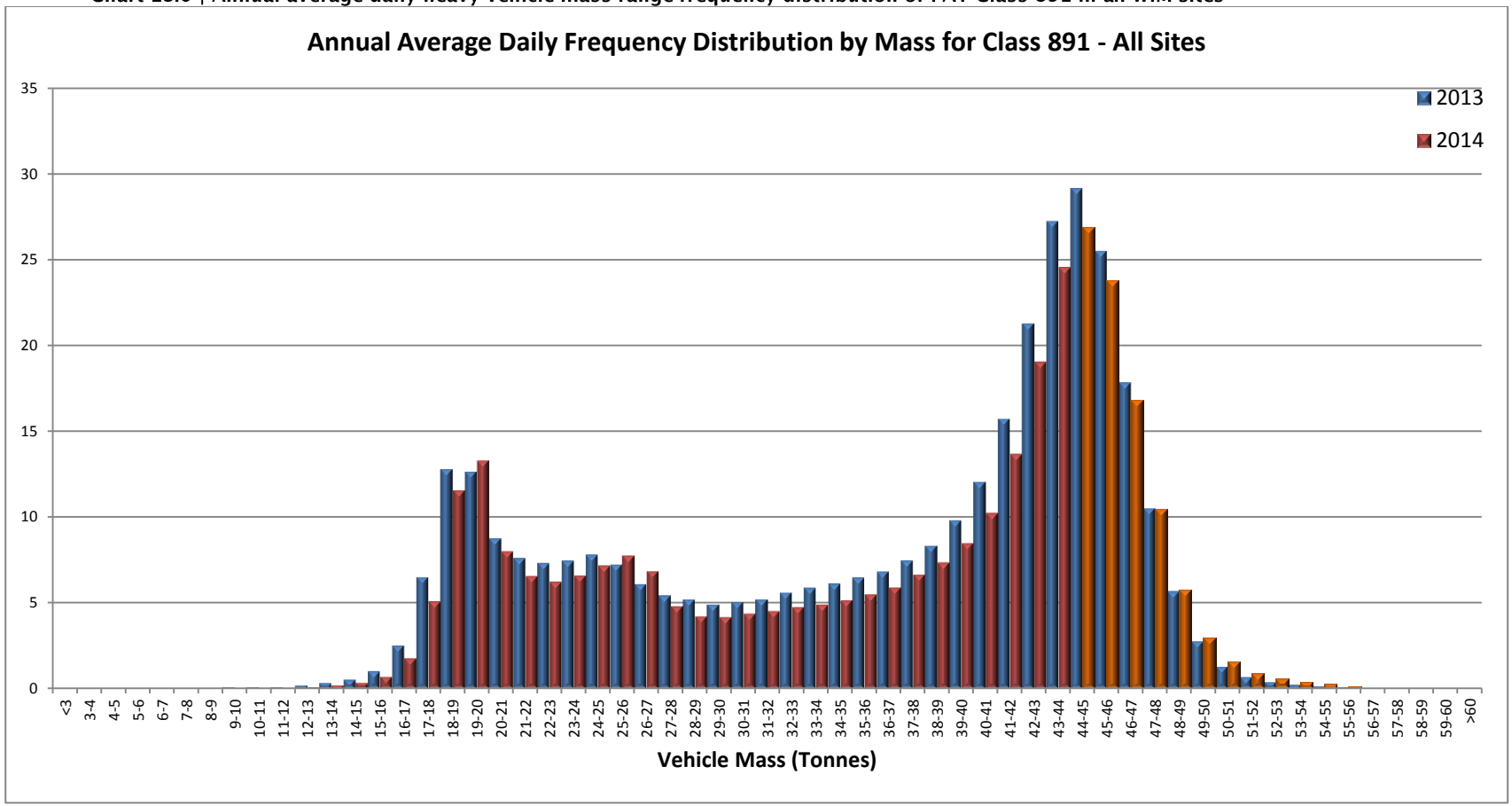


Key: = 2014 over 44 tones (legal limit without HPMV or overweight permit.)

Interpretation: Vehicles at the Hamanatua WiM site were more frequent in a number of mass ranges below 45 tonnes in 2014, but consistently less frequent in all mass ranges from 45 tonnes upward. This is a point of difference between Hamanatua Bridge and other sites.

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

Chart 13.0 | Annual average daily heavy vehicle mass range frequency distribution of PAT Class 891 in all WiM sites

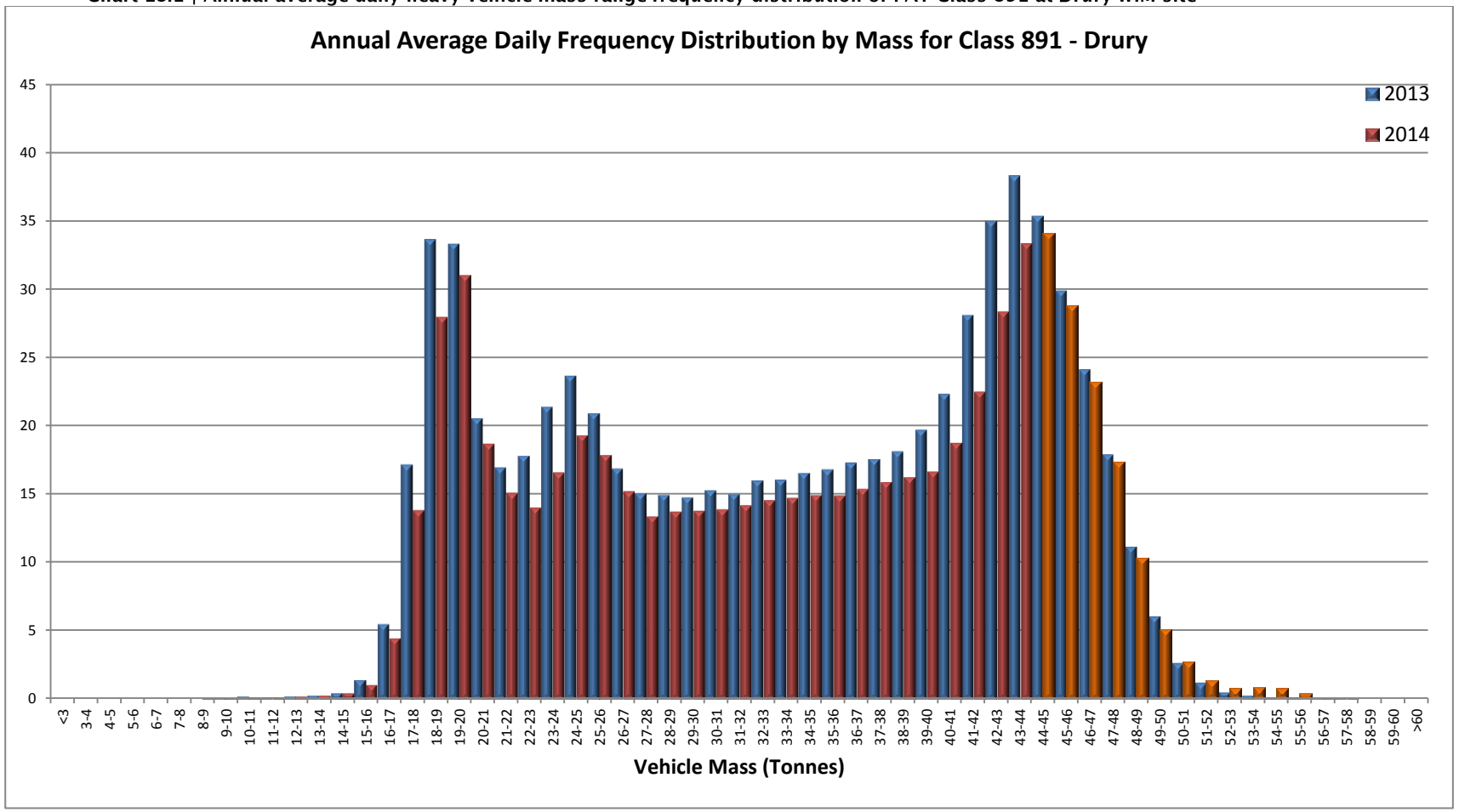


Key: = 2014, over 44 tones (legal limit without HPMV or overweight permit.)

Interpretation: PAT class 891 shows decreases for most mass bands below 47 tonnes. For mass bands 47 tonnes and over, volumes were equal to or greater than those in 2013.

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

Chart 13.1 | Annual average daily heavy vehicle mass range frequency distribution of PAT Class 891 at Drury WiM site

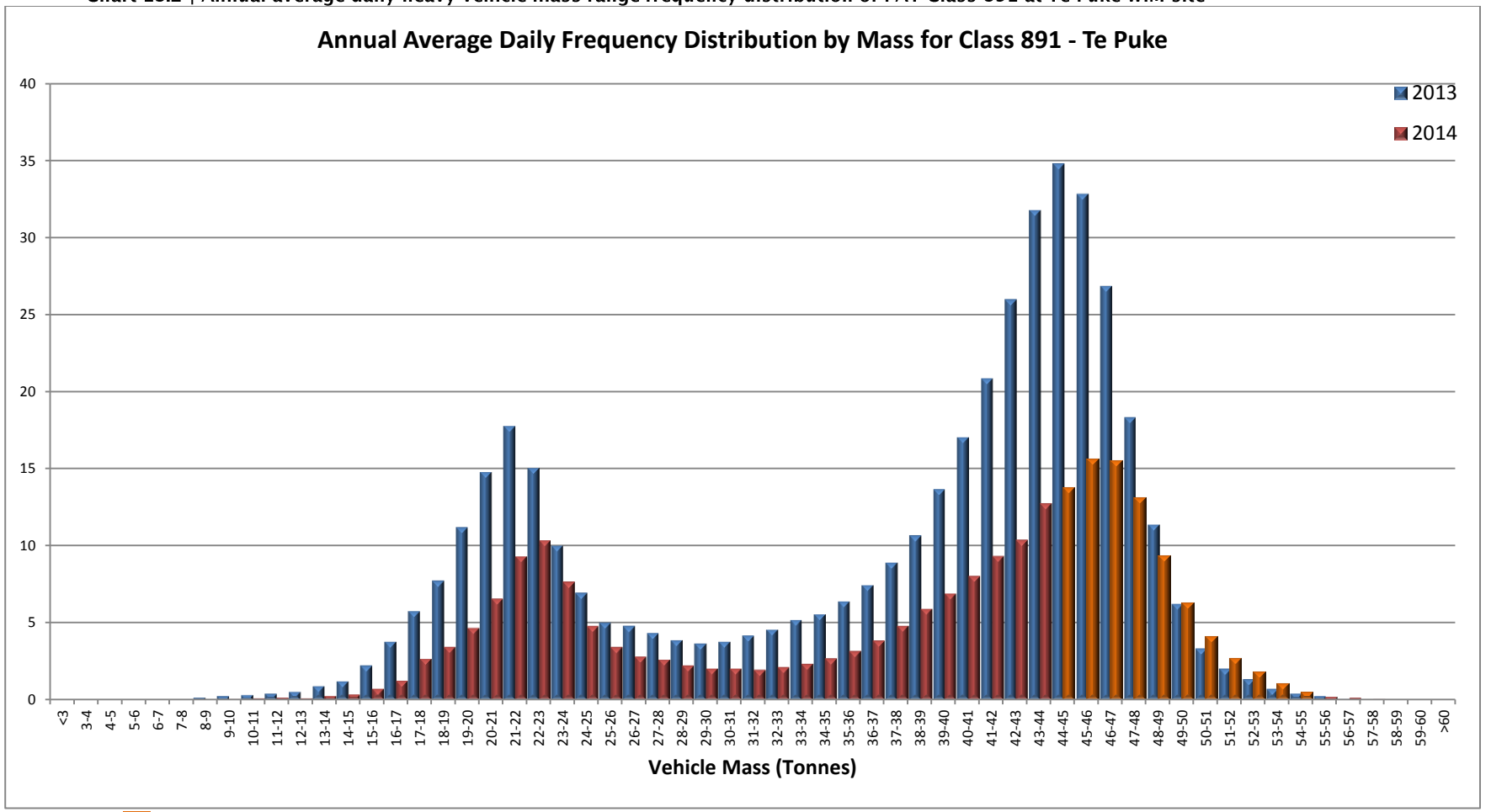


Key: = 2014 over 44 tones (legal limit without HPMV or overweight permit.)

Interpretation: PAT class 891 at Drury showed decreases for all mass bands below 50 tonnes. For mass bands 50 tonnes and over, volumes were (roughly) equal to or greater than those in 2013.

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

Chart 13.2 | Annual average daily heavy vehicle mass range frequency distribution of PAT Class 891 at Te Puke WiM site

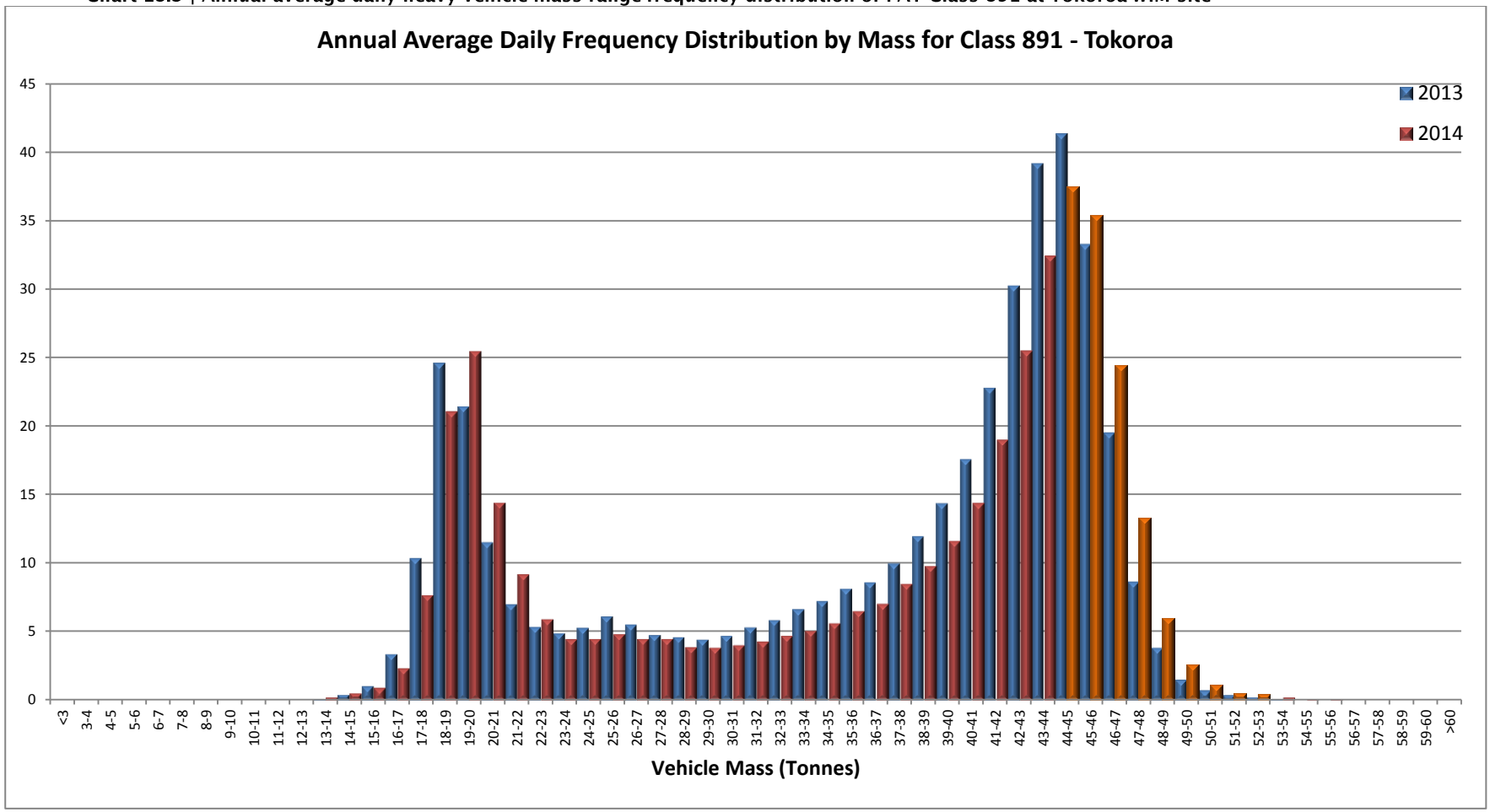


Key: = 2014 over 44 tones (legal limit without HPMV or overweight permit.)

Interpretation: PAT class 891 at Te Puke showed marked decreases for all mass bands below 49 tonnes. For mass bands 50 tonnes and over, volumes were (roughly) equal to or greater than those in 2013.

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

Chart 13.3 | Annual average daily heavy vehicle mass range frequency distribution of PAT Class 891 at Tokoroa WiM site

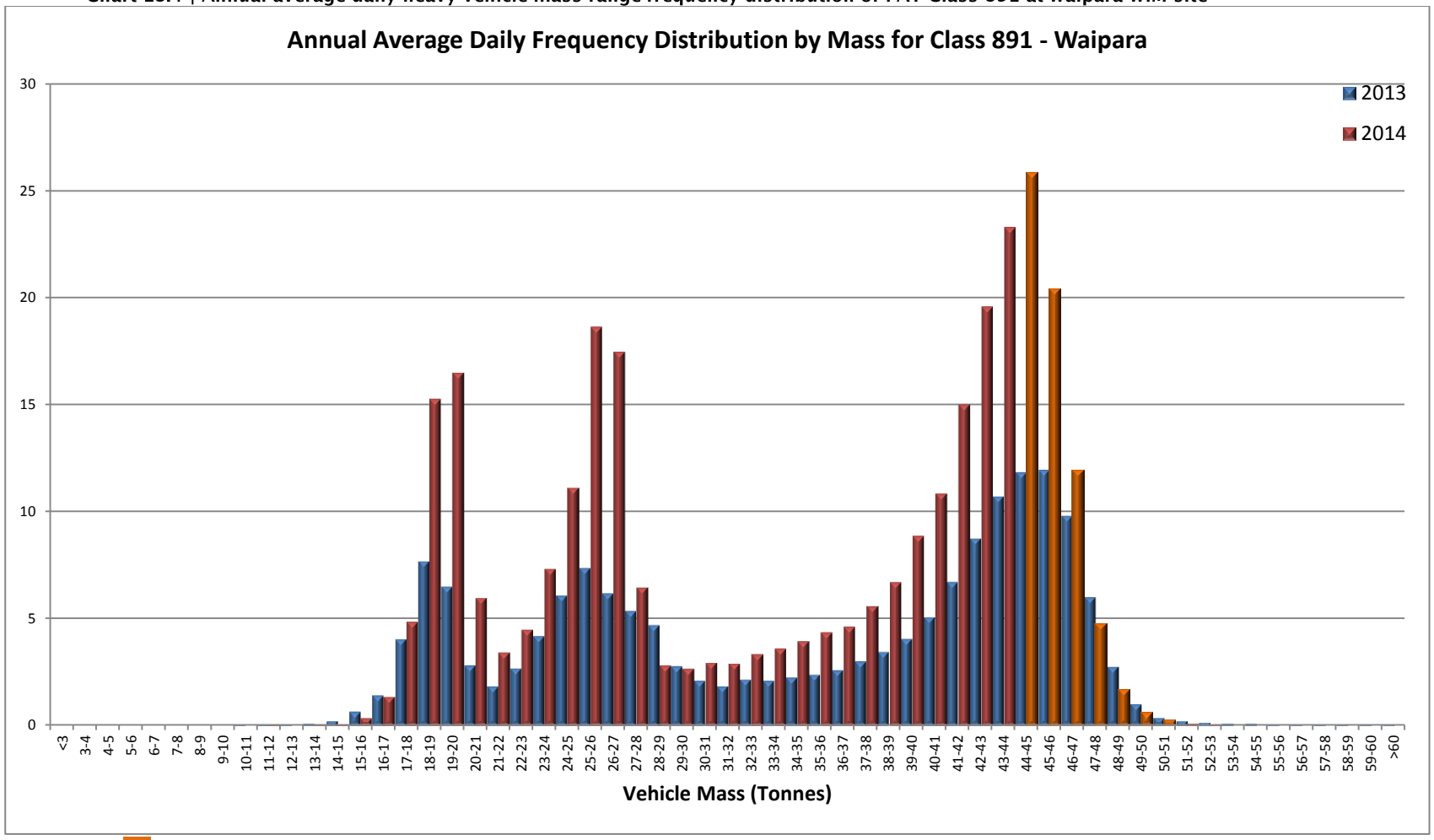


Key: = 2014 over 44 tones (legal limit without HPMV or overweight permit.)

Interpretation: PAT class 891 at Tokoroa showed decreases for most mass bands below 45 tonnes. Following the general trend for PAT class 951, for mass bands 45 tonnes and over, volumes were greater than those in 2013.

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

Chart 13.4 | Annual average daily heavy vehicle mass range frequency distribution of PAT Class 891 at Waipara WiM site

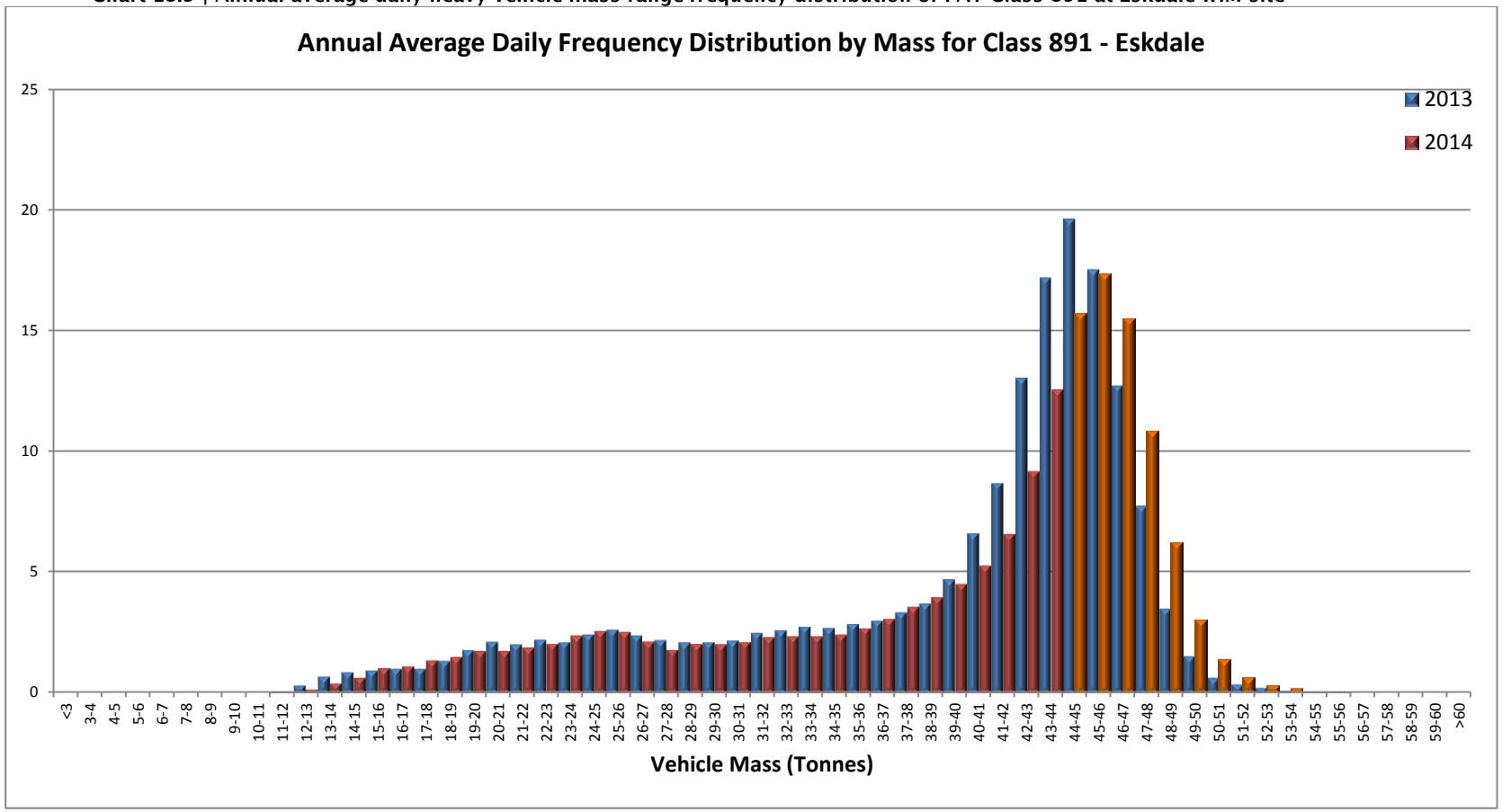


Key: = 2014 over 44 tones (legal limit without HPMV or overweight permit.)

Interpretation: PAT class 891 at Waipara bucks the trend. There are increases for nearly all mass bands below 47 tonnes, but consistent decreases in 2014 for all mass bands 47 tonnes and over.

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

Chart 13.5 | Annual average daily heavy vehicle mass range frequency distribution of PAT Class 891 at Eskdale WiM site

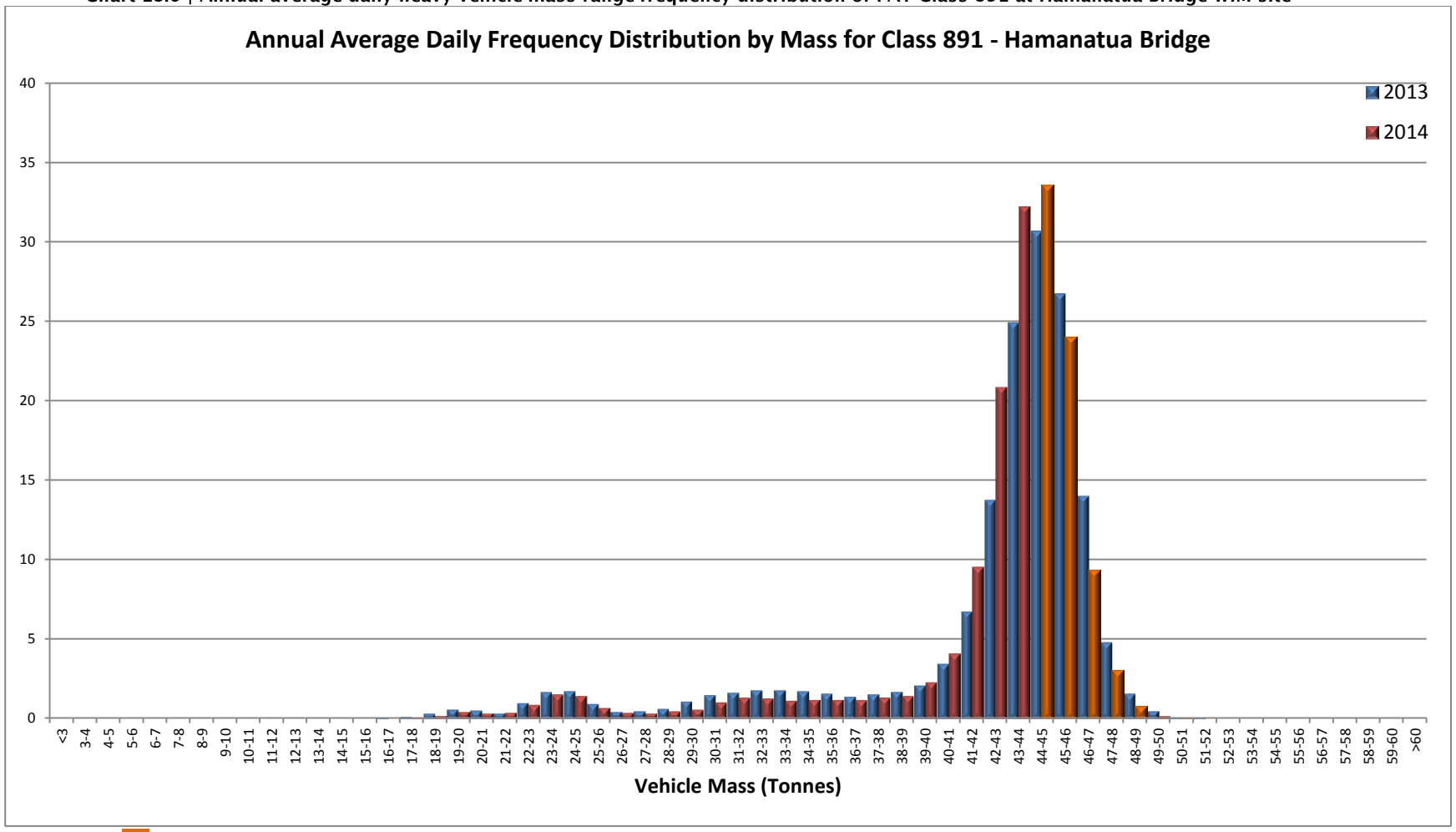


Key: = 2014 over 44 tones (legal limit without HPMV or overweight permit.)

Interpretation: PAT class 891 at Eskdale follow the overall trend. There are no marked increases for mass bands below 47 tonnes and marked decreases between 40 and 45 tonnes, but sharp increases in 2014 for all mass bands 46 tonnes and over.

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

Chart 13.6 | Annual average daily heavy vehicle mass range frequency distribution of PAT Class 891 at Hamanatua Bridge WiM site



Key: = 2014 over 44 tones (legal limit without HPMV or overweight permit.)

Interpretation: PAT class 891 at Hamanatua Bridge, like Waipara, goes against the overall trend. There are increases for mass bands from 39 to 45 tonnes, but consistent decreases in 2014 for all mass bands 45 tonnes and over.

21.0 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 14.0 | All WiM sites

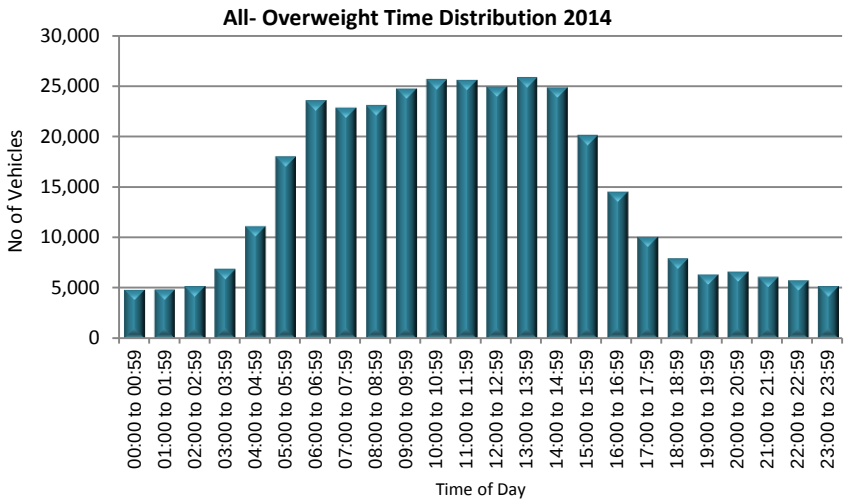


Chart 14.1 | Drury

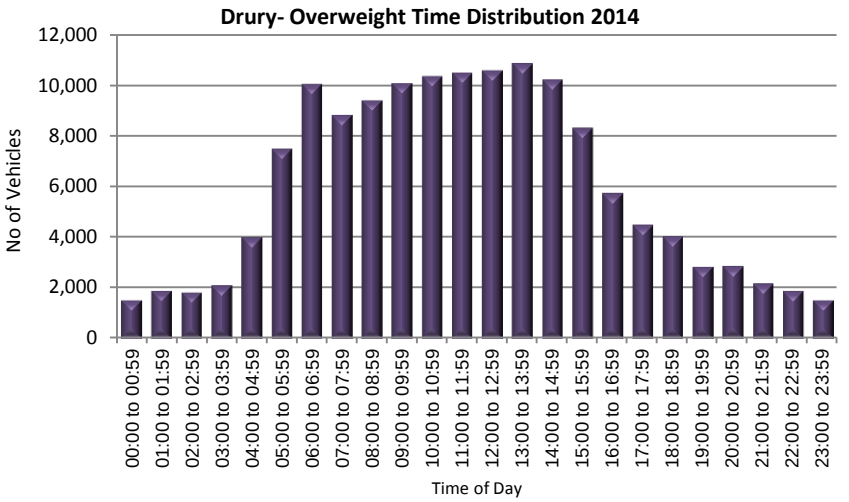


Chart 14.2 | Eskdale

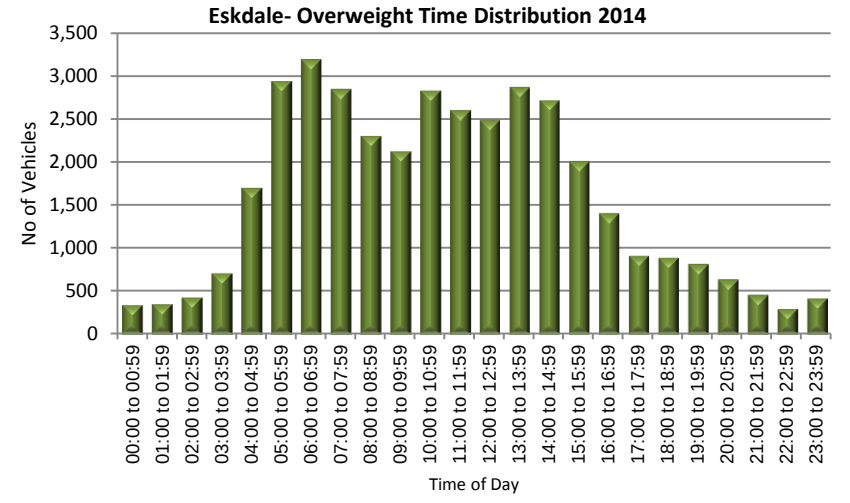
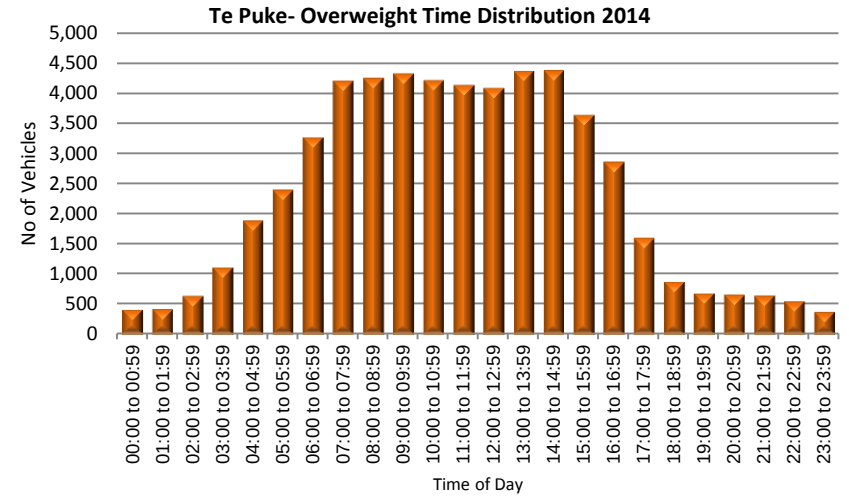


Chart 14.3 | Te Puke



22.0 APPENDIX C – VEHICLE FLEET OVERWEIGHT CHARTS (Continued)

Chart 14.4 | Tokoroa

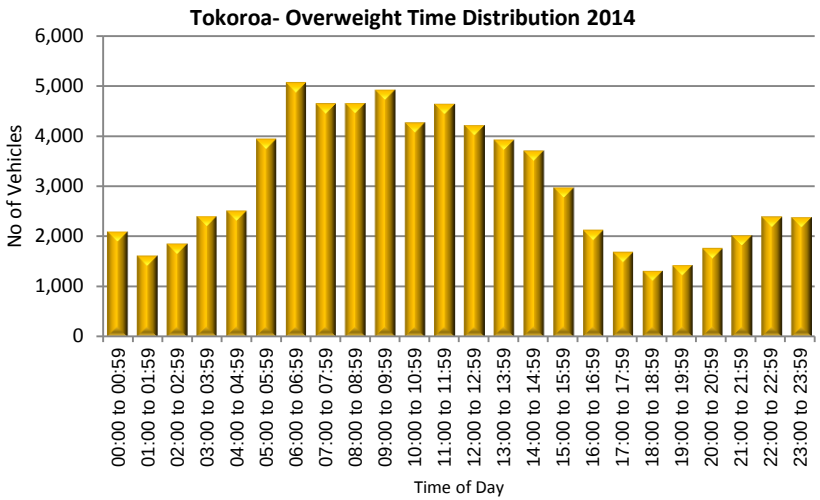


Chart 14.5 | Waipara

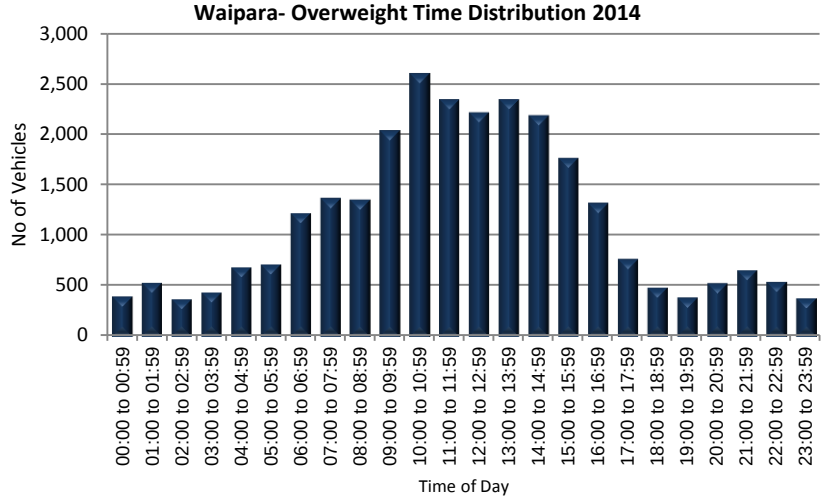
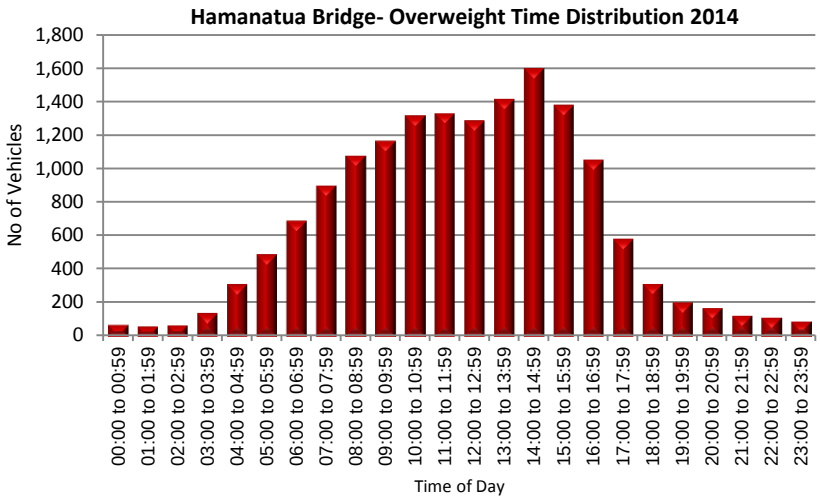
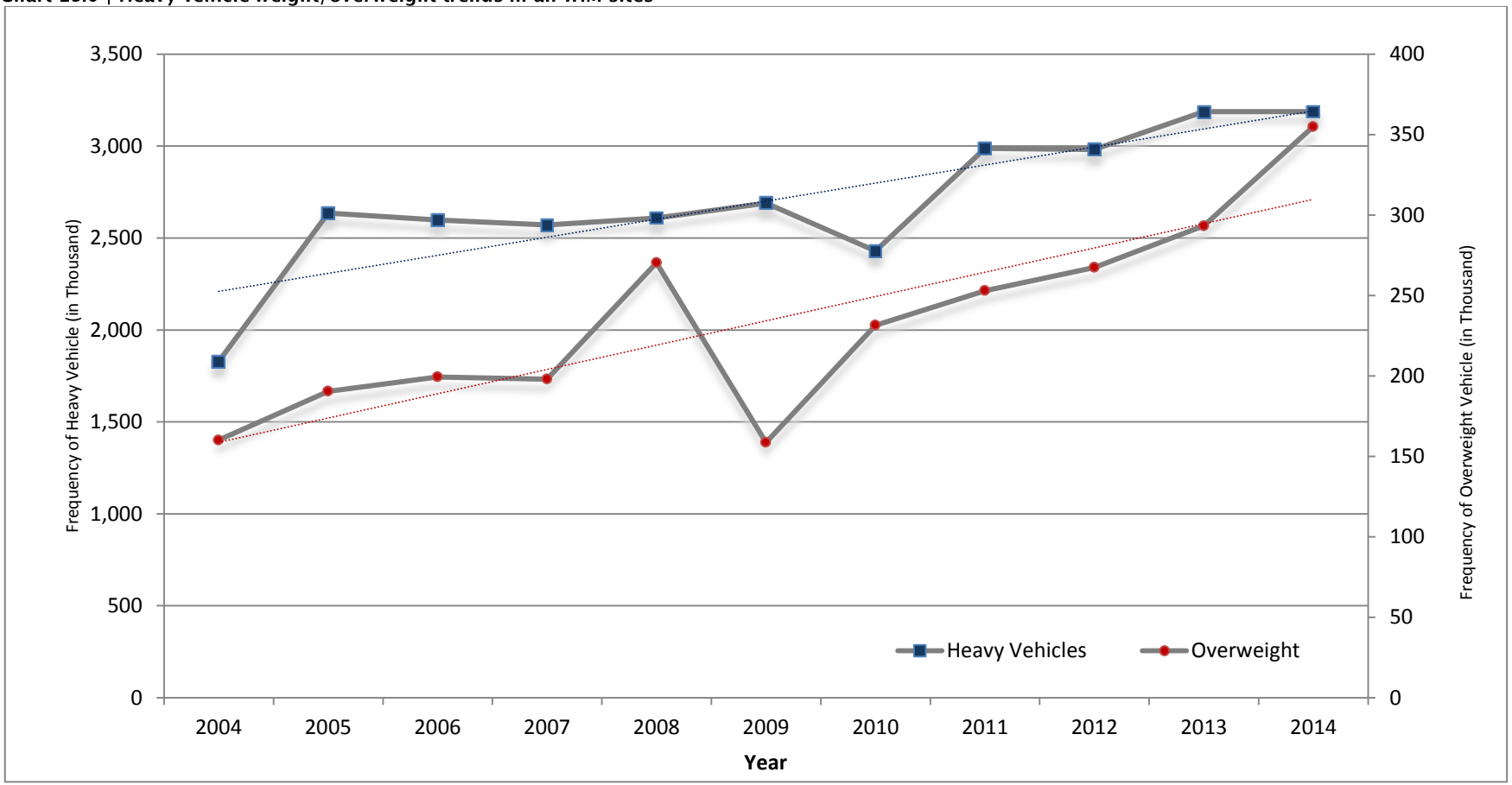


Chart 14.5 | Hamanatua Bridge


Hamanatua Bridge- Overweight Time Distribution 2014
No of Vehicles
1,800
1,600
1,400
1,200
1,000
800
600
400
200
0
00:00 to 00:59
01:00 to 01:59
02:00 to 02:59
03:00 to 03:59
04:00 to 04:59
05:00 to 05:59
06:00 to 06:59
07:00 to 07:59
08:00 to 08:59
09:00 to 09:59
10:00 to 10:59
11:00 to 11:59
12:00 to 12:59
13:00 to 13:59
14:00 to 14:59
15:00 to 15:59
16:00 to 16:59
17:00 to 17:59
18:00 to 18:59
19:00 to 19:59
20:00 to 20:59
21:00 to 21:59
22:00 to 22:59
23:00 to 23:59
Time of Day

22.0 APPENDIX D – HEAVY VEHICLES LOAD/OVERWEIGHT TRENDS

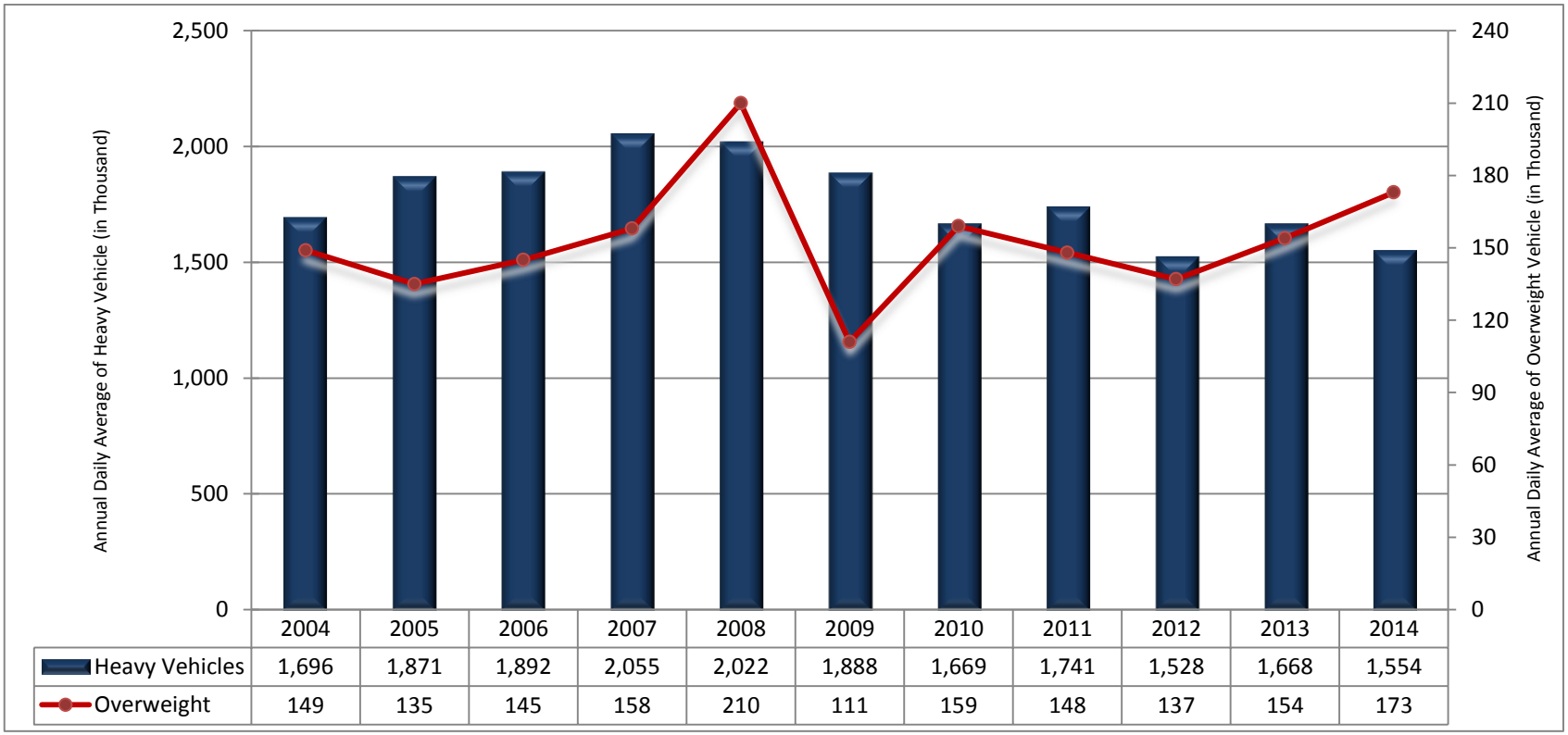
Chart 15.0 | Heavy vehicle weight/overweight trends in all WiM sites



Interpretation: In 2013, both heavy and overweight vehicles show increasing trends in the long term, but from 2013 to 2014, overweight vehicles showed a greater increase than vehicles generally.

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

Chart 15.1 | Annual average daily heavy vehicle load and overweight in all WiM sites

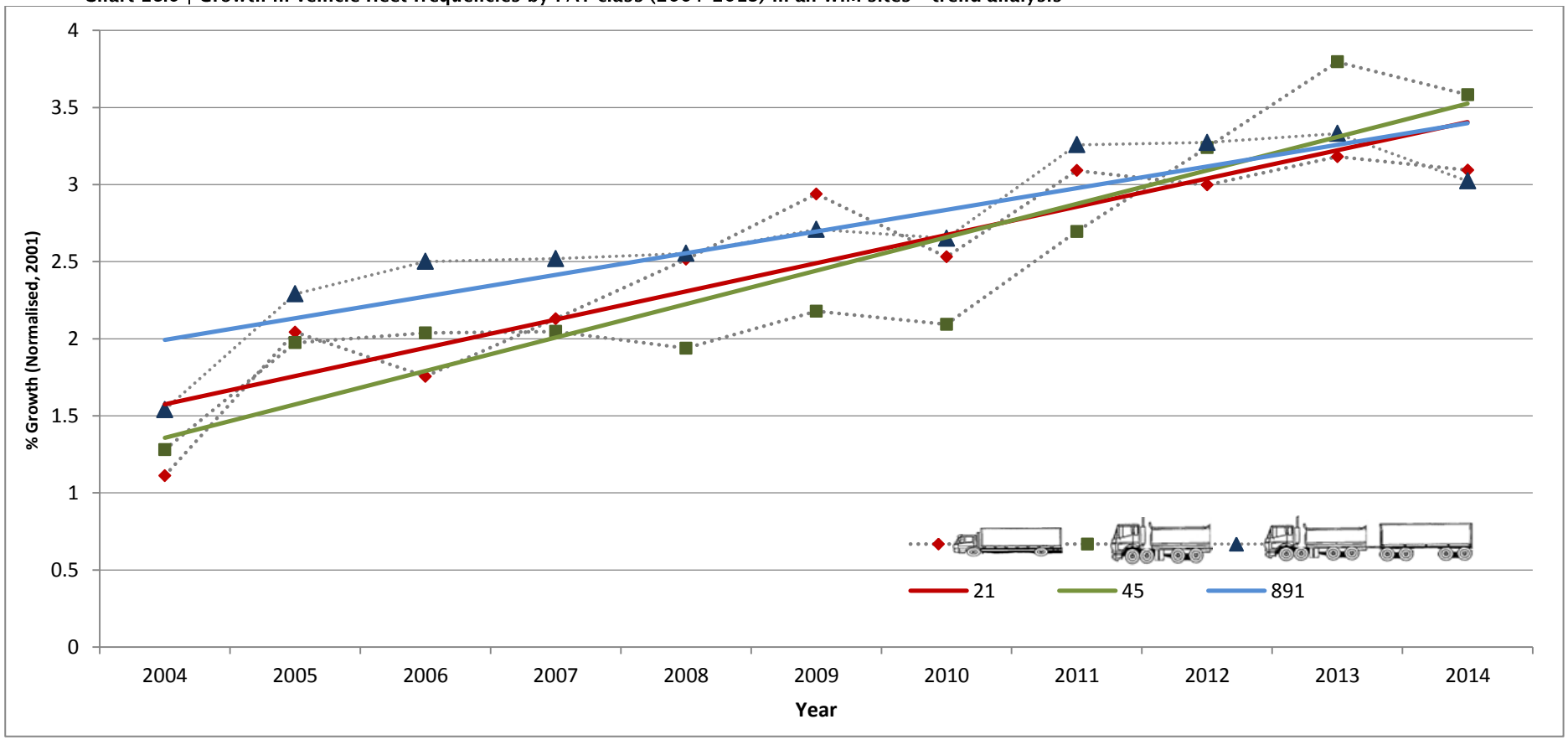


	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Heavy Vehicles	1,696	1,871	1,892	2,055	2,022	1,888	1,669	1,741	1,528	1,668	1,554
Overweight	149	135	145	158	210	111	159	148	137	154	173

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

24.0 APPENDIX F – VEHICLE FLEET TRENDS

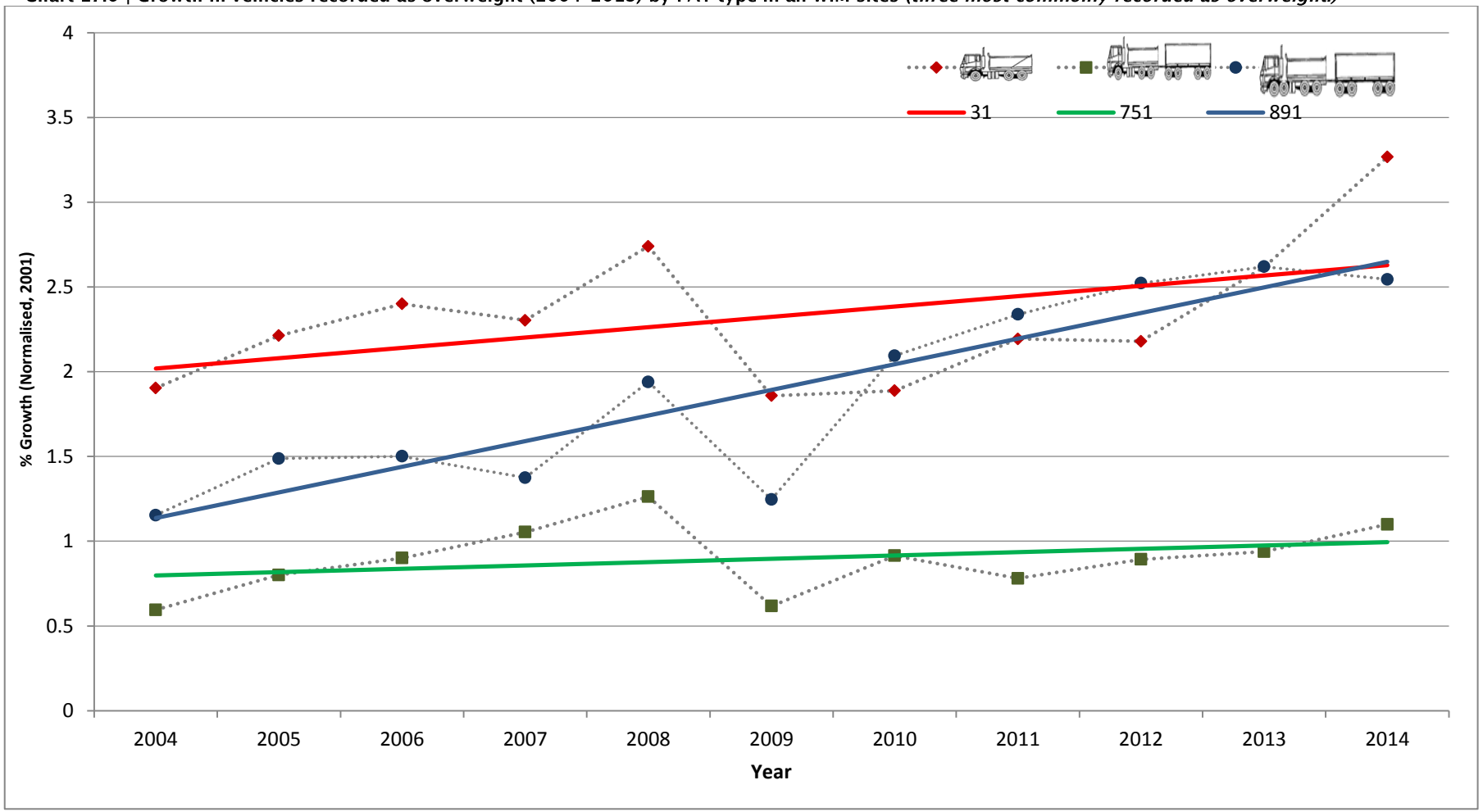
Chart 16.0 | Growth in vehicle fleet frequencies by PAT class (2004–2013) in all WiM sites – trend analysis



Interpretation: The three most frequent PAT classes (891, 21, and 45) show an increasing trend in the long term, even though all three decreased from 2013 to 2014.

25.0 APPENDIX G – VEHICLE FLEET OVERWEIGHT TRENDS

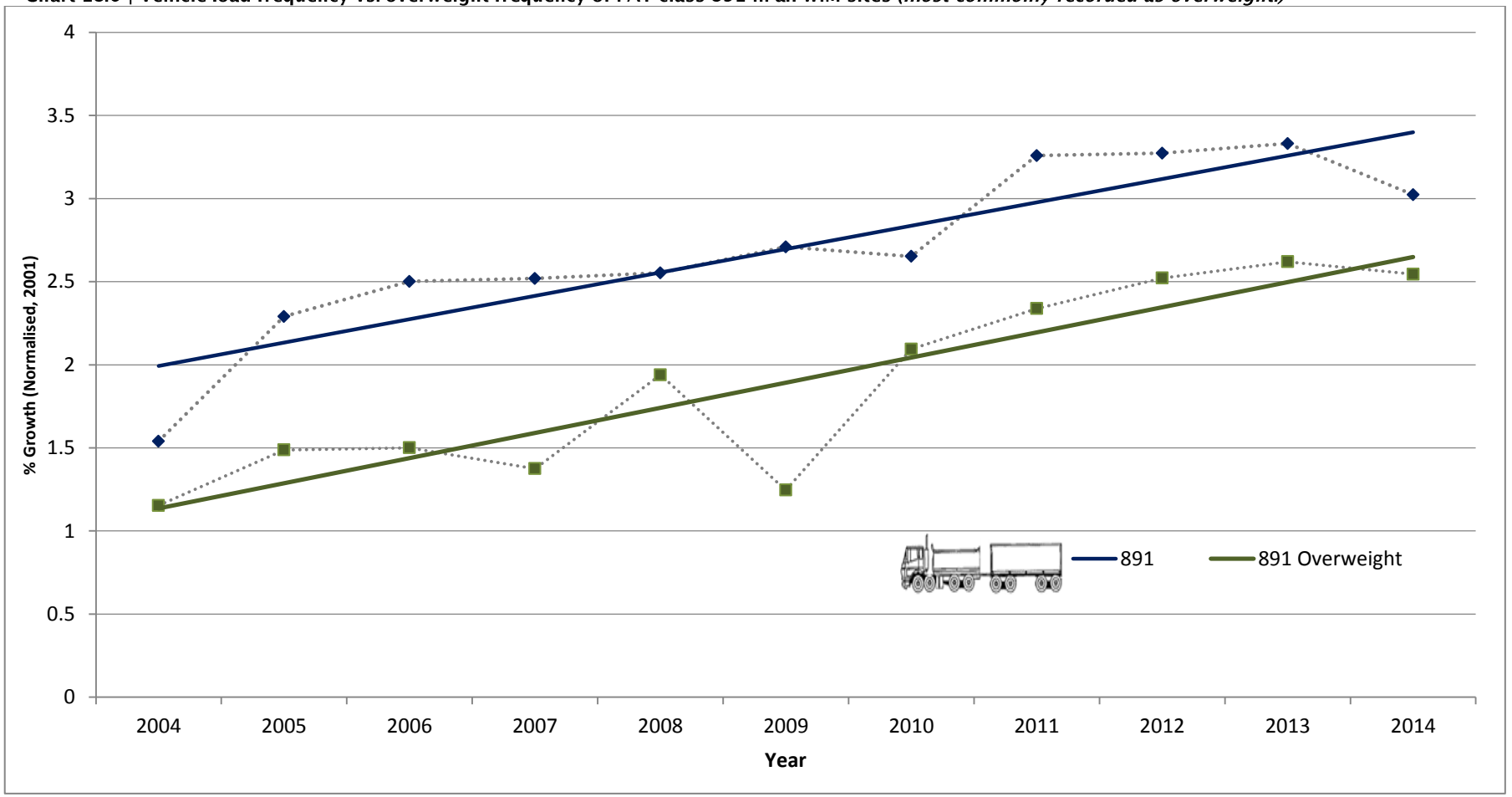
Chart 17.0 | Growth in vehicles recorded as overweight (2004–2013) by PAT type in all WiM sites *(three most commonly recorded as overweight.)*



Interpretation: All three PAT classes here 891 continue to report an increasing overweight trend, but the trend is weak for PAT class 751.

26.0 APPENDIX H – VEHICLE FLEET FREQUENCY vs OVERWEIGHT CHARTS

Chart 18.0 | 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, in spite of a decrease from 2013 to 2014. This is because although class 891 is still the most commong among vehicles with 8 or more axles, it is on the decline, while 9 axle vehicles are on the rise.

For more graphs on each PAT class and number of axles, refer to the attached
Weight-in-Motion Dashboard 2014